

**BREATHING WOODWINDS – MUSIC THERAPY FOR ASTHMA AND  
COPD REHABILITATION**

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<p>Tiivistelmä – Abstract</p> <p>Finnish Lung Health Association (Filha ry) estimated 2010 that respiratory diseases concern a million Finnish, every fifth of us, every day. Rehabilitation underlines self-care and co-ownership. This Master’s Thesis introduces one option to rehabilitation.</p> <p>Asthma group, two children and one adult, had music therapy sessions with woodwind instrument playing, and COPD patient individual music therapy sessions for 12 weeks. Breathing exercises and playing a wind instrument was used to strengthen respiration and musical aspect for motivating practicing.</p> <p>Can musical wind instrument in music therapy context, added to standard care, provide a beneficial effect for pulmonary patients? Is there positive impact in quality of life?</p> <p>In twelve weeks time results was found in qualitative material. PEF measures remained the same, but in diaries patients tell improved skills in asthma attack, mucus severing from lower part of the lungs, relieve from continuing coughing and improved capability to cure from common cold.</p>	
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# 1 INTRODUCTION

## 1.1 Motivation of the study: finding solutions

Physical wellbeing and good individual life quality should be achievable for everyone. Especially when the solution is enjoyable, easily accessible and can be modified for multiple situations. My motivation for the study is to introduce one option to rehabilitation.

As a child I had asthmatic symptoms often. It was never diagnosed as asthma, but I know what it feels like when you can't breathe. Many people can agree that not being able to breathe is at the top of the "what I never want to go through again" -list. Even then there was discussion about can wind instrument help with pulmonary diseases. I had always wanted to play a wind instrument; at the age of 11 I got my clarinet and 14 my first saxophone. Lucia (1994) has found that teenage wind players with asthma had a significantly better health profile and perceived coping than non-wind players with asthma. Many times I have wondered did that do the trick.

Common sense ratify this should be right, but there is no sign of wind instrument playing or singing in recommendations to treat asthma or COPD. Music is versatile cure. Varied breathing exercises and playing a wind instrument can strengthen respiration and musical aspect can motivate practicing.

The main goal is symptomless, normal working capability. By working capability I mean you control the disease, not the opposite. Music has a natural health-improving factor, which can make the difference. Good lung function means effortless breathing both in and out in rest and exertion situations. There is a difference between becoming breathless and shortness of breath.

Hahtela et al. (2008) state in Current Finnish Allergy Programme 2008-2018 key messages:

- Endorse health, not allergy.
- Strengthen tolerance

- Adopt a new attitude to allergy. Avoid allergens only if mandatory.
- Recognize and treat severe allergies early. Prevent exacerbations.
- Improve indoor air quality. No smoking.

Self-care and co-ownership are two magic words of treating whatever disease we are dealing with. Promoting self-initiative, thereby enhancing one's sense of empowerment as a proactive force in his/her own healing. Impact on the progress of the disease can help us live on higher quality.

As a research question, I want to examine if musical wind instrument in music therapy context, added to standard care, can provide a beneficial effect for pulmonary patients. Is there positive impact in quality of life?

In first chapter *Introduction* I describe why I'm interested in this subject, the motivation to find different solutions for pulmonary rehabilitation. Why music and breathing are connected? The second chapter *Pulmonary Diseases and Music Therapy* explains about pulmonary system and what is done in research trying to connect these two. Third chapter gives description of *Research Methods and Data*. In fourth chapter *Asthma Group* I try to make clear what happened in Jyväskylä Music Therapy Clinic for Research and Training. What was done with the group of asthmatics? In fifth chapter *COPD Patient* I give basic lines according COPD patients music therapy process. Sixth chapter reveals *Results* what were found during these two Clinical Trainings. And finally in *Discussion* I wonder what could be done next.

## **1.2 Music and breathing**

This study concentrates on the question: can playing a wind instrument alleviate when having pulmonary diseases. Research, for example Särkämö & Soto (2012), has demonstrated that music therapy in the medical setting may influence oxygen saturation, heart rate, respiration rate, anxiety, depression and quality of life. What is the effect to these chances when adding wind instrument to therapy sessions? Can playing a wind instrument help you to gain control and a sense of mastery over breathing? Lucia's study (1994) founded that wind players felt their asthma did not impede their lifestyles in the same degree as non-wind players.

Living is based on rhythms, cycles and pulses. Music therapy can influence the breathing rhythms. Research has demonstrated that musical rhythms can influence respiratory rate. Joke Bradts (2009) article concentrates on music entrainment for breathing regulation, in other words how musical elements can regulate breathing rhythms. “Entrainment goes a step further than resonance” (p. 12). She reminds us that music entrainment is used also for pain management. By giving the pain a sound it can be transformed to a healing image through improvisation. Human body tends to synchronize and therefore is entrainable. A goal of music therapy can be to slow respiratory rate, allowing for better release of exhaled gases.

Entrainment is used with pain relieve. Could this idea be modified for breathing? Finding the patients shallow breathing and slightly moving towards more relaxed breathing can help the patient to find his/her own breathing style and motivate changes. Music can offer nonverbal expression, and stimulate conversations about new experiences with breathing.

Body rhythm and presence of breathing have a significant effect on quality of life. Breathing rhythm has an effect to mood regulation. Relaxed and deep breathing soothes and diminishes stress hormone level. Body relax, blood pressure and heart beat decrease. With more fresh air in lungs, patient can feel freshen up. If breathing is shallow and irregular, more energy is needed, digestion slows down and condition makes fatigue.

The idea that we control our feelings through breathing is interesting. An emotional gateway may open through entrainment. Bradt (2009) makes a point that “physiological responses are never *just* physiological” (p. 16). Practical guidelines where she recommends identifying people’s respiratory rate in non-therapy situations are given. She shows the way to use inhalation in musical parameters. For example she reminds us how to use upbeats, how to observe other peoples breathing in train or how much time lapses between the exhalation and the subsequent inhalation.

Aldridge (2005) prefers performance medicine. In music one can start actively working for own health. David Aldrige writes that by gaining control of the breath, we gain mastery of body and mind. Connection with the world around us is established through the breath.

Performance medicine provides a useful tool for co-ownership of the disease or illness. Musical communication can be used to find an access to a state of calm whenever needed.

## 2 PULMONARY DISEASES AND MUSIC THERAPY

### 2.1 Lung ventilation

Lung ventilation consists inhalation and exhalation. The chest wall and diaphragm moves and causes chest cavity pressure changes. During the inhalation diaphragm lowers and outer intercostal muscles contract and raise the ribs, when Thorax and lungs can expand. This makes the alveoli to have negative pressure in relation to outside air and the air begins to flow through pipes to the lung alveoli. During exhalation, the inspiratory muscles relax and the chest returns to the rest position. Now air is flowing out from the lungs. (Iivanainen et al., 2006)

Normally inspiratory muscle effort is active and expiration is passive event. Breathing is automatized, but it's possible to have an impact on. Lungs are not muscles. You can't strengthen your lungs by exercising, but you can strengthen the muscles assisting your breathing.

The most important muscles for inhaling are external intercostal muscles and the diaphragm. In relaxed breathing only the inspiratory muscles are in use, but in fierce breathing and shortness of breath situation the expiration muscles, the inner intercostal muscles and abdominal muscles assist exhalation. When having troubles with breathing the assistant respiration muscles, sternocleidomastoid muscle, levatore costarum muscles and pectoralis major muscle, are in use. In exhale patient can actively use also innermost intercostal muscles and rectus abdominal muscles. (Iivanainen et al., 2006)

Martin & Seppä (2011) recommend tools to recognize unbalanced breathing:

- Ineffective use of assistant respiration muscles; during inhale upper part of chest wall ascend, ribs don't move or move upwards, tension in neck, spaces between ribs are visible, powerful use of nasal muscles or deepen collar bone dimple
- Respiration muscles work opposite way than they should. For example shrinking in inhale and relaxing when exhaling
- Constant use of yawning/sighing



Exhale works as like a piston, which presses downwards and helps assistant respiration muscles to relax. In relaxed breathing exhale is about twice as long as inhale.

Martin & Seppä (2010) underscore the meaning of pause after exhalation. They claim that when breathing is in balance and in inaction pause comes automatically. Muscles can rest; there is no need to even breath. In order to calm our body by activating parasympathetic nervous system, we can concentrate to breath relaxed and long out and to find the pause after exhalation. In our sessions we tried to find the pause by thinking inhale as a great gift. After a long exhale and a pause, inhale, great gift, is rewarding.

van Dixhoorn(2008) discusses breath training and relaxation therapy. In his Whole-Body Breathing -article he wants to awaken patients' awareness of tensions and respiration. Dixhoorn has developed a process model of relaxation practice, where muscle tension is reduced, instructions are given and relaxed breathing is trained in different postures.

In Dixhoorn's advices the most relevant idea for my study was the discussion about a pause after exhalation. Length and width breathing are familiar in practice, but Dixhoorn broadens these. Dixhoorn makes a difference between patient's experiential reality and observer's third-person perspective. One might have signs of a disease, but all the signs can't tell how it feels to live in such a body.

## **2.2 Asthma and COPD**

Asthma and Chronic Obstructive Pulmonary Disease (COPD) are the most common pulmonary diseases. They are both characterized as obstruction in the airways, causing difficulty in breathing. These chronic inflammatory diseases of the lungs and airways make even simple activities like walking or having a conversation challenging. Amount of asthma and COPD patients are increasing. Finnish Lung Health Association (Filha ry) estimated 2010 that respiratory diseases concern a million Finnish, every fifth of us, every day.

Lötvall & Busse ed. (2012) explain that asthma and COPD can be hard to separate because of the similarities in reported symptoms, airflow limitation and response to treatment. Both

asthma and COPD cause the airways to narrow over time. In COPD obstruction is a stationary state, but in asthma obstruction varies. Obstruction limits airflow to and from the lungs, causing shortness of breath (dyspnea). In obstructive chronic pulmonary diseases ventilation diminishes powerfully and patient doesn't get enough oxygen in, and carbon monoxide doesn't leave from the lungs properly.

In obstruction precisely breathing out becomes difficult. This normally passive act demands extra effort from pulmonary patients. Both tightening of the airways and changes in lung tissue increase the muscle work for ventilation, and patient gets tired easily.

In asthma obstruction is usually located in central airways, but in COPD usually in peripheral airways. Lötval and Busse (2012) discuss major difference to be that asthma can be treated when COPD can only be prevented. They require more research for developing specific therapies for improved health outcomes for asthma as well as COPD.

Visse et al (2010) discuss about shared responsibilities in COPD treatment. Awareness that COPD is more than just a lack of air, that mind and body interact, is a first step to investigate other potential problems and to enhance one's quality of life. COPD is a disease that we can't cure, because of that rehabilitation aims retarding diseases worsening and the most importantly enhance the quality of life.

Because mind and body are connected, the best improve to quality of life is gained by working on both aspects. Visse et al. (2010) reminds that with COPD patients support from other patients is in a great role. Knowing that there are others with the same issues every day, and knowing that someone really understands, how this feels without saying. Visse et al underline powerfully that rest is not the solution!

### **2.3 Pulmonary rehabilitation**

Asthma and COPD concerns many people in welfare states. Tukiainen (2005) informs us that according to researches 15-22% of patients coming to health care services in Finland have difficulty of breathing as main symptom. Over 50% of these patients have respiratory-related

illnesses, mainly asthma or COPD. Early intervention is recommended. Bäckmand (2010) reminds that muscular fitness rehabilitation should be started early preferably when COPD is diagnosed. She claims that partly self-oriented rehabilitation is recommended so that as many as possible good get into treatment.

Bäckmand ed. (2010) gave basic information about respiratory symptoms and diseases. How can we prevent them, interfere early and treat ourselves? Respiration rehabilitation aims at self-care treatment, preservation and improvement of working ability and finding ways to encourage a lifestyle that creates wellbeing and make them as part of everyday life.

In Finnish recommendations physical exercise is highlighted. Bäckmand (2010) claim that chronic pulmonary diseases induce inactivity and that way impaired stress tolerance, isolation, shortness of breath when stressed and low physical capability. With physical rehabilitation these can be influenced. My claim is that for some people an intervention with music and wind instrument playing could be more suitable and motivating.

The Finnish National Asthma Programme was invented to get early diagnosis for early intervention. Tuomisto (2010) evaluates asthma management at the interface between primary and secondary care during the asthma programme. The main sources of data were adults' non-acute asthma-related referral letters and copies of primary care spirometry report sheets.

Treating asthma is always individualized and the main goal is a symptomless patient. Self-management and patients key role on recovery are getting a higher status in our health care system. Visse et. al (2010) was discussing the responsibilities between doctors and patients. This qualitative research illustrates that more is needed in order to motivate people with COPD to take responsibility and become co-owners in a process of recovery. Support from fellow patients had a great role for patients to learn to accept their disabilities. Bäckmand (2010) adds to this self-treatment list good recognizing of symptoms, avoiding stimulus, tracking condition and physical exercise. She reminds that written guidelines are useful for many patients as well as peer support kind of activity.

Recommendations for exercise are maintaining physical condition and improving it. Suitable ways are proper breathing manner and relaxing exercises, movability of rib cage, mobilizing

mucus from lungs, breathing against counter pressure, exercising abdominal muscles and relaxation. Rehearsing abs improves posture management and strengthens muscles needed for coughing. It is important that patient can recognize and separate diaphragm and abdominal muscles.

Recommendations for self-care usually offer three breathing techniques: pursed-lip breathing, diaphragm breathing and blowing to half full bottle with a straw. Pursed-lip technique controls particular difficulty of breathing out. Wind instrument can induce similar effect. Most important factor is regulating and becoming aware of breathing. Music can make this more easily perceptible. Diaphragm breathing helps to strengthen the diaphragm muscle so patient may use less energy when breathing. This breathing technique is mostly in use with wind instrument playing. The music itself gives the patient awareness of breathing patterns.

It is typical for asthmatics to use upper respiratory very actively, wherein sternocleidomastoid muscles tense. With this relaxing exercises are at great help. Attaching movement to breathing exercise, like I'm here –exercise described later, connects relaxed breathing and relaxed muscles. Kinnula & Kallanranta (2005) outline that all methods assisting breathing aim to increase of breathing capacity and advantageous breathing frequency.

Physiotherapy for lungs, especially bronchial emptying with counter pressure breathing has been in use for COPD exacerbation periods. To mobilize the mucus both asthma and COPD patients are instructed to blow into a bottle half full of water with a straw. This counter pressure infiltrate behind the mucus and cause the mucus to sever. Mucus comes out to the upper respiratory tract and coughing gets easier. Coughing empties mucus secretion from bronchus. (Iivanainen et al., 2006) When breathing to a water bottle, patient's exhalation muscles are activated and strengthened. Patting patient's lungs in various positions and causing vibration by that or local intensified breathing exercises are in use for severing mucus by physiotherapists. Despite the fact its effectiveness has not been proved by controlled trials.

Effectiveness of music therapy has been under research by Sliwka et. al (2012). Results indicated that mild asthmatics benefit from music therapy. Seventy-six patients were divided in two groups: standard versus music therapy. In this research only receptive music therapy was in use, patients could choose music only for listening.

Cambach, Wagenaar, Koelman, van Keimpema and Kemper (1999) conducted a critical review and meta-analysis of studies evaluating the long-term effects of pulmonary rehabilitation in patients with asthma and COPD. They evaluated outcome measures of exercise capacity or health related quality of life (HRQL). With physiotherapists guidance asthma and COPD patients had rehabilitation with muscle exercise, patient education, breathing exercises, exercises that release phlegm, relaxing techniques and refreshing activities. Results were significantly better after six months. Both asthmatics and COPD patients reacted similarly to rehabilitation.

Pbert, Madison, Druker, Olendzki, Magner, Reed, Allison and Carmody (2012) evaluated a mindfulness-training program (mindfulness-based stress reduction (MBSR)) as improving the quality of life and lung function in patients with asthma. A randomized control trial compared an 8-week MBSR –group and an educational control program. The quality of life was measured with Asthma Quality of Life –questionnaire and lung function with 2-week average PEF (peak expiratory flow). The conclusions were that MBSR produced lasting and clinically significant improvements in asthma-related quality of life and stress in patients with persistent asthma, but with no improvements in lung function. Pbert et al study concentrates on improving quality of life.

Martin, Seppä, Lehtinen, Törö and Lillrank (2010) wrote a psychophysical manual about breathing therapy based on the idea of controlling breath and the meaningfulness of balanced breathing to psychological wellbeing. Early interaction and neurobiology are important when learning different breathing styles and handling stress. This method is used among many different healthcare professionals who describe their methods.

At the beginning of the therapy it is just about being and observing your own breathing. Psychophysical breathing therapy and a special breathing school has been used for patients with fear, nervous, stress, exhaust, pain and eating disorders. It gives special tools for observing and modifying breathing.

Instead of controlling the movement, concentrate letting the natural movement to happen. Recognizing is the first step. At first sensitize to cognize, then realizing bodily actions when they appear and finally preventing learned unwanted procedures, like uplifting shoulders

while breathing. Musical elements regulate breathing rhythms. Recognizing and motivate changes!

## **2.4 Wind instrument playing as an option to physical exercise**

Physical exercise is recommended for all pulmonary patients. If you compare immobility and physical exercise the arguments against immobility were: diminished physical capability, becoming breathless in exertion, isolation and diminished exertion tolerance. Arguments on behalf on physical exercise are: improved physical capability, decrease of exertion symptoms, increased activity and improved exertion tolerance. (Vuori et al., 2010)

Pulmonary patients are most likely to avoid situations that demand physical activity. Playing saxophone is enjoyable way to learn how to breathe optimally. Creating a powerful sound out of real instrument gives confidence to own capability. Immobility refers patients staying at home, but playing and music assists patient going out. Playing a wind instrument can be motivating for repetitive exercises; it is engaging and likely to be repeated.

In New York, Louis Armstrong Music and Medicine Center (Azoulay & Loewy 2009; Bradt 2009; Griggs-Drane 2009; Loewy, Azoulay, Harris, Rondina 2009; Raskin, Azoulay 2009) has been investigating the impact of wind instrument playing for the last ten years. Their special program The Music for Advances in Respiration (AIR) is a holistic care program that includes wind instrument playing, singing, making music and music visualization experiences. Ronit Azoulay describes it "an integrative medical music psychotherapy approach to address the needs of adults with pulmonary disease" (Azoulay & Loewy, 2009, p.151).

Improvisation is a very useful tool in music therapy. Loewy et al. (2009) introduce clinical improvisation with winds. They combine traditional pharmacological methods with complementary breathing techniques motivated by the use of music therapy. Music meditation with winds affects the mind and body as a whole. Instructions are given with flute, clarinet or Native American flute. In improvisations a recorder, harmonica, melodica or slide whistle are used. A step-by-step sample about visualization, pre-composed music, instruments special characteristics, typical scales and other creative solutions are given.

The use of musical wind instruments with pulmonary diseases has been in discussions of many wind instrument teachers. Ellen Griggs-Drane (2009) discussed clinical strategies for making musical wind instrument intervention more effective. She recommends continuous dialogue with music educators, pulmonologist and/or nurse. According to Griggs-Drane the most important thing is that the selected instrument is pleasant. But at the same time she reminds that this is not the time to stay one step ahead of the student. Music therapist can't be a professional in every instruments, a dialogue is needed in both ways.

Louis Armstrong music and medicine centers medical overview about asthma and COPD and an overview of related literature are given by Raskin and Azoulay (2009). They write about a discussion of how music therapy practice may impact the medical symptoms and quality of life. They suggest incorporating singing and wind playing techniques and remind about their impact on psychological wellbeing.

Pursed lip breathing has been discussed in many recommendations concerning asthma and COPD treatment. Raskin and Azoulay (2009) claim that playing a wind instrument causes a similar effect. Raskin and Azoulay remind that patients with asthma or COPD are not homogenous, they experience a range of symptoms and clinical features. Raskin and Azoulay claim that comparisons have not been made with inspiratory muscle training and music therapy.

In clinical vignettes Azoulay (2009) describes music-assisted relaxation and music-assisted energizing. Primary treatment goals aim at reducing shortness of breath, anxiety, stress and depression. Patients explore the connection of mind and body and they recognize their own breathing-style and motivate changes. Music offers nonverbal expression, and stimulates conversations about new experiences with breathing. The patients found they can feel more relaxed and are on their way to optimal breathing and wellbeing.

Jaana Lehtikoinen, a Finnish music therapist, visited the Louis Armstrong Music and Medicine Center and had the opportunity to work there for three months. Her master's thesis (2011) concerns this visit. Lehtikoinen reflected how different approach was this holistic care that treated both body and mind. Lehtikoinen discusses briefly about their Music for Air –treatment

care, where different theoretical contexts are combined. She sees this justifiable when considering how strong connection is with body and psyche in breathing.

Lehikoinen (2011) reminds us that for some COPD patients it might be unbeneficial to breathe out with strong pressure through wind instruments air resistance after big inhale. She added that this could be avoided by choosing instrument that utilizes low breathing pressure, like recorder, flute or harmonica. On the other hand she reminds that on the contrary other patients might benefit just the opposite and stronger pressure instrument playing, like saxophone or trumpet. Stronger pressure might open bronchus and thereby enhance oxygen flow.

Alexander and Wagner (2012) asked in their control trial “Is Harmonica Playing an Effective Adjunct Therapy to Pulmonary Rehabilitation?” Their study examines the effect of harmonica playing among COPD patients in pulmonary rehabilitation. Raskin and Azoulay (2009) dwell upon comparisons with music therapy and inspiratory muscle training (IMT). Alexander and Wagner claim that harmonica provides similar training that IMT. Both provide resistance while expiration goes through a device. They claim this is due to the size of holes in harmonica. The study does recommend more qualitative research in understanding the benefits of harmonica playing. Patient testimonials about the playing were in favor to group-based playing rather than home-based playing.

Didgeridoo is an aboriginal wind instrument. Its effects on asthma rehabilitation have been investigated recently in Australia with Aborigines. Robert Eley (2013) provides analyses of music medicine intervention whether a program of teaching didgeridoo playing and singing would be beneficial considering asthma. Small improvements were discovered with spirometry to lung function. Also the overall value of the program was to improve wellbeing and was considered high by both participants and parents. Health and cultural benefits were evident in all seven locations where the intervention was held.

Music therapy with wind instruments can optimize COPD or asthma patients breathing when having symptoms. With musical action patient can feel his/herself as decision maker or in control on contrary to the experience that comes as passive recipient. Music therapy is not substitute treatment over medical care but as conducive to natural health. Collaboration with medical care is necessarily, because patient condition or receptivity varies.



My goal is to convince that playing a wind instrument helps living with respiratory problems on a daily basis. The connection is not available for doctors to discover and it is not a part of recommendation in asthma or COPD treatment programs. In Finnish recommendations rehabilitation and training should be more widely used both at the specialist level and primary care. Physical exercises are highlighted, but wind instrument playing is not mentioned in any circumstances.

### 3 RESEARCH METHODS AND DATA

#### 3.1 Starting the process

As in primary school student I had quite much asthmatic symptoms, breathing was difficult from time to time, and all sports were uncomfortably. When I was 11 years old, I started to play clarinet and at the age of 14, saxophone came in the picture. After that I can remember taking any medicine only when the major pollen attack came in springtime. I have wondered has playing a wind instrument really had an effect on my breathing, or is it just coincidence?

Questions in my mind:

- Does playing a musical wind instrument strengthen your lung capacity?
- Is it effective option to regulate breathing?
- Can you gain better awareness and control over your breathing?

Aldridge (1996) makes a point that music appears to have paradoxical effect:

...while subjects report music to be highly relaxing, soothing and sedative, their physiological reactions indicate otherwise. (Aldridge 1996, p.44)

I assume Aldridge is refers to listening music. Playing a wind instrument is physically demanding and while music is relaxing, soothing and sedative, the playing itself is on the contrary activating.

The most important questions became my research questions:

- Can musical wind instrument in music therapy context, added to standard care, provide a beneficial effect for pulmonary patients?
- Is there positive impact in quality of life?

My primary purpose in this research is that music therapy and wind instrument playing will find a way to treatment options and doctors will suggest patient to consider musical wind instrument playing as primary care. Music therapy is a safe and cost effective treatment. It can offer a lifelong support when treating pulmonary diseases. Even slightly better lung function can mean remarkable change in pulmonary patient's life quality.

## **3.2 Participants**

A Clinic period at Music Therapy Clinic for Research and Training is a part of my Master's degree program. In Jyväskylä this period lasts 12 weeks once a week, all sessions were audio and video recorded. My colleague students and a professional supervisor were watching live time all sessions and gave clinical supervision right after every session. To establish a group in fall 2013, I made contact with Allergy and Asthma Society in Jyväskylä. Premises for the society are located nearby university and this society was a great help for finding suitable persons for my Clinic period.

Allergy and Asthma Society spread advertisement for opportunity to test out music therapy for asthma treatment. I got contact from two mothers whose eight-year-old son and daughter had asthma from early childhood. Also boys 30 year-old mother had exercise-induced bronchoconstriction as a child and was now under control for asthma diagnosis. I decided to make a group for children and mothers, and to include girls healthy mother to exercises whenever she was able to come.

Wind instrument playing is such a versatile rehabilitation method for asthmatics that I couldn't get rid of using the same idea for COPD patients. The amount of COPD patients is increasing, and as concerning adults, it makes retirement earlier. Rehabilitation underlines self-care and co-ownership of the disease. Couldn't this be suitable tool for patients to improve their own responsibility of the disease? Couldn't music improve life quality? Both diseases have such similarities, such as obstruction itself, that it should be investigated more. I started to work with 59-year-old male COPD patient in January 2014.

## **3.2 Data collection**

The main focus is in asthma group and sessions held in Jyväskylä. All 12 session were recorded, and I had the opportunity to watch them again and mark meaningful conversations or events.

With asthma group my intention was to rely on multiple sources of evidence, both quantitative and qualitative.

Quantitative:

- \* Asthma Control Test –questionnaire
- \* PEF measuring

Qualitative:

- \* Diaries (patients and my own)
- \* Analyzing video material after sessions

Asthma Control Test was filled at the beginning and after the twelve weeks. Test gives different versions for adults and children, the differences concern mainly appearance, and for children pictures help choosing the suitable condition. Questions asked are concerning basic condition, like How is your asthma today? Is it very bad, bad, good or really good?

PEF measuring was done for the first week and the last week. Patients were instructed to blow at the same time of the day three times to get the average. The time of the day was open for patient to decide.

As research went on, I decided to rely mainly on qualitative descriptive material. The research angle molded phenomenographic. Rehabilitation is seen as phenomenon, and my aim is to compare different impressions and opinions. Similarities and differences between standard pulmonary rehabilitation and music therapy with wind instruments are in comparisons. Ontological assumptions are subjectivistic; we see our lives through different lenses.

Phenomenography allows using researchers own experience as data. Experiences from sessions are described and the focus is in variation. As phenomenology investigates researchers own experiences, phenomenography describes and analyzes experiences of others. (Rissanen, 2006)

COPD patient gives us a grace note from my hometown Järvenpää. With this single patient I decided to use only qualitative material. My own diary and observation marks from the sessions.

### 3.3 Methods of data analysis

Case study offers the possibility a structure for either qualitative or quantitative research. Because finding suitable measurements were uneasy, I decided to make a descriptive case study as research strategy. The connection to real life context is essential, and most important data were diaries and discussions. Direct-observation and exploring the process of what goes on in music therapy sessions are in my main focus.

Phenomenography doesn't have a specific method for gathering or analyzing data. Material gathered from the sessions is in investigation. Research takes place in a natural setting, and initiate for more holistic interpretation for rehabilitation. As writing a Master's Thesis my goal can't be finding generalizations or typical features or meaning-response. My intention is to describe phenomenon and make new observations. This empirical data propose the opportunity to further work.

I look participants individually; a small group of participants are aiming towards their own goals, not as a group. These both cases can be described as local knowledge cases. To establish a state of a key case, I would have to have multiple cases from were to choose. Patients are typical, not outlier cases.

Wigram (2002) makes an excellent argument.

What's the point of producing a study, which shows that an intervention is effective, if you cannot explain how to administer the intervention, or what components or elements there are within the intervention that cause it to be effective? (Wigram et al. 2002, 224-225.)

Individual changes are specific and relies on patients own description. As a descriptive case study the questions for future research are made.

Methods actually used were qualitative: observing, analyzing diaries and data from the sessions, evaluating the results and interpreting in discussion. Data analysis for case study can be either holistic or through coding. My holistic analysis discusses the gathered material as whole.

## **4 MUSIC THERAPY WITH ASTHMA GROUP**

### **4.1 Participants - Group**

In the group were an eight-year-old girl and an eight-year-old boy. Both had a history with asthma for years. Boys 30 year-old mother had exercise-induced bronchoconstriction as a child and was now under control for asthma diagnosis. I decided to make a group for children and mothers, and to include girls healthy mother to exercises whenever she is able to come. It was interesting to see the effects on both children and an adult, but also I was happy to make this as shared experience. My goal was to get music as a part of their everyday life, as a music teacher I have noticed that musical hobby gets unnecessarily separated from family life.

As a starting point only mother with asthma symptoms had played flute as a teenager, but haven't touched her flute for years. Girl had asked the opportunity to play the flute, but mother had thought it as a bad idea because of the asthma. The boy is more interested in sports, like floor ball, rather than music.

### **4.2 Methods**

Focus on these goals:

- Despite asthma, patient has the feeling of capability to do what he/she wants. You control asthma, not the opposite.
- Familiarize with own breathing; find new strategies to improve breathing and recognize own breathing style.
- Making difference between becoming breathless and shortness of breath.
- Finding own style to adjust breathing while the symptoms increase.
- Talking about common things with peer support.
- New solutions to live with asthma also after the period and
- Music as a normal factor conducting health.

Strategies to achieve these goals:

- Different breathing exercises to recognize air flowing in lungs and to improve oxygen uptake.
- Music making by singing and playing. Woodwind instruments are highlighted, therapist lets client choose instrument that interests the most. Because time is limited to only 12 weeks, and all offered instruments are differently transposing instruments, I use sheet music as little as possible.
- Playing concentrates on imitating, question and answer –method and on investigating instrument by self under therapist/teacher control. Actual instrument playing skills are not as ambition, rather playing by heart.
- Relaxing with music, entrainment
- Joy. Happiness is an emotion that can be transmitted. Happiness creates motivation to repeat exercises. Playing is most effective if it's repeated regularly. If thought of playing makes one feel happy, you're most likely to play more often.



PICTURE 1: Joyful player from Diary

### 4.3 Assessment

Pulmonary patients assessment is done interviewing, observing patients breathing and overall situation, by asking how patient feels, defining health history, family anamnesis and environmental factors (Iivanainen et al., 2006).

#### 4.3.1 Diary, PEF & Asthma Control Test -questionnaire

Every patient and I are keeping diary throughout the session period. As instruction I asked others to either write or draw, cartoons would be nice.

PEF – instruments were given to patients at the beginning of the sessions. Measuring PEF (Peak Expiratory Flow) was already familiar to everyone. At the same time of the day, average from three different blows, gives maximum speed of expiration. At the first week this was done daily. After 11 weeks this measuring period repeated.



PICTURE 2: PEF meter

Asthma control test –questionnaire was filled when period started and right after the period.

All three asthmatics wrote to their diaries throughout the sessions, mainly when period started and finished. From adult patient I received comments after Christmas break. Final control session was in late April 2014. After final comments were an Asthma Evening for Allergy and Asthma Society, which was very helpful when finding suitable clients.



## **4.4 Sessions**

The sessions included different parts and different goals. At the beginning of every session is a warm-up, where my body and me are warmly welcomed to this group. As this is a group, starting point tries to remind there are others with same issues in mind.

Loewy et al. (2009) discusses incorporating singing, breathing exercises and wind instrument playing. When our sessions started, singing and opening the voice is in big role. Your own voice tells more than a hundred words. Human voice is unique, but in sessions voice can reveal your current asthma level and feelings around it.

From the first session playing some woodwind instrument was in main role. Instruments varied: clarinet, saxonette, flute and saxophone. In the last session we played lollipop-recorders.

### **4.4.1 Warm-ups and breathing exercises**

Every session begin with a warm-up. These warm-ups can stimulate creating new exercises, which are suitable just for you. Ready-made rehearsals can create necessity to “practice right”, although you are yourself the right person to know what is suitable for you. The main idea is to be in this moment and learn listening to yourself!

Imagination helps while thinking about breathing. We can't see our lungs and while doing different breathing exercises we profit from mental images. Vining (2009) claims in his *The Breathing Book* that your conception of where the air goes will determinate how your body moves. Imagine the air going to the bellybutton, your belly will dance, but the air is not going down there.

Laughing and having fun, that's really important! It relaxes your muscles, and keeps the doing worth effort. For pulmonary patient is important to keep laughing as a little rumbling rubbing.

### **I'm here**

As a warm-up we used tapping our own body, as a reminder I'm here. One of my main goals was to recognize own breathing style, and that starts with knowing the limits of your body.

Tapping your breast, your hands, belly, feet and maybe even toes. Then add sound to this tapping, and listen how the sound differs while tapping. While tapping and singing you can hear where the air flows. Light boom sounds when tapping the part of your body where the air flows. This is an excellent way to recognize limits for example near collarbone to shoulder.

### **Sound ball**

Throwing an imaginary sound ball concentrates your focus to the person with the ball, that's recognizing the others in the situation. Making a sound, your personal sound with throwing makes you do something different with your voice. Sound can be light; ball can be huge, only your imagination gives the limits. Try to catch the ball your companion throws you. Voice is very connected with breathing, and can be a powerful tool when adjusting breathing.

### **Sound orchestra**

Choose a word and play with it, same word for everyone. Second round own word for everybody. Using voice is a good instrument for adjusting breathing. Words contain hissing, putting, rhonchus, loudness, quietness, high voices and low voices.

### **Drumming**

This same sound orchestra we did also when sitting on the djembe drum. Drumming creates vibration while playing loud enough. I was hoping this encourages using wider movements.

### **Singing**

Encouraging singing. Because Christmas was coming, I chose one song for every last five sessions. This song was Silent Night. We started by trying to sing as loud that the neighbors could hear us. We had long curtains in our clinic, which we tried to move while singing. I hoped that we could play our instruments in turns and the others would sing at the same time, but time was limited for this.

Opening voice for singing is important. Not everyone is ready for singing in short notice. In clinic sessions we sang multiple verses, used quiet and extremely loud voices just to make sure everyone sings happily and uses right respiration muscles. Diaphragm gives support nicely while shouting.

### **Lying down**

Rrrrrr. In tip of your finger is the sound. While your drawing in the air, sound slides from high to down, like in a rollercoaster. This opens your throat for singing. We sang Silent Night lying down. First normally, then really quiet, then as loud as possible, every variation what comes to mind? Song remains the same so we didn't have to think about it. First thing is to get singing started and after that we can start practicing.

At first, while lying down, patient can close her eyes and just breath. Listen and feel how breathing feels like. Martin & Seppä (2011) reminds that you can assist inhale by pulling from patient's knees gently. By doing this you assist diaphragm to work on right direction and probably reach tension in pelvis.

### **Relaxing**

Relaxing can be just music listening. We didn't use this receptive music therapy a lot. Just a little peek and discussion, that this could be done at home with own preferable music. Human body tends to synchronize finding suitable music for calming can help breathing to ease.

### **In through nose, out from mouth**

Breath in through your nose, out from your mouth. This is usually the recommendation with playing a woodwind instrument. With pulmonary patients I recommend comparisons what feels right or natural in different situations. With these patients I have now heard complain how narrow nostril patients has, or some other difficulties with breathing through nose. Are these just coincidences or typical for this kind of patients?

Breathing through your nose warms and moisturizes the air and nasal hair catches some of the pollutants.

### **Nostril breathing**

Nostril breathing can be assist against hyperventilation. Breathing in from left nostril, out from right, and vice versa.

### **Pursed-lip technique**

This exercise is familiar from rehabilitation. Breathing in slowly through your nose and exhale through pursed-lips. Exhale slowly as you intended to whistle. This should encourage you to twice as long exhale than inhale.

This pursed-lip technique is a good way to control your breathing. The idea of entrainment can be used. When having difficulties in breathing, starting with the current breathing towards the idea of relaxed breathing and twice as long exhales.

### **Every inhale is a gift!**

A little pause after every exhalation gives the lungs opportunity to rest a bit, inhale is more powerful and it fills your lungs with fresh air as a gift from the universe. Van Dixhoorn (2008) recommends this idea especially for COPD patients.

### **Landlords' position - Wings**

Landlord position is familiar from breathing exercises and pulmonary rehabilitation. Sitting in a front part of a chair, elbows leaning on knees. Sitting position is good, when knees have right angle. By this position breathing goes deeper, and upper part of lungs are not in use.

We added there a little sighing and talking. Maybe there could be some landlord talk? Sighing and wondering how everything is so expensive and it is so peculiar that we have to obey all restrictions.

A pair can help recognizing breathing with a massaging ball. Easily rotating, stretching to a long back and wondering how much there is space for breathing. We could feel like wings were grooving from back when you breathe there. This image helped while the asthma attack came to one patient, this came up from the diaries.

### **Hands up in the air**

Hands located beside your body. Breath in, hands are slowly arising up towards the ceiling, let go and breathe out while hands are slowly coming back beside your body. Do the same exercise thinking consciously your breathing. Martin & Seppä (2011) recommend starting movement right after inhale already started. Breathing will lift your hands up; breathing out will make them come down. Movement and breathing will become one. Make comparisons of these two paradigms.

Imaging a flat-water jug fills in your stomach. This is how you imagine air flowing in the bottom of your lungs. The idea is same than of diaphragm breathing.

Patient can slow outflow with “ssshh”-sound, air runs from between the teeth.

### **From nodding to bowing**

Blow out and while blowing head goes slowly down. First just little movement by nodding, but slowly the whole upper body is going down with the breathe.

### **Bugbear walk**

Walking preferably with music. Heavy and slow steps like a bugbear. Stopping – and big inhale with hands opening up while bugbear smells the enemy. Your imagination is the only limitation!

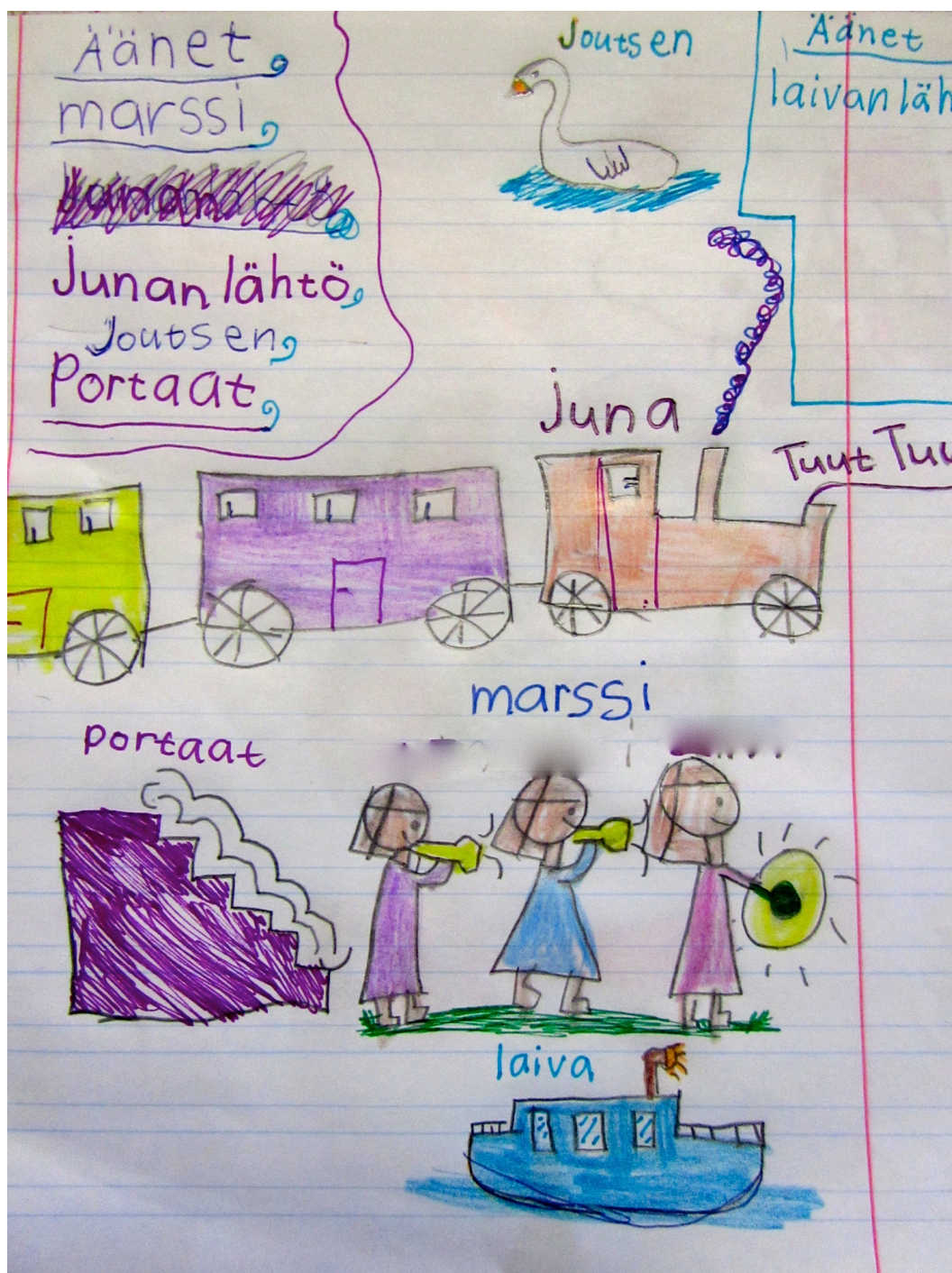
## **4.4.2 Wind Instruments**

*Remember to take enough pauses during the exercises! The aim is not to get exhausted!*

### **Clarinet**

The first woodwind instrument I introduced was clarinet. This is not just because it is my main instrument, but also because it can be divided in to little pieces, and can be just a little resistance to airflow. At first be took only mouthpiece and barrel, with only this you make quite funny and loud sound that can't be such nice. With this you can play for example explosion. Because the sound is so loud that not everyone can play at the same time, we made pairs, where the one plays as the other moves. By playing you control how long the other has to move. This can lead to dancing. Also this is how to get these practices to last a little longer.

Imagination with the sounds, first thing when playing at home was to find different sounds from the instrument. Not just actual tones, but sounds as coming explosion with warnings, train, ship, maybe some melodies or whistles.



Picture 3: All these sounds can be made with clarinet: swan, train leaving, stairs, boat and an idea of us marching. With woodwinds you can move while playing!

Sometimes excellent ideas come from diaries. Diary showed our cheerful playing as a march while I got the privilege to play the drum. We did actualize this marching band!

Playing a wind instrument can be empowering for pulmonary patients, it gives you the feeling that despite of the disease you can do something very different with your blowing and even sound extremely loud.

### **Flute**

Flute players can use a special instrument with a propeller for to get blowing into correct angle. If the blowing is right, only specific propellers spin. This plastic exercise tool doesn't give hardly any resistance and doesn't interest for long, but is a great assistant getting the maneuver to the instrument correct.



FIGURE 4: Pneumo Pro Wind Director Practice Tool

Connection with expert on the chosen instrument is essential. I got excellent advices from my colleague, a professional flute teacher, the other mother on the sessions had played flute for years and there were two almost professional flute players watching every session. After few sessions this girl got also real flute lessons. This excellent practice tool we founded from there. They used also five, lighter version of flute for beginners. We used this for a while before playing actual flute.

With flute you can also play only with the mouthpiece. The sound differs nicely when turning the flute in to different positions, and sometimes a finger inside gives very beautiful glissando. In our sessions there were references from Red Indian dances. With almost every wind instrument one can move during the playing, and this Indian dance gave excellent breathing exercise while children played the drums and adults played flute mouthpiece and danced. Roles changed naturally.

We used imagination with playing a lot. One way to add new fragments is playing with different kind of syllables. Tonguing with dyy, duu, lii, taa or some other syllable change the character easily.

## **Saxophone**

Saxophone is the most easily approachable in my opinion from these three instruments. Many people wish to play saxophone, or at least have the opportunity to try it. This time I thought it would be great for our adult asthmatic, because she had played flute before and was open to new experiences. By this she was more on the same level as other beginners. For young children it might be too heavy.

With saxophone we used the same kind exercises as described before. Because of player's previous hobbies, she wanted to play actual music: familiar songs. By heart she could find quite many Christmas songs.

### **4.4.3 Woodwind exercises**

#### **Facial expression**

Stretching neck, shoulders and sides are important. But when playing wind instrument you have to remember facial muscles. Facial expressions can include: mouth as full as possible pursing mouth as little as possible, eyes wide open or pursing close, bulking cheeks and stretching tongue. Brass instrument players use putting brrr-sound with loose lips. Stretching upper or lower lip to nose. As yawning relaxes chin, and relaxed chin we need!



### **Mouthpiece exercises**

Long exhale with mouthpiece, as long as possible. A little pause and after that keep in mind that every inhale is a gift from the universe!

At first try to make a sound as a box: clear starting point, steady tune and clear stopping point. Or you can play with the sounds. For example mimic bird sounds, use staccato and mimic explosion.

### **Imitating - Question and answer- Improvisation**

Improvisation is versatile practice. It works well with anyone, suits for single client or a group. First steps can be imitating, trying to make something similar, or even better. Questions and answers, like conversation, can be made even with the very first tones. First improvisations can use only one note, gradually with three notes or even blues scale. If this feels uncomfortably, you can also write down some ideas. Your imagination has to be in use, there is now time for unnecessary thinking. You have no extra time for inhale, but you really hear your exhale.

### **Traffic lights**

This excellent exercise was originally my client's idea. I asked them to play short notes, like staccato, and she said that this sounds like traffic lights. Staccatos tell you to wait. We decided that when the imaginary traffic light turns from red to green, staccato is replaced to a long note. With long note everyone walks through crosswalk. "Lets see can you keep up playing, so you can cross the street!" Walking and playing is possible with these March band instruments.

### **Murmur**

This murmur exercise is my personal favorite breathing exercise while teaching clarinet or saxophone playing. At first you have to replace the reed lower, because the aim is to get as much as possible murmur, but not at all beautiful clarinet/saxophone sound.



FIGURE 5: Reed is replaced lower to get only murmur

Imagine that the instrument is like a Christmas tree, you blow in the top of the tree and air is coming from every hole from the instrument. The lower the air goes, the wider the Christmas tree is.

The louder murmur the better. At first put all your fingers closed, inhale through the instrument with murmur four beats, exhale with murmur four beats, all fingers open inhale four beats, exhale four beats. All fingers closed three beats with murmur inhale, three beats exhale, all fingers open three beats inhale, and three beats exhale. All fingers closed two beats inhale, two beats exhale. Fingers open two beats inhale, two beats exhale. Fingers closed one beat inhale and one beat exhale. Fingers open one beat inhale and one beat exhale. Murmur all the time, and the aim is to get same amount air in use while beats differ from four to one.

This exercise is very powerful, and demands control all the time if done correctly. The most important thing is control, that breathing is done down to lower part of the lungs were rib cage moves to make room for the coming air.

#### **4.4.4 Story composing**

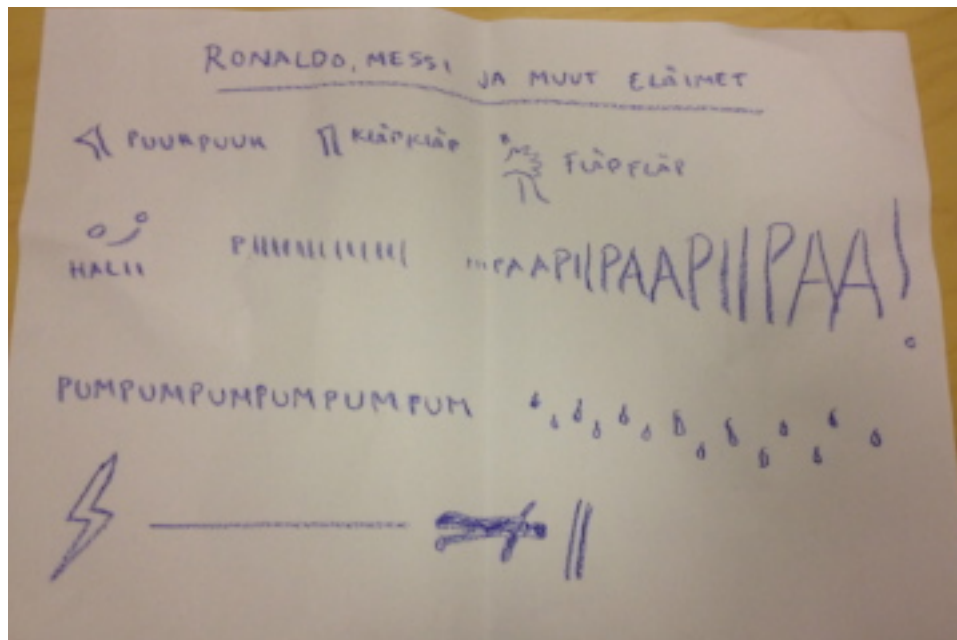
This took one session. Finnish music therapist Hanna Hakomäki has created very useful tool to music education and music therapy. The original idea came when she was teaching children from 3-6 years how to play piano. She noticed that children are more eager to play their own composed music and are inventive enough to keep the composed material suitable.

In story composing the ideas what to play come only from the client. Therapist or teacher doesn't recommend or make suggestions. Composing can be done with single patient or a group. Group size can vary. The largest group I've had at this point was 16 preschoolers.

Our story compose was Ronaldo, Messi and other animals. The used sounds were blowing in to the bell, clapping and flapping the keys, two notes attached by legato, high straight note, two notes like ambulance, drum banging like heart, raindrops, a lightning and finally great fall (from the football player, hit by lightning?)

Hakomäki underline that composing must include:

- 1) Opportunity to musical expression
- 2) Interaction
- 3) Some kind of notation, where everyone can remember what is played when composing is ready for performance.
- 4) Performance can be to a small audience like mothers or actual concert. Joined experience.



PICTURE 6: Story compose

Story composing is very suitable for everyone to try. For us it was something very concrete and fun to remember.

## **5 MUSIC THERAPY WITH COPD – PATIENT**

### **5.1 Background information**

As I was planning wind instrument playing with pulmonary diseases, this future patient was in my mind. I had heard him coughing regularly, and couldn't get rid of the idea this might be beneficial for him. I suggested this music therapy period in the winter break 2013, and we started January 2014.

COPD has been troubling few years this 59 years old man. Patient has been in pulmonary rehabilitation in Joensuu. This rehabilitation was for COPD patients only, and was exercise based. In spite of doctors orders, patient haven't been blowing in half full bottle, because it doesn't motivate. Pursed-lip –technique was familiar, but the idea was not crystal clear when asked more.

### **5.2 Sessions**

Main issues when planning the sessions:

- \* Decision maker or in control on contrary to the experience that comes as passive recipient
- \* Self-care and to patient co-ownership

I had in mind to do similar things that we did with the asthma group. The idea of playing any instrument wasn't patients own, so I didn't know what to expect. Patient was surprisingly eager to play, so the main focus was on playing. He didn't show that much interest on breathing exercises, so these are in minor role, mainly hidden between playing. I assume, that breathing exercises work well in a small group where peer support is in greater role.

In the first session I explained why I wanted this patient to try music therapy. I have always claimed that music belongs to everyone, and this person has multiple times been talking how his teachers or relatives have been talking about his unmusicality. Listening to music has been in a big role, but I didn't know that he had always wanted to know how to play an instrument.

Jaana Lehtikoinen (2011) had written in her Master's Thesis about variation among COPD patients. Depends on the patient is strong pressure wind instruments or on the contrary lower pressure instruments air resistance after big inhale more beneficial. To be sure we started with most low air pressure I could figure, saxonette.



FIGURE 7: Saxonette

Saxonette is very plain woodwind instrument. It has the same mouthpiece than clarinet. Fingering chart is quite close to a recorder. It produces one octave. Schools use these easily approachable instruments instead of recorders in Germany.

With saxonette exercises like trying how long note we can produce, starting note evenly, ending evenly and a lot of imitating while I was playing clarinet. We were comparing low notes and high notes, how they sounded and how it feels to blow them. At the second session I noticed that air pressure was too low and he tend to play while sitting by the table while

elbows were resting by the table. These exercises didn't give the needed resistance, and we moved on to alto saxophone.

Alto saxophone was surprisingly interesting for patients use. We started playing with only mouthpiece and neck. Forming a good sound was easy enough and quite soon patient wanted sheet music so he could play easy recognizable tunes. Because of my main issues while planning the sessions, patients co-ownership and decision maker, I decided to use sheet music. This time there were no other players with other instruments and because of that nothing to transpose. I wrote some sheet music, but mainly we used Swedish Altsax.nu -book. This saxophone elementary course uses a lot of familiar songs while introducing note by note.

Playing should be organized in short periods. Playing an actual instrument is motivating for longer blowing, but especially in the beginning shorter periods are recommended. When playing too long, it might cause dizziness or unsteady. The aim is towards whole pieces, but you don't have to master it the first day!

Motivation for practicing has been great. Patient plays approximately once per week in music therapy session and three to four times by himself. According to his own words, he feels that he has been playing in his diaphragm. He recognized nicely what muscles are in use while playing. Blowing seems natural.

## 5 RESULTS

As a research question, I wanted to examine if musical wind instrument in music therapy context, added to standard care, can provide a beneficial effect for pulmonary patients. Is there positive impact in quality of life?

Music can treat holistic, like in Louis Armstrong Music and Medicine Center in New York; patient is seen as whole not just the physical illness and problems that come with it. The aim was to find strategies to optimize wind instruments affect to strengthen patients control over respiration.

### 6.1 Conclusions about the group

With asthma group all patients were thinking themselves as decision makers. The girl had wanted to play flute, but mother had wondered if it is good idea because of asthma. With starting the sessions she was convinced that playing flute was not only suitable as a hobby, but can also help dealing with asthma.

PEF measurements were taken at the first week and from the last week. As instructions were three independent blows every day at the same time for one week. These PEF measurements were familiar to all. The time of the day, when measures were taken, was open for patients to decide. Young girl took measures in the morning and at the evening, but young boy more infrequently. Unfortunately there were no significant variation; maximum +/-30 L/min. Measures from the first week were very similar than from last week.

Also with Asthma Control Test variation was minimal. The given state was rather good from the beginning of the sessions. Test gives basic guidance of what kind of symptoms are something you should be aware of. Do you cough a lot, wake up because of asthma by night or does it bother with your hobbies. Adult women patient was saying that these symptoms are not easily for her to fill, the form was too black and white for her.

Why there were only minimal changes in PEF measures and Asthma control test? Twelve weeks is a really short period. This experiment was only once per week, and natural life events did happen. These measures could have had significant changes in a rehabilitation center or other more stable situation. Most significant was the limited time structure.

We didn't have time for all breathing, relaxing and blowing exercises. From observing the session it wasn't clear to me, are the patients having these exercises as daily routines. From the diaries I found that all patients were trying to modify ideas from the sessions to their daily routines.

According to girl's mother's diary and adult patients diary after these sessions breathing was easier to get "deeper". They could all remember practices done in the sessions when the asthma attack came, and the situation was easier to deal with. Adult women and girl both said specifically that plug of mucus had moved on. The girl had noticed that when this happens flute gives a better sound too. Playing flute or saxophone had opening effect according to these diaries. These players did play regularly at home.

Adult women told that her prolonged cough had stopped, and breathing feels easier because mucus had released from the lower part of the lungs. After Christmas break she wrote that when she had not played, the cough is coming back and breathing is difficult. Was this because she hadn't the opportunity to play anymore? Or was it just coincidence?

The boy wasn't so eager to play from the beginning. He played sometimes but not regularly. Mother had noticed that this fall his flues didn't worsen. He had only little flues, which normally predicted infected asthma.

From boys diaries I got the impression that he was proud of his clarinet playing as a hobby, but not so proud he would play it after these sessions. The effect these sessions made to him, I hope are concerning about the decision maker part. I think after this period, he can think of music as one opportunity to have an effect to his own condition or maybe he will invent something even better.



All participants in asthma group are very well aware of their situation with asthma, and after this period are more open to other possibilities to treat themselves. We sang a lot in the sessions, and maybe this is continuing at home. Singing gives similar effect than playing a wind instrument. In my opinion wind instruments rumble lungs a bit deeper.

## **6.2. Conclusions with the COPD patient**

Because all measuring was difficult with the asthma group, I decided to use only diaries. From there I can find observation, and specific notices from conversations. This patient is a grace note concerning this study.

Playing has been interesting as a new hobby. He has been practicing regularly, and has learned basic skills for playing. Recognizing muscles used in breathing has been good from the beginning, and playing has been assistant to use them more actively.

Patient had discussed with his doctor about playing saxophone. They had thought it similar than blowing into a half-full bottle with a straw. This exercise is recommended to release mucus. We started with saxonette and with that the counter pressure could be quite similar. Rehearsing with saxonette didn't give patient enough resistance and we moved on to alto saxophone. This sounded really nice from the beginning. Saxonette and saxophone gives very different counter pressure, and because of that comparisons with bottle blowing sound uneven.

In discussions with doctor they had come to common conclusion that numbers are just numbers, the most important is how you feel. Numbers and measurements can give you stability and something to compare, but measures doesn't tell how you can cope with your disease. Music has uplifted life quality and given the feeling there is something we can do.

Comparisons with alto and tenor saxophone were made, and we decided that tenor saxophone is even more suitable at this point. Playing has been very motivating for patient and he bought himself a tenor saxophone. Music continues to have an effect to his life. He has always been enjoying music listening, but now also by playing himself. His doctor and people close him say he is seems to feel better, and is happier.

## 7 DISCUSSION

Aldridge (1996) compares man as a musical composition. He doesn't explain it deeper, but the idea of rhythms, pulses, melodies, and different tunes, getting stacked with some ideas, cheerful or depressed can reveal something from a man.

Music can be great tool for improving the quality of life. The improvement is easily heard and the compliments from listeners can motivate the change. Finding new strategies for breathing through variant breathing exercises can motivate for practicing. Shortness of breath reminds every day that maintaining respiratory health needs a lifelong effort. Music can divest your worldly worries and physical tensions.

### 7.1 Music as an option

Katarina Porander (2013) discusses for music making the whole body is needed. She reminds us that music teachers have uncountable ways to teach suitable manors using body while playing. Timbre of the tone is dependent on natural movements and maintenance of the body. Hänninen (2014) underlines meaning of playing together. As patient says "maybe alone I wouldn't play". Playing together with a teacher, therapist, friend or orchestra creates stability and continuity. Peer support is essential for improving life quality.

The first step is recognizing one's breathing style. In the sessions I noticed that the first thing is not trying to learn new ways to control breathing, the first thing is to relax and just breathe. If the patient has been thinking about breathing before, he/she is motivated for new ideas. Quality of life and working capability can be poor, because of shortness of breath. Breath has a special healing power. Relaxed and deep breathing soothes the body and diminishes stress hormones. In deep breathing, fresh oxygen flows in the body and the condition refreshes. With shallow breathing, energy level is low, digestion slow and tiredness troubles. With shortness of breath the vicious circle is ready.

Contemporary treatment programs aim to self-care and to patient co-ownership of processing towards recovery. Peer support is essential. Finding out that other people have the same sort

of difficulties in daily life and being able to talk about this with someone who really understands is extremely important for patients. I wanted to describe useful exercises as carefully as possible, so physiotherapists and pulmonologists feel more sure when taking music and wind instrument playing as part of the therapy. Introducing this opportunity can help finding a new solution.

Azoulay (2009) reminds us that music-assisted relaxation is important but as important is music-assisted energizing. Loewy et. al (2009) discusses incorporating singing, breathing exercises and wind instrument playing. Listening to music can make you want to breath synchronized. Azoulay (2009) discusses that with pain relief music therapy use entrainment, this could be modified to breathing?

Music-assisted relaxation or energizing by singing or playing could be used in pulmonary rehabilitation according to these two cases described. Small groups or individual sessions with the opportunity to meet also in peer group could be organized with co-operation of music professionals and pulmonary specialists. Dialog and more research about efficacy are needed.

Music therapy is a safe and cost effective treatment. It can offer a lifelong support when treating pulmonary diseases. Perhaps music therapy and wind instrument playing will find a way to treatment options and doctors will suggest patient to consider musical wind instrument playing as primary care.

## **7.2 Future research possibilities**

Pulmonary patients life quality and changes in functional completeness are under studied at this point. Rehabilitation demands patients co-ownership of the disease and self-care, but what are the possibilities to treat self?

Patients can benefit from different treatment options. Jaana Lehtikoinen has written in her Master's Thesis (2011) that variation exists between different COPD patients. For some patients might be unbeneficial to breath out with strong pressure through wind instruments air resistance after big inhale for them lower pressure instruments are recommended. On the

contrary other patients might benefit just the opposite and stronger pressure instrument playing. Stronger pressure might open bronchus and thereby enhance oxygen flow. These individual options are best made in small groups that can offer variation. I wonder is the pressure in such a great role. The air column, which is formed in the instrument, does it form something similar inside body? And how about the vibration?

I would like to claim that playing saxophone gives you more vibration in your body. Making a sound next to your body vibrates, and because you with your breathing are a part of the instrument it gives you inner massage with sound waves.

One dimension of music therapy is vibroacoustic care. Low frequency sinusoidal sound gives massage with sound waves. Special chairs or mattresses are in use to relief pain or treat stress-related symptoms. I wonder could this be opportunity to treat also pulmonary patients. Especially if the mattress can use circulating movement, mucus relieving could get easier.

Being creative is an important step towards recovery. There is no cure that suits for everyone, and because of that we should be creating new ways to increase our life quality.

## References

Alexander, J.L. & Wagner, C. Is Harmonica Playing an Effective Adjunct Therapy to Pulmonary Rehabilitation? *Rehabilitation Nursing* 2012; 37(4), pp. 207-212

Aldridge, D. (Ed.) (2005). *Music Therapy and Neurological Rehabilitation. Performing Health*. London & Philadelphia: Jessica Kingsley Publishers.

Azoulay, R. (2009). A Music Psychotherapy Approach for the Treatment of Adults with Pulmonary Disease. In R. Azoulay & J. V. Loewy, (Eds.), *Music, the Breath and Health: Advances in Integrative Music Therapy* (pp.151-169). New York: Satchnote Press.

Bradt, J. (2009). Music Entrainment for Breathing Regulation. In R. Azoulay & J. V. Loewy, (Eds.), *Music, the Breath and Health: Advances in Integrative Music Therapy* (pp.11-21). New York: Satchnote Press.

Bäckmand, H. (Ed.). (2010) *Hyvä hengitysterveys. Opas hengityssairauksien ehkäisyyn ja hoitoon*. Helsinki: Yliopistopaino.

Cambach, W., Wagenaar, R., Koelman, T., van Keimpema, A. & Kemper, H. (1999). The long-term effects of pulmonary rehabilitation in patients with asthma and chronic obstructive pulmonary disease: a research synthesis. *Archives on physical medicine and rehabilitation*; 80(1), pp.103-11.

van Dixhoorn, J. (2008). Whole-Body Breathing. *Biofeedback*; 36(2), pp.54-56

Eley, R. (2013). The Potential Effects of the Didgeridoo as an Indigenous Intervention for Australian Aborigines: A Post Analysis. *Music and Medicine*; 5

Griggs-Drane, E. (2009). The Use of Musical Wind Instruments with Patients Who Have Pulmonary Diseases: Clinical Recommendations for Music Therapists. In R. Azoulay & J. V.

Loewy, (Eds.), *Music, the Breath and Health: Advances in Integrative Music Therapy* (pp.103-117). New York: Satchnote Press.

Haahtela, T., von Hertzen, L. Mäkelä, M., Hannuksela, M. and the Allergy Programme Working Group. (2008). *Finnish Allergy Programme 2008-2018 – time to act and change the course*. Retrieved April 2, 2014, from:

<http://filha-fi-bin.directo.fi/@Bin/cceb1cb1ea2fc3fae81673471cea4389/1396450729/application/pdf/1714824/FinnishAllergyProgramme-Allergy180208.pdf>

Hakomäki, H. (2005). *Tarinasäveltäminen – uusi musiikkiterapian malli ja käytännöt*. Master's Thesis, University of Jyväskylä.

Hakomäki, H. (2013). *Storycomposing as a Path to a Child's Inner World. A Collaborative Music Therapy Experiment with a Child Co-Researcher*. University of Jyväskylä: Studies in Humanities 204.

Hänninen, S. Musiikki voi hoitaa keuhkoja. *Allergia ja Astma*; 2014(2), pp.22-23

Iivanainen, A., Jauhiainen, M. & Pikkarainen, P. (2006) *Sairauksien hoitaminen terveyttä edistäen*. Helsinki: Kustannusosakeyhtiö Tammi.

Kinnula, V. & Kallanranta, T. (2005). Keuhkopotilaan kuntoutus. In Kinnula, V., Brander, P.E. & Tukiainen, P. (Ed.). *Keuhkosairaudet* (pp.761-771). Helsinki: Duodecim.

Lehikoinen, J. (2011). *Musiikkipsykoterapia somaattisesti sairastuneen potilaan sairaalahoidossa: the Louis Armstrong Center for Music and Medicine – musiikkiterapiaosaston työskentelymallit*. Master's Thesis, University of Jyväskylä

Loewy, J. V., Azoulay, R., Harris, B. & Rondina, E. (2009). Clinical Improvisation with Winds: Enhancing Breath in Music Therapy. In R. Azoulay & J. V. Loewy, (Eds.), *Music, the Breath and Health: Advances in Integrative Music Therapy* (pp.87-100). New York: Satchnote Press.

Lucia, R. Effects of Playing a Musical Wind Instrument in Asthmatic Teenagers. *Journal of Asthma* 1994; 31 pp.375-385

Lötvall, J. & Busse, W.W. (Ed.) (2012). *Advances in combination therapy for asthma and COPD*. Chichester, West Sussex: John Wiley & Sons.

Martin, M., Seppä, M., Lehtinen, P., Törö, T. & Lillrank, B. (2010). *Hengitys itsesäätelyn ja vuorovaikutuksen tukena*. Tampere: Mediapinta.

Martin, M. & Seppä, M. (2011). *Hengitysterapeutin työkirja*. Tampere: Mediapinta.

Norén, A., Norén, R. & Johansson, R.G. (2005). Altsax.nu. Warner/Chappell Music Scandinavia AB.

Pbert, L., Madison, J.M., Druker, S., Olendzki, N., Magner, R., Reed, G., Allison, J. & Carmody, J. (2012). Effect of mindfulness training on asthma quality of life and lung function: a randomized controlled trial. *Thorax*, 67, pp.769-776.

Porander, K. (2013) Musiikkiin tarvitaan koko keho. In Jordan-Kilkki, P., Kauppinen, E. & Korolainen-Viitasalo, E. (Eds.), *Musiikkipedagogin käsikirja, Vuorovaikutus ja kohtaaminen musiikinopetuksessa*. (pp.138-146). Tampere: Juvenes Print – Suomen Yliopistopaino Oy.

Raskin, J. & Azoulay, R. (2009). Music Therapy and Integrative Pulmonary Care. In R. Azolay & J. V. Loewy, (Eds.), *Music, the Breath and Health: Advances in Integrative Music Therapy* (pp.69-86). New York: Satchnote Press.

Rissanen, R. (2006). Fenomenografia. *KvaliMOTV – menetelmäopetuksen tietovaranto*. Retrieved May 24, 2014, from: [http://www.fsd.uta.fi/metetelmaopetus/kvali/L5\\_1.html](http://www.fsd.uta.fi/metetelmaopetus/kvali/L5_1.html)

Sliwka, A., Nowobilski, R., Polczyk, R., Nizankowska-Mogilnicka, E. & Szczeklik, A. Mild Asthmatics Benefit from Music Therapy. *Journal of Asthma* 2012, 49(4): pp.401-408

Särkämö, T. & Soto, D. Music listening after stroke: beneficial effects and potential neural mechanisms. *Annals of the New York Academy of Sciences* 2012. 1252, pp.266-281.

Tuomisto, L. (2010) *Asthma Programme in Finland – Management of Adult Asthma as Reflected by Referral Letters*. Tampereen Yliopistopaino Oy

Vining, D. (2009) *The Breathing Book – Tuba Edition*. Arizona: Mountain Peak Music.

Visse, M.A., Teunissen, T., Peters, A., Widdershoven, G.A.M. & Abma, T.A. Dialogue for Air, Air for Dialogue: Towards Shared Responsibilities in COPD Practice. *Health Care Anal* 2010; 18, pp.358-373

Vuori, I., Taimela, S. & Kujala, U. (Ed.) (2010). *Liikuntalääketiede*. Helsinki: Duodecim.

Wigram, T., Nygaard Pedersen, I. and Bonde, L. (2002) *A Comprehensive Guide to Music Therapy: Theory, Clinical Practice, Research and Training*. London: Jessica Kingsley.