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# Possibilities of music in treating agitation caused by dementia - A literature review

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**Possibilities of music in treating agitation  
caused by dementia - A literature review**

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The purpose of this literature review is to collect information on possibilities of music in treating agitation caused by dementia. This review will offer a point of view that is suitable for health care professionals as well as professionals in the music industry. The working life partner for this literature review is the Finnish Accordion Association.

This literature review is based on five academic research articles. The data has been obtained from databases such as ProQuest Central and CINAHL (EBSCOhost). The analysis method used in this review is thematic analysis. The themes chosen for this thesis are the impact of music on agitation caused by dementia and the factors related to the impact of music on agitation caused by dementia.

The results show that music has a positive impact on agitation caused by dementia, reducing it significantly. The results also bring up different factors that are related to the impact of music in agitation caused by dementia. These factors include individual music interventions, using familiar and preferred music and being in a familiar environment.

The results of this literature review can be used as directional basis for further research. The review is rather concise, so further research to ensure the validity of the results is suggested. For future research, it is suggested that more of functional researches that focus specifically on the impact of music in treating agitation should be considered. This could offer a broader view on the the subject.

Keywords: music, music therapy, agitation, dementia

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## 1 Introduction

As the population of Finland is aging, and citizens need more and more treatment, all means need to be taken into consideration. According to National Institute for Health and Welfare (2018), in 2015 the estimate of people with a memory disorder worldwide was nearly 50 million. In Finland the estimate in 2018 is over 190 000. It is evaluated, that the amount of people falling ill with a memory disorder in Finland is approximately 14 500 per year. (National Institute for Health and Welfare 2018.) It can be assumed, that the amount of people having a memory disorder will increase significantly in the future, and this - among other things - brings challenges to care work. The Ministry of Social Welfare and Health (2009) states that the aim is to treat the citizens by using regulations and methods that are deemed effective.

It is stated in the Finnish law, that the wellbeing, health and independent coping of the elderly citizens need to be supported. It is also stated that quality care should be offered early enough and according to the needs of the elderly, when it is necessary for them. (Finlex 2012.) The municipalities of Finland prepare for the aging of the population in a way that they are able to offer quality care to those who need it.

Every nurse and health care professional in general should always ask themselves what the ultimate purpose of their care work is (Räsänen 2017). To many nurses, the ultimate purpose of their care work is to help people by all means possible. This can bring up creativity in care work, and turning a hobby, such as music, into an effective tool in care work.

In this literature review the possibilities of music in treating agitation caused by dementia are investigated. This study is hoped to shed light on the impact of music as well as the factors related to the impact of music in treating agitation caused by dementia.

The impact of music in general has been researched widely. Music stimulates the brain more comprehensively than any other stimuli, activating both sides of the brain. Music cultivates a variety of emotions, positive as well as negative. It also helps in dealing with different emotions from a symbolic distance, making it possible to address even the more difficult matters and events. Music can also have a behavioral impact, calming one down and helping one relax. (Erkkilä 2017.)

## 2 Background

### 2.1 Dementia

In this thesis, the term dementia is used as a common noun to describe all memory disorders. Dementia is a state, in which a person's memory and cognitive functions deteriorate in such a way that it affects the performance of a person (National Institute for Health and Welfare 2018). Dementia can be a cause of another health problem, such as deficiencies, medications or illnesses of the central nervous system (Huttunen 2017 A). It can, however, be a disease in itself. Of this, examples include Alzheimer's disease, which is the most common memory disorder worldwide (Muistiliitto 2017). Dementia is deemed as a national illness.

The estimate of the amount of people with a memory disorder in 2015 was close to 50 million, and it has been estimated to double every 20 years (National Institute for Health and Welfare 2018). In 2018, National Institute for Health and Welfare has estimated the amount of people with a memory disorder in Finland to be over 190 000 and for approximately 14 500 people to become sick with a memory disorder annually. Most of the people with a memory disorder are over the age of 80, but over 7000 diagnoses have been made in people within the ages of 35-65 (National Institute for Health and Welfare 2018).

According to Tilastokeskus (2016) in 2015 nearly 8600 people in Finland died of dementia. Tilastokeskus also states that the amount has more than doubled in the last 10 years.

#### 2.1.1 Alzheimer's disease

Alzheimer's disease is the most common, slowly progressive memory disorder worldwide. In Finland the amount of people having Alzheimer's disease is estimated to be over 70 000 (Alzheimerin tauti n.d.). According to Juva (2015), out of all people with memory disorders, 80% have Alzheimer's disease. Although Alzheimer's disease can rarely be diagnosed under the age of 50, it is mostly considered as a disorder of the elderly. Most often it appears after the age of 65 (Alzheimerin tauti n.d.).

The ultimate reason for Alzheimer's disease is unknown. The mechanism of the disease is related to certain proteins that sediment in the brain and create changes that

damage certain areas of the brain. This causes the symptoms of the disease. (Härmä & Juva 2013 A.)

The course of the disease can be divided into four stages: early, mild, moderate and severe stage. The speed of progression as well as the symptoms vary individually, but the pattern of progression in general is quite common. The first, most common symptoms of Alzheimer's disease are mild disruptions in memory and difficulties in learning new things. As the disease progresses, these symptoms worsen and new symptoms arise. These may include problems with perception, difficulties in understanding abstract things such as the time; problems with developing speech and understanding speech and also deterioration in the ability to survive in daily routines. As the performance deteriorates and the ability to communicate the needs is compromised, the person with Alzheimer's disease may act in a disruptive way that is very uncharacteristic of them. This is described as having behavioural symptoms. (Härmä et al. 2013 A.) Most of the people with Alzheimer's disease have restlessness, hallucinations and agitation as symptoms at some point of the disease. (Juva 2015.)

According to Juva (2015) the duration of the disease, from the onset and the first symptoms to death is usually over 10 years.

### 2.1.2 Vascular dementia

The second most common form of dementia in Finland is vascular dementia. In vascular dementia, the regression of the memory is not usually the most distinct symptom. The disease can manifest primarily as regression of the ability to function in normal routines. Due to the damage in the brain, the spectrum of symptoms can also include other neurological symptoms such as difficulties in providing speech and symptoms of paralysis. The symptoms depend solely on which parts of the brain the cerebrovascular accident has affected and to what extent. The progression of symptoms in vascular dementia is not stable. (Atula 2015 B.)

The risk of having vascular dementia is increased by e.g. high blood pressure, obesity, diabetes, alcohol and high cholesterol levels. Vascular dementia can be caused by a stroke, cerebral hemorrhage or transient ischemic attack. A stroke can also be "silent", in which case the symptoms cannot be detected. (Atula 2015 B.)

### 2.1.3 Dementia with Lewy bodies

The third most common form of dementia in Finland is dementia with Lewy bodies. The name stems from small deposits, that accumulate in the brain and over time damage brain cells. (Alzheimer's association n.d. A.) The incidence of the disease is estimated to be approximately 20% out of all people with a memory disorder. (Atula 2015 A.)

The symptoms of dementia with Lewy bodies vary from regression of cognitive abilities, hallucinations to changes in alertness and disruptions in the ability to move. (Härmä & Juva 2013 B) The parts of the brain, that diminish in Alzheimer's disease often stay normal sized in dementia with Lewy bodies. Therefore it is easy to tell these two diseases apart. Dementia with Lewy bodies is a progressive disease, and the life expectancy is less than 10 years. (Atula 2015 A.)

## 2.2 Music

In Finnish (Nyky-suomen sanakirja 1992) music is described as:

*“Musiikki, laulamalla tai soittamalla tuotettuja sävelryhmiä tai -sarjoja, joiden sisäistä suhdetta määräävät rytmin, melodian ja harmonian lait.”*

Music can be created by using different elements such as rhythm, melody and harmony, and bringing it to life by using different instruments or one's own body. One's vision of music can be brought to life by writing it down into sheet music.

Through times, different philosophies have tried to define music in a variety of ways. It has often been linked to mythology of culture, and it has been associated with different rituals. Music has been created in histories of each culture, and it can be compared to spoken language based on its societal meaning. Brain researchers have proven, that listening to music activates the mechanisms of satisfaction, while other researchers have noticed the kind of mechanisms in music, that can be compared to crying. This kind of music awakens strong emotions, in the same way as seeing someone cry. According to some researchers, the impact of music depends on one's own preferences as well as learned connections.

Lehikoinen (1973) describes music as a looking glass - and at the same time, an outlet - of ones' inner self. This explains why music has always been such an important part of human existence and culture. Anything from vibration to a rhythm and to a melody

can be described as music. Even a composition that is still forming in the head of a composer, can be considered as music even before it can be heard by anybody else (Lehikoinen 1973). Music can also be considered as a uniting force worldwide - it doesn't know a language barrier. When words cannot describe, music can.

### 2.2.1 Music and dementia

Music works as a gate to the past, because memories are often somehow related to music. Hearing a song you listened to as a child can bring back a lot of things and memories from that time. Music activates the brain comprehensively, and especially familiar music activates those parts of the brain, that are linked to episodic memory. These parts of the brain maintain their ability to function longer than other parts of the brain. Mainly for this reason people with severe dementia, who suffer from cognitive and linguistic disturbances, can process familiar music without a problem. Music can still bring up reactions even towards the end of dementia, when other sensory stimuli cannot. (Särkämö, Laitinen, Numminen, Tervaniemi, Kurki, Rantanen 2011.)

Music has a calming effect, and it decreases aggressiveness, restlessness and irritation significantly. Singing or having music played in the background during a procedure related to care work can calm the patient as well as the nurse down, making the procedure more pleasant. (Numminen n.d.)

### 2.3 Music therapy

Music therapy is a form of treatment and rehabilitation, and it is based on the usage of different elements of music - such as rhythm, harmony and dynamics - as a form of communication in order to achieve individualized goals (Suomen musiikkiterapiayhdistys ry n.d.). Although music therapy can be at its simplest form, singing or listening to music, the term is used only when music is used in a therapeutic context - in other words, when the treatment is carried out by registered music therapist.

Music therapy can be used as main treatment and rehabilitation form, or among other treatment and rehabilitation methods. Music therapy is used in treating a variety of health problems. It can help significantly in achieving positive results in treating symptoms and illnesses of all aspects - neurological, social, mental and physical. The methods include listening to music, singing, improvising, making music, physioacoustic treatment and playing music. (Suomen musiikkiterapiayhdistys ry n.d.)

In dementia care work, music therapy is mostly used as a rehabilitation method. According to research, music therapy reduces restlessness, aggressive behaviours, wandering around and irritation in people with dementia. (Särkämö et al. 2011.)

#### 2.4 Agitation

Agitation is considered to be a very common behavioural symptom of dementia. It is seen at some point of the disease in 40-50% of people with dementia, most commonly in mild to moderate stage. (Muistisairauksien Käypä hoito- työryhmä 2016.)

Agitation in a person with dementia often rises in situations where one is unable to process new information. This can be due to changes in the environment, fatigue, being in pain or misperceiving threats. (Alzheimer's Association n.d. B.) Agitated behaviour has been divided into physically aggressive, physically non-aggressive, verbally aggressive and verbally non-aggressive behaviour. Examples of physically aggressive behaviour include biting, hitting, hurting others or oneself and pushing. Physically non-aggressive behaviour may be hiding things, hoarding, restlessness, repetitious mannerisms and pacing around. Cursing, screaming and making strange noises is identified as verbally aggressive behaviour, whereas complaining, repetitive questions and sentences and negativism are considered as verbally non-aggressive behaviours. (Cohen-Mansfield 2008.)

#### 2.5 Care work of people with dementia

Care work of people with dementia is essentially based on answering to the needs of the patient. One of the most important goals is to secure the quality of life of the patient in all stages of the disease. In practice this means securing autonomy, maintaining the dignity of the patient, maintaining the social network of the patient and fostering the background and lifestyle of the patient. (Käypähoito 2017.)

Käypä hoito (2017) describes a variety of care practices as important and essential when caring for a person with dementia. The diagnosis should be clarified to the patient and to their next of kin. The treatment and rehabilitation plan should be formulated as soon as possible after the diagnosis has been formed. The accurate treatment, including assuring outpatient care, treating behavioral symptoms and somatic illnesses, should be taken into consideration. In progressive forms of dementia, monitoring pharmacological treatment at all times should be taken care of, as well as providing quality round-the-clock care. (Käypä hoito 2017.)

To every individual with dementia, a treatment and rehabilitation plan is compiled as soon as possible after diagnosis. It is checked and updated every 6-12 months as the disease progresses. Due to the plan, it is possible for the individual to continue living at home for as long as possible. This can be done by e.g. providing the individual with measures that are rehabilitative and support their independent initiative, or by assuring their financial benefits. (Käypä hoito 2017.) The care provided is assured by a multiprofessional team at all times.

## 2.6 Finnish Accordion Association

The working life partner for this thesis is Finnish Accordion Association, which has been founded in 1952. The purpose of the association is to support and develop accordion music as a hobby as well as to support the benefits of accordion players, musicians and composers (Suomen harmonikkaliitto ry n.d.). The association consists of 3000 individual members and 60 member associations around Finland.

Finnish Accordion Association is currently working on projects that are related to improving the quality of life of the elderly through music. The members of and the musicians working with the association do a lot of volunteer work with the elderly as well as with people with dementia, and therefore have a great amount of practical knowledge and experience on the subject.

The role of the association in this thesis process is to act as a mentor and offer guidance and comments on the work. They also offer information that may benefit the thesis process, whether it be literary material or an opportunity to meet a person with knowledge on the thesis subject. The results of this thesis will be referred to in the associations' membership magazine in suitable parts nationally. In the future, the association may also use this thesis as material for different guidance and training purposes.

## 2.7 Earlier research

The effects of music in agitation caused by dementia have been studied before, mostly as a part of a broader entity, to which other types of interventions as well as symptoms have been included.

A research conducted by Clément, Tonini, Khatir, Schiaratura & Samson (2012) examined long and short-term effects of music interventions and cooking interventions on

emotional wellbeing of people with a severe Alzheimer's disease. The results showed that music had short-term as well as long term effects on emotional state of the participants and concluded that music is an effective tool in maintaining the participants' emotional wellbeing.

In the literature review written by de Oliveira, Radanovic, de Mello, Buchain, Vizzotto, Celestino, Stella, Piersol & Florenza (2015), a variety of non-pharmacological interventions to reduce behavioral as well as psychological symptoms of dementia were investigated. Music therapy was one of these interventions. The results of the literature review showed that listening to familiar music from the past was effective in reducing agitation.

The impact of music in dementia in general has also been researched quite broadly. In her thesis work, Peippo (2016) conducted a research on the effects of music on people with dementia by arranging a small music event. Haapamäki (2013) on the other hand did a systematic review on the effects of music on wellbeing of the elderly.

Although the relationship of music and dementia has been investigated and a fair amount of information is available on the subject, more precise research on the relationship of music and agitation caused by dementia has not been done. This literature review provides a broader view on the subject in question.

### 3 The purpose and aim of the study

The purpose of this thesis is to collect information on possibilities of music in treating agitation caused by dementia. This thesis offers a point of view that is suitable for health care professionals as well as professionals in the music industry, who work with people with dementia.

The aim of this thesis is to investigate the possibilities of music in treating agitation caused by dementia, and to combine and summarize material on the subject so that it can be used as basis for further research in the future.

The research questions of this thesis are:

1. What is the impact of music in agitation caused by dementia?
2. What are the factors related to the impact of music in agitation caused by dementia?

## 4 Method

### 4.1 Research method and study selection

The method of this thesis is a narrative literature review. In narrative literature review, the goal is to examine several different articles and stories on the same subject and combine the information to gain more information on the subject (Burns & Grove, 2001). Narrative literature review offers a broad background of the subject to the reader and helps them in understanding the phenomenon (Cronin, Ryan, Coughlan, 2008).

The analysis method used in this thesis is thematic analysis. It is a method that is used in identifying and analyzing similar patterns within the data. These patterns are called themes. (Braun & Clarke, 2008.)

These methods were chosen for this thesis, because together they provide a simple and defined framework that supports the thesis subject.

### 4.2 Data collection

The research for this literature review was conducted by collecting data from the following databases: CINAHL (EBSCOHost), Cochrane Library and ProQuest Central. The articles were chosen according to certain inclusion and exclusion criteria. The inclusion criteria consisted of certain key words with which the search was conducted, publication period between 2008-2018, language either English or Finnish and academic as well as peer reviewed articles. The availability of the publications was to be without further costs. The extent of the subject of music in treating agitation caused by dementia was to be rather large. The articles were to focus on the aforementioned subject, and a maximum of two other subjects on the side. The articles also needed to be precisely about the impact of music on agitation caused by dementia, not the impact of music on dementia in general.

The exclusion criteria consisted of publication time prior to 2008 and language of the publication being something other than Finnish or English. Also, if an article touched on the subject of music in treating agitation caused by dementia, but more so focused on a variety of nonpharmacological methods, it was excluded.

Many articles did touch on the subject of music in treating agitation caused by dementia or music in treating dementia in general, but these articles were excluded from the thesis due to the concise overview on the thesis subject.

The firstly done data collection process is presented in table 1.

Search term	Articles provided
Music therapy AND Agitation AND Dementia AND music	CINAHL (EBSCOhost) n=16 ProQuest Central n=446 Cochrane Library n=18
	Chosen based on title
	CINAHL (EBSCOhost) n=9 ProQuest Central n=26 Cochrane Library n=1
	Chosen based on abstract
	CINAHL (EBSCOhost) n=4 ProQuest Central n=8 Cochrane Library n=1
	Chosen based on full text
	CINAHL (EBSCOhost) n=2 ProQuest Central n=1 Cochrane Library n=0

Table 1: Firstly done data collection

The research was conducted in three separate phases: data collection based on title, data collection based on abstract and data collection based on full text. The first data collection was done by using the following search terms: “music therapy AND agitation AND dementia AND music”. These terms were used in all aforementioned databases. From CINAHL this search provided 16 articles, of which 9 were chosen based on title. From Cochrane Library the search provided 18 articles, of which only 1 was chosen based on title. ProQuest Central provided 446 articles with the aforementioned search terms, and of those, 26 were chosen based on title.

The second phase of the data collection was conducted after having gone through all of the databases. Out of the 9 articles chosen based on title from CINAHL, four (4) were chosen based on the abstract. From Cochrane Library, the one article chosen based on title was chosen again based on abstract. From ProQuest Central, out of 26 articles that were chosen based on title, 8 were chosen based on abstract.

The last phase of the data collection was conducted by choosing the articles based on full text. From CINAHL, out of the four articles chosen based on abstract, 2 were chosen based on full text. The article from Cochrane Library was not chosen based on full text. Only one article out of 8 from ProQuest Central was chosen based on full text. From the first data collection, only three articles were chosen based on full text.

An extended search was conducted by using a slightly different search term. The search term was “agitation AND music OR music therapy AND dementia”, and it was used in all databases.

With the aforementioned search term, CINAHL provided 129 articles, of which 8 were chosen based on title. Cochrane Library provided 42 articles, of which none were chosen based on title. ProQuest Central provided 1762 articles of which 2 were chosen based on title.

Out of the 8 articles CINAHL provided in the extended search, 3 were chosen based on both the abstract and full text. From ProQuest Central, no articles were chosen based on abstract and full text. The extended data collection process is presented in table 2.

The search term	Articles provided
Agitation AND Music OR Music therapy AND dementia	CINAHL (EBSCOhost) n=129 ProQuest Central n=1762 Cochrane Library n=42
	Chosen based on title
	CINAHL (EBSCOhost) n=8 ProQuest Central n=0 Cochrane Library n=2
	Chosen based on abstract
	CINAHL (EBSCOhost) n=3 ProQuest Central n=0 Cochrane Library n=0
	Chosen based on full text
	CINAHL (EBSCOhost) n=3 ProQuest Central n=0 Cochrane Library n=0

Table 2: Extended data collection

#### 4.3 Analysis method

The analysis method used for this thesis is thematic. Thematic analysis is a method that identifies different patterns among the data and that way helps in providing an answer to the research question. (Braun & Clarke 2008.)

Prior to the analysis process, rudimentary themes and ideas for the themes already existed and during the first steps of the analysis process, the ideas formed into concrete themes through inductive reasoning. The themes for this thesis are:

- The impact of music
- The factors related to the impact of music

The analysis process started by reading all articles from cover to cover, getting a preliminary idea on each article. After that, the articles were re-read, now underlining important factors from the texts and forming a more thorough idea on each article. After the themes had been formed, the articles were read once more with the themes in mind. Patterns that were related to the themes were underlined. These findings are presented in table 3.

<b>Authors of the articles, year, country</b>	<b>Theme 1: Impact of music on agitation caused by dementia</b>	<b>Theme 2: The factors related to the impact of music caused by dementia</b>
	<b>The fields of content:</b>	<b>The fields of content:</b>
Park, H. & Pringle Specht, J.K. 2009, The United States	Agitation levels were lower while listening to music and after listening to music, than before listening to music	Individualized, preferred music
Cox, E., Nowak, M. & Buettner, P., 2011, Australia	Pacing/aimless wandering, general restlessness and performing repetitious mannerisms were reduced significantly	Individual music interventions Live music Music from the participants' childhood, preferred music

Hicks-Moore, S.L., Robinson, B.A., 2008, Canada	Significant reduction in verbally agitated behavior as well as physically non-aggressive behaviors	Preferred music Individual music interventions
Riddler, H. M.O., Stige, B., Qvale, L.G. & Gold, C. 2013, Denmark & Norway	Significant reduction in agitation disruptiveness compared to agitation disruptiveness in standard care.	Timing of music therapy, whether it was before or after standard care Individual music interventions
Cooke, M. L., Moyle, W., Shum, D. H.K., Harrison, S.D., Murfield, J.E. 2010, Australia	Overall effect was not evident. Increase in verbal aggression	Music can improve verbalization and speech.

Table 3: The findings related to the themes from the data

## 5 Results

### 5.1 Data chart

The main content of the articles chosen for this thesis can be found in the data chart presented in appendix 1.

## 5.2 Results

The results show that music does have an impact on agitation caused by dementia. In the research conducted by Park & Pringle Specht (2009) agitation caused by dementia reduced significantly while listening to music, and it remained that way after the music intervention was over. In the research conducted by Hicks-Moore & Robinson (2008), it was also evident that music reduced agitation in participants, and the level of agitation remained lower even an hour post intervention. The research by Cox, Nowak & Buettner (2011) supports the reducing impact of music on agitation caused by dementia.

In the research conducted by Riddler, Stige, Qvale & Gold (2013), music therapy was shown to also have a reducing impact on agitation caused by dementia. Out of all articles chosen for this thesis, the research conducted by Cooke, Moyle, Shum, Harrison & Murfield (2010) was the only one in which music was not shown to have a significant impact in reducing agitation caused by dementia. On the other hand, they found out, that verbal aggression increased over time. The researchers suspect that this was due to music being able to improve verbalization and speech. (Cooke et al. 2010.)

The results show that there are several factors that are related to the impact of music on agitation caused by dementia. The results of this literature review support the idea that individual music interventions have a diminutive impact on agitation caused by dementia (Park et al. 2009; Cox et al. 2011; Hicks-Moore et al. 2008; Riddler et al. 2013). Also using the preferred music of the participants during the music interventions is seen to be an important factor (Park et al. 2009; Cox et al. 2011; Hicks-Moore et al. 2008). Live music was used as a part of the music intervention in researches conducted by Cox et al. (2011) and Cooke et al. (2010), while recorded music was used in researches conducted by Hicks-Moore et al. (2008) and Park et al. (2009). The environment can also be considered as a factor in the impact of music. The research by Park et al. (2009) was conducted in a home environment, while researches by Cox et al. (2011), Hicks-Moore et al. (2008), Riddler et al. (2013) and Cooke et al. (2010) were conducted in a facility environment. In the researched by Cooke et al. (2010) and Cox et al. (2011), the residents had been living in the facility environment for more than 4

weeks but less than 4 years, making it possible for the environment to be familiar enough not to cause a significant amount of agitation.

From the articles chosen for this thesis, the research conducted by Riddler et al. (2013) was the only one where music therapy was used in the music intervention. In the research, the use of music therapy was not directed at reducing agitation, but more so to fulfill psychosocial needs by e.g. facilitating self-expression and initiative. The forms of music therapy used during the interventions included singing, dancing and moving, listening to both pre-recorded and live music as well as other activities, such as talking. (Riddler et al. 2013.)

In the research conducted by Cooke et al. (2010) music did not show any significant impact on reducing agitation. The researchers consider there to be a variety of possible reasons for this. One reason is that there was no control group in the study, so there was no possibility to contextualize the results in light of changes in agitation without an intervention. Another reason is that the research was conducted without having individualized interventions. The researchers also consider the short-term positive effects of music to be a reason for the lack of significant results. (Cooke et al. 2010.)

## 6 Discussion

### 6.1 Discussion of results

The aim of this literature review was to investigate the possibilities of music in treating agitation caused by dementia. The results show that music has a diminutive impact on agitation caused by dementia, which is supported by a variety of previous studies, such as a study conducted by Pedersen, Andersen, Lugo, Andreassen and Sütterlin (2017). A variety of factors are related to the diminutive impact of music - one of them being preferred music.

According to Huttunen (2017 B) listening to calm preferred music is one effective way to relax and calm down. In a case report written by Long (2016) the results showed that listening to a playlist that consisted of songs based on the preferences of a person, calmed them down. This could have been due to the familiarity and gaining a sense of their own identity through that music.

Preferred music is naturally pleasant to listen to. It brings a sense of familiarity, one may even sing or dance along to it. Preferred music is often, in cases of dementia, music from the past that one listened to when they were young. Hearing those familiar songs can bring back memories from that time. Preferred music also very often reflects one's ultimate self in one way or the other. Can a familiar, favorite song from the past give a person with dementia a sense of connection with themselves?

Another factor that could be considered to be in relation to the impact of music is environment. According to a report by Preidt (2018) a study on the calming impact of music on agitation on people with dementia was conducted. The results showed, that listening to preferred music increased communication on the participants, and increased their contact with the environment. A person with dementia tends to feel safer in a familiar environment. It is often assumed that the most familiar environment is one's own home - a house or an apartment they have lived in for years. It can, however, be possible for a facility to feel like home, especially if it gives a sense of safety, that the actual home has not been able to offer. Is it possible for music to have a similar impact on a person in an unfamiliar environment compared to the impact in a familiar environment?

## 6.2 Limitations

The results of this literature review can be biased due to the small amount of data. The research was conducted by using certain databases. Had there been an opportunity to use a larger variety of different databases and articles in different languages, the data setting could have been broader and therefore more comprehensive. Having done two data collections and one being extended, it can be stated that the amount of research done on the subject of this thesis as its own individual whole, is rather concise.

## 6.3 Trustworthiness and ethical issues of the literature review

This literature review has used peer reviewed articles, that have been collected systematically from reliable databases. The inclusion criteria as well as exclusion criteria stated clearly prior to data collection have been met in each article. In addition to this, the data collection process as well as the analysis process have been described distinctly. This literature review is also done by one person only, and therefore there is no other opinions or points of view on the data. This can be a good thing,

but it can also be counterproductive, as the researcher can become blinded to the research.

The validity has been taken into consideration in this literature review by using suitable methods of research and analysis in conducting the review and answering the research questions.

The Declaration of Helsinki (Lääkäriliitto 2013) states that medical research should, at all times, be done so that it protects and improves the health, wellbeing and rights of the patients. This applies to other health care professionals as well. These principles have been taken into consideration during the literature review process by ensuring that the review meets the ethical and trustworthiness that is required. This means, for example, that the studies used in this review are ensured of their validity and reliability.

#### 6.4 Conclusion

This literature review was quite concise, and although the results can be used as directional, further research is needed to ensure the validity of the results. Music is an extremely simple and inexpensive tool in maintaining the wellbeing and quality of life of the population as well as in reducing the symptoms caused by dementia. As the population is aging, it is becoming more and more important to use these kind of non-pharmacological tools in care work.

Music can have a direct impact on a person, but there are many indirect ways as well. An elderly person with dementia may suffer from loneliness, and due to the memory disorder it may be more difficult for them to socialize. Taking part in a music group could prevent loneliness and difficulty in socialization - a music activity makes one feel like they are a part of something, and therefore can improve their quality of life.

To the elderly of today, dancing has a certain meaning - memories from adolescence. With the help of dance music and folk music from their youth it is now possible to activate the elderly to move. This, naturally, also improves their quality of life.

## 6.5 Implications for further research

Considering future research, the restrictions of the subject should be taken into account. In this literature review the subject was rather restricted, however, factors such as live music vs. recorded music emerged. It could be beneficial to investigate the impact of these factors on agitation caused by dementia individually. A broader research on data could ensure more qualified and sweeping results for the research. It could also be beneficial to do more of functional researches, that focus specifically on the impact of music on agitation. This could offer a broader view on the subject and make it more familiar in the field of research.

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## Appendix 1: Data chart

Author, year, country	Purpose of study	participants	Data collection	Data analysis method	Main results
Park, H. & Pringle Specht, J.K. 2009, The United States	To investigate the effects of individualized music in people who have dementia and who live at home	n=15	Individual music interventions	Descriptive statistics and one-factor repeated measures of variance (ANOVA)	On average, agitation levels were lower when listening to music, than before listening to music.
Cox, E., Nowak, M. & Buettner, P., 2011, Australia	To investigate the possibilities of live music in reducing agitated behaviour in people with Alzheimer's disease	n=7	A quasi-experimental one-group repeated measures design	The Friedman test	Reduction of agitated behavior was evident among the participants.
Hicks-Moore, S.L., Robinson, B.A., 2008, Canada	To investigate whether favorite music and hand massage have an effect in reducing agitated behaviours in people with dementia	n=41	Experimental 3x3 repeated measures design	ANOVA	Both interventions individually and combined have a significant effect ad. 1 hour post intervention.

<p>Riddler, H. M.O., Stige, B., Qvale, L.G. &amp; Gold, C. 2013, Denmark &amp; Norway</p>	<p>To investigate the effects of individual music therapy on agitation in people who live in nursing homes and have moderate to severe dementia. Also the effect of individual music therapy on psychotropic medication and quality of life is explored.</p>	<p>n=42</p>	<p>Cross over trial</p>	<p>Statistical analysis</p>	<p>Music therapy reduces agitation disruptiveness significantly and also prevents the increases of medication.</p>
<p>Cooke, M. L., Moyle, W., Shum, D. H.K., Harrison, S.D., Murfield, J.E. 2010, Australia</p>	<p>To investigate the effects of live group music intervention on agitation and anxiety in people with dementia</p>	<p>n=47</p>	<p>A randomized cross-over design with reading and music control groups</p>	<p>Statistical package for the Social Sciences Version 17.0</p>	<p>One significant finding was evident: 24 participants, who attended 50% or more of music sessions had a significant increase in frequency of verbal aggression.</p>