



Outdoor Environments for Physiotherapeutic Rehabilitation of Work-Related Stress

– Lying Down in Shelter, Sitting in Serenity,
Standing in Nature and Walking in Coherence

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Independent project in Environmental Psychology • 30 hp

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Outdoor environments for health and well-being - Master's programme - LM007

Alnarp 2022



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Credits: 30 hp
Level: A2E
Course title: Independent project in Environmental Psychology
Course code: EX1000
Programme/education: Outdoor Environments for Health and Well-being - Master's programme - LM007
Course coordinating dept: Department of People and Society

Keywords: Physiotherapy, Exercises, Environmental, Qualities, Stress-Related, Illness, Restoration

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Faculty of Landscape Architecture, Horticulture and Crop Production Science

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Environmental Psychology

Publishing and archiving

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Abstract

Learning more about rehabilitating work-related stress is important since stress-related illness is creating a lot of human suffering and a significant economic loss in most countries. Physiotherapists are one of the most common professions in work-oriented rehabilitation in Sweden and previous research has shown positive results of using outdoor environments when rehabilitating work-related stress. Research has also displayed the preferred qualities of stress-reducing and restorative outdoor environments, used in multi professional interventions. There is however no previous research found on displaying the specific environmental qualities which are beneficial in different types of physiotherapeutic exercises for rehabilitating work-related stress. In order to investigate the qualities of outdoor environments and how they are affecting physiotherapeutic exercises a qualitative study has been conducted, interviewing two physiotherapists who are currently working at two rehab gardens with rehabilitation of work-related stress. The interviews have been thematically analysed and resulted in a display of the effect of the environmental qualities when doing physiotherapeutic exercises while: lying down, being seated, standing and walking; in the rehab garden, the nearby field, walk path and forest. The conclusion of this thesis is that the specific environmental qualities which are especially important in the different types of physiotherapeutic exercises are the sheltered quality while lying down, the serene quality while being seated, the natural quality while standing and the cohesive quality when conducting exercises while walking. There is a need for further research, evaluating the effect on the participants of the different environments used in physiotherapeutic exercises, in order to better support physiotherapists when using outdoor environments for rehabilitating work-related stress.

Keywords: Physiotherapy, Exercises, Environmental, Qualities, Stress-Related, Illness, Restoration

Preface

When I was doing my practical training during my education as a physiotherapist I always felt that there was something missing in the environment in order to support the participants in the exercises. As I did not find a suitable environment which would support my work as a physiotherapist I decided to use my other education and work as an engineer, only to find myself in the situation several years later searching for a suitable work-environment for myself. It was in fact my intention during my education to combine the knowledge of physiotherapy, engineering and business economics to be able to create a good work-environment. I now believe my knowledge has been complimented with an important piece of the puzzle which has previously been missing - the connection between environment and psychology. With this thesis I am thus trying to help other physiotherapists to find a suitable environment for rehabilitating people suffering from work-related stress.

I hope you enjoy your reading!

Peter Lundkvist

Ängelholm, Midsummer, June, 24, 2022

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Introduction

This thesis is conducted as a master project in environmental psychology and aims at investigating the qualities of outdoor environments and how they are affecting physiotherapeutic exercises when treating work-related stress. It starts with a theoretical background introducing the importance of gaining more knowledge about interventions regarding work-related stress and how physiotherapy in outdoor environments has been used as a rehabilitation method in multi professional settings. The introduction ends with a section on how the environmental qualities affects stress reduction and restoration which leads to the aim of this thesis.

Work-Related Health Problems

It is important to gain more knowledge about interventions regarding work-related health problems since it creates a lot of human suffering and entails a significant loss for most countries' economies. In the WHO report *Protecting Workers' Health* it is stated that work-related health problems result in an economic loss of 4–6% of GDP for most countries (WHO 2020).

A significant proportion of Sweden's population are feeling stressed. The Public Health Agency writes that in 2018 16 percent of the population aged 16–84 stated that they felt quite or very stressed (Folkhälsomyndigheten 2020). They also write that there has recently been an increase of the reported stress among highly educated people of working age – during the period 2006–2018, the proportion who reported stress increased among people under the age of 45 with post-secondary education level” (ibid.).

The Swedish Work Environment Authority states in its report on work-related mortality that there has been an increase in work-related stress. With regards to work-related complaints due to stress or other mental causes, the results from repeated surveys 1998–2016 indicate that such complaints have become more common (Arbetsmiljöverket 2019). They conclude that mortality due to work-related stress has increased since the 80's and will continue to increase in the future (ibid).

Work-Related Stress

The characteristics of work-related stress are psychological symptoms of burnout, cognitive problems, depression and anxiety (Glise et al. 2012). Physical symptoms are also prevalent effects of prolonged stress and symptoms like:

gastrointestinal problems, sleep disturbances, dizziness, fatigue, eye strain, headache, loss of appetite and musculoskeletal pain all have connections to job stressors – gastrointestinal problems and sleep disturbances more than the others (Nixon et al. 2011). After a period of two weeks with physical and mental exhaustion which has developed in response to a longer period (at least six month) of exposure to identifiable stressors, an exhaustion disorder can occur showing symptoms of severe tiredness, low executive functions as well as mental, physical and social impairments (Jonsdottir et al. 2013).

Physiotherapeutic Rehabilitation of Work-Related Stress

Physiotherapists are one of the most common professions working with rehabilitation of work-related stress. Work-oriented rehabilitation is performed by service providers procured by the Swedish Social Insurance Agency and e.g. the most common professions in the procured services regarding work-oriented rehabilitation in Jönköping, Kalmar and Kronoberg counties are Physiotherapists and Physicians (Abrahamsson & Tenngart 2003). Mindfulness and Basic Body Awareness Therapy are used by physiotherapists for rehabilitating work-related stress and they have been practised and scientifically tested for treating stress-related illness (Khoury et. al 2013; Köpsén & Sjöström 2020). The exercises are conducted both individually and in group while lying down, being seated, standing or walking and aim at creating an awareness of the client's thoughts and feelings, their use of the body and what their body needs in different situations (Larsson 2020). Basic Body Awareness Therapy is practiced by doing exercises, using techniques which are directed at six types of elements: 1) Relation to the ground, 2) The centre-line of the body, 3) The movement centre, 4) Breathing, 5) The boundaries of the body and 6) Muscular tension and relaxation (Roxendal 1985). There is little knowledge about the effect of outdoor environments on these types of exercises which are commonly practiced indoors, although it is commonly known among physiotherapists that both Mindfulness and Basic Body Awareness Therapy has its roots in eastern philosophies and practices like Zen Buddhist meditation and Tai Chi which has a tradition of also being practised outdoors in natural environments.

Physiotherapeutic Rehabilitation in Outdoor Environments

At the Rehabilitation Garden in Alnarp, research studies have been conducted on work-oriented rehabilitation of stress-related illness. The garden has been described as a positive place when recovering from stress (Adevi & Mårtensson

2013) which resulted in a reduction in healthcare consumption (Währborg, Petersson & Grahn 2014) and it has been used when describing the role of nature (Pálsdóttir 2014) and its supportive qualities when rehabilitating stress-related mental disorder (Pálsdóttir et al. 2018). The team working at the Rehabilitation Garden in Alnarp consisted of a horticultural therapist, a landscape architect, an occupational therapist, a physiotherapist, a physician and a psychotherapist. The physiotherapist was conducting a treatment based on Rosen Method Bodywork which is a treatment method using tactile stimulation and thereby creating awareness of muscle tensions and its connection to emotional attitudes (Lavesson 2013).

Research on work-oriented rehabilitation of stress-related illness has also been conducted at Gröna Rehab in Gothenburg (Sahlin 2014). The nature based rehabilitation at Gröna Rehab resulted in decreased burnout-scores and long-term sick leaves, increased work ability and less stress-related symptoms (Sahlin et. al 2014). Furthermore decreased scores on burnout, depression and anxiety, and increased well-being scores and significantly reduced health care utilisation has been reported (Sahlin et. al 2015). At Gröna Rehab there has been a team consisting of a gardener, biologist, psychotherapist, an occupational therapist, and two physiotherapists. The physiotherapists are guiding the participants in Mindfulness exercises every day and Basic Body Awareness Therapy at a minimum of two group sessions each week during the rehabilitation period of 28 weeks (Larsson 2020).

Outdoor Environments for Rehabilitation of Work-Related Stress

There are important factors to consider when choosing an outdoor environment for the use of rehabilitating people suffering from work-related stress (Pálsdóttir et al. 2018). The first prerequisite is a suitable distance and transportation method to the intervention site, in order to avoid depleting the already diminished energy level of the participants (Dolling et al. 2017, Sonntag-Öström et al. 2015 a, b). Way-finding to an intervention site and also on the site can be facilitated by using five types of elements: paths, edges, districts, nodes, and landmarks which can all be helpful when understanding and navigating in an environment (Lynch 1960).

When choosing a suitable outdoor environment it could be argued that it is of fundamental importance to identify properties in the landscape which are generally preferable to people visiting the environment. Generally humans have a preference for other lifeforms and natural environments due our biology and evolutionary history (Wilson 1984). This is also argued to be the cause for the environmental preference of prospect and refuge, which have been important features in human habitats (Appleton 1975), e.g. savanna landscapes (Oriens

1986). More specifically, environments could be said to be generally perceived according to its affordances i.e. what it offers, provides or furnishes - like an ecological niche rather than a habitat (Gibson 1979).

It has been shown that there is a general visual preference for landscapes which are not too open or blocked and there is also a preference for a high degree of both mystery and legibility whereas low coherence and complexity are not preferred properties of a landscape – a high complexity is however also not preferred if it is not combined with a high coherence (Kaplan & Kaplan 1989). It is preferable if the complexity is moderate to high and has structural properties that establish a focal point with order and patterning present, there is a moderate to high level of depth which can be perceived unambiguously, the ground surface texture tends to be homogeneous and even and is appraised as conducive to movement, a deflected vista is present, appraised threat is negligible or absent and the preference will be even greater if a water feature is present (Ulrich 1983). The general visual preference for natural environments can be explained by the presence of a medium complexity of patterns called natural fractals, which enables soft fascination whereas the built environment often consists of too high complexity which leads to hard fascination or too low complexity which works under-stimulating (Van den Berg et al. 2016).

When comparing the preference of different landscapes a visual rating of the outdoor environment can be performed according to the Eight Dimensions of Environmental Assessment which are pleasantness, complexity, unity, enclosedness, potency, social status, affection and originality (Küller 1991). Analysing visual landscape character can also be done using the framework VisuLands consisting of nine key concepts stewardship, coherence, disturbance, historicity, visual scale, imageability, complexity, naturalness and ephemera (Tveit et al. 2006).

Besides the visual perception, there are also the perceptions of sounds, smells and touch to consider when rehabilitating work-related stress. When considering the soundscape of a restorative environment it is preferred to have natural sounds of the wind in the trees, singing birds and running water (Ratcliffe 2021). The rippling water of a small stream or a pond can even mask the stressful sound of car traffic in a rehab garden (Cerwén et al. 2016). Regarding the smellscape of a setting for rehabilitating stress-related mental disorders there are findings indicating that natural smells of e.g. lavender, grass, wood, and conifer needles has a profound effect on stress reduction whereas artificial smells like perfume, cigarettes, and “hospital scent” has the opposite effect (Pálsdóttir et al. 2021). There also seems to be a close relationship between smells and touch which is exemplified by descriptions of participants feeling pleasant and calm when touching the leaves of plants and smelling them (ibid.).

When choosing an outdoor environment it is of special importance to identify environmental qualities which promote restoration, i.e. to find a great display of restorative qualities in the environment. Four key components which have been suggested to make an environment restorative are soft fascination, being away, extent and compatibility (Kaplan 1995). It can also be argued to be of the same importance to identify qualities which are too stimulating and hence not promoting restoration in order to avoid these when choosing a suitable outdoor environment. Both restorative and stimulating qualities of a rehab garden used for rehabilitating work-related stress has been described by Pálsdóttir et al. (2018) and in order to clarify its relationship with previously used concepts, these qualities have been renamed and presented by Stoltz and Grahn (2021) in a revised version of the framework called the Perceived Sensory Dimensions (PSD). The restorative PSDs in the revised version are presented as shelter, natural, serene and cohesive whereas the more stimulating PSDs are diverse, social, cultural and open (ibid.).

The eight PSDs are also included in the Thirteen Environmental Qualities Supporting Persons' Access to Nature and Surrounding Life in the Quality Evaluation Tool (QET) for designing outdoor environments in healthcare settings (Bengtsson & Grahn 2014). The other five supporting qualities are joyful and meaningful activities, contact with surrounding life, symbolism/reflection, sensual pleasures of nature and seasonal changes in nature. The complete QET has a total of 19 qualities and consists also of the Six Environmental Qualities Allowing Persons to be Comfortable in the Outdoor Environment: closeness and easy access, enclosure and entrance safety and security, familiarity, orientation and way-finding and different options in different kinds of weather.

The environmental qualities of the QET can also be recognised in the Theory of Supportive Gardens, in which it is stated that the most healing feature of a healing garden is the ability to facilitate stress reduction and restoration (Ulrich 1999). It is further stated by Ulrich (1999) that the most important factor for stress reduction and restoration in a healing garden is its ability to convey a sense of security, which is a requisite condition for the other stress-reducing resources to be effective. The other four resources are: sense of control and access to privacy, social support, physical movement and exercise and access to nature and other positive distractions (Ibid.).

To achieve a supportive healing garden, the environmental qualities should be located with respect to the gradient of challenge so that users can choose whether they wish to confront the more challenging qualities, depending on their subjective experience of well-being, described in the triangle of supporting environments as inward-directed, emotional, active and outward-directed engagement (Bengtsson & Grahn 2014). When analysing the location of the environmental qualities there are generally four essential areas to investigate in a healing garden which can be categorised as The Four Zones of Contact with the

Outdoors, ranging from inside the building, transition zones, the immediate surroundings to the wider context of the neighbourhood (Bengtsson & Grahn 2014).

The Specific Qualities of Outdoor Environments

When investigating the preference of different outdoor environments for rehabilitation of work-related stress there are general environmental qualities, qualities connected to healing gardens and greater landscapes to consider due to e.g. location, aesthetic preferences and their stimulating, stress-reducing and restorative effects. These qualities have been displayed in previous research and are referred to in this introduction. There is however no previous research found on investigating the specific qualities of outdoor environments when they are used in different types of physiotherapeutic exercises for rehabilitating work-related stress. The specific environmental qualities is defined in this thesis as the qualities in the outdoor environment which has been identified in previous research as having a stimulating, stress-reducing and restorative effect on humans and/or from statements made by the interviewed physiotherapists in this thesis as positively or negatively affecting the participants in the physiotherapeutic exercises when rehabilitating work-related stress. The definition of a specific environmental quality which is used in this thesis can be compared with the general definition of environmental quality, used by the European Environment Agency (2022).

Properties and characteristics of the environment, either generalized or local, as they impinge on human beings and other organisms. Environmental quality is a general term which can refer to: varied characteristics such as air and water purity or pollution, noise, access to open space, and the visual effects of buildings, and the potential effects which such characteristics may have on physical and mental health (caused by human activities).

According to Cambridge Dictionary (2022) quality can refer to both "how good or bad something is" or as used in this thesis "a characteristic or feature of someone or something".

Aim

The aim of this thesis is to investigate the specific qualities of outdoor environments and how they are affecting the participants in different types of physiotherapeutic exercises when rehabilitating work-related stress.

Research Questions

Which specific qualities of outdoor environments are important for the participants in different types of physiotherapeutic exercises when rehabilitating work-related stress?

How do the specific qualities of outdoor environments affect the participants in different types of physiotherapeutic exercises when rehabilitating work-related stress?

Method

In order to investigate the qualities of outdoor environments and their effect on different types of physiotherapeutic exercises, a qualitative study was conducted by interviewing two physiotherapists with current experience in the rehabilitation of work-related stress at two active rehab gardens in Sweden. A qualitative approach was chosen since the aim of the study was to gain a deep knowledge about the environmental qualities in the physiotherapeutic exercises, which has been missing in previous research. Since there are only a few physiotherapists currently working with outdoor rehabilitation of work-related stress in an active rehab garden, it would also have been impossible to conduct a quantitative study.

Participants

The choice of the participants for the interviews was due to them being physiotherapists currently working with outdoor rehabilitation of work-related stress in an active rehab garden. The selection of the participants was done using a mapping of Swedish outdoor rehab facilities conducted by Gröna Rehab – Gothenburg botanical garden (Västra Götalandsregionen 2022). Among the 30 listed rehab facilities, only three were currently offering physiotherapeutic rehabilitation of stress-related illness. Two of the contacted physiotherapists accepted whereas one declined participation due to only working part time at the rehab garden.

Data collection

The interviews took place at the rehab gardens and its surroundings. The locations which were described during the interview as being used for physiotherapeutic interventions were also visited together with the physiotherapist during the interview. The data from the physiotherapists' descriptions was collected by using semi-structured interviews, using an interview guide (Appendix 1) in order to both ensure the coverage of the research questions and also enable the interviewee to elaborate further in an open-ended way by the use of follow-up questions (Brinkmann & Kvale 2015). The data from the physiotherapists descriptions of the exercises and the environments were collected using audio recordings which were transcribed and translated from Swedish to English.

Data analysis

The transcribed and translated audio recordings collected from the interviews was analysed thematically. A thematic analysis was used since it is a method for identifying, analysing and reporting patterns (themes) within data and it can be performed through a process containing six phases: 1) familiarisation with data, 2) generating initial codes, 3) searching for themes among codes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the final report (Braun & Clarke, 2006). The first step of the analysis consisted of familiarising with the interview material by listening, translating and transcribing while taking notes on initial ideas. In the second step of the analysis the initial codes were generated from having familiarised with the interview material. The codes were then used in the third step when gathering them into potential themes which were reviewed in the fourth step of the analysis. The two last steps of the analysis were then conducted by defining and naming the themes when writing the results section of the thesis.

Ethical considerations

The physiotherapists have signed a form: Consent for Participation (Appendix 2), granting approval for their voluntary participation and were also informed about the possibility to withdraw their participation at any time without any further explanation. All the interview material has been securely handled by the author alone. The participants' identities and the names of the rehab gardens have not been displayed in the result of this thesis. No personal information regarding people's health was handled during the master project.

Result

The result section of this thesis consists of five themes which were identified in the analysis of the physiotherapists descriptions. It starts with a theme in which a general display of the qualities of outdoor environments for physiotherapeutic rehabilitation of work-related stress is introduced. In the four following themes it is further elaborated on the specific qualities of outdoor environments in the different types of physiotherapeutic exercises i.e. while lying down, being seated, standing, and walking. The described exercises are conducted in the outdoor environments of the rehab garden, the adjacent field, walk path and forest.

The General Qualities of Outdoor Environments

A feeling of exertion is expressed by one of the physiotherapists when trying to explain the general qualities of outdoor environments when they are to be used in physiotherapeutic exercises for rehabilitating work-related stress, since it is so obvious as to why it is so good to be in nature – it is like trying to explain why water is so good for the fish.

We are made for being in this environment. It is as if a fish should explain exactly why it is good to be in the water, or something like that – because it is nothing strange; we are not made for the artificial environment inside a house, but now we have to explain and try to put words on why it is so good for us to be in nature and that can feel a bit exerting.

The physiotherapists explains that the general effects of the outdoor environments in physiotherapeutic exercises for rehabilitating work-related stress is due to the sensory stimulation of the natural environment which is helpful for creating self-awareness.

You are helped by experiencing things for real, that the senses are stimulated by the sounds, the air, the sun and everything

Nature gives the best conditions for being aware of oneself...it happens automatically

One of the physiotherapists further elaborates that the participants find it easier to be aware of themselves in nature, especially for people who can not stand the awareness of themselves. Being outdoors and perceiving nature calms the participants and hence facilitates them to perceive and create an awareness of themselves.

It can be really difficult for some people to direct their attention inwards and be aware of their own body. Nature can help us with that, it happens sort of automatically when we go out in nature. If there is a person who finds it hard to stand being in their own body, that person can instead perceive the surrounding nature and hence automatically get calmer, which then

makes it easier to be present in their own body. It feels like doing Basic Body Awareness exercises indoors standing in a room can be very hard if you are feeling very bad, but these are really the best conditions (being outdoors) to enable you to connect with yourself.

Doing Basic Body Awareness indoors can, according to the physiotherapist enable practising some exercises which might be very beneficial for the participants but are not suitable for practising outdoors at certain times; due to for example disturbances from insects, traffic noise, people in the surroundings or the current weather conditions. The physiotherapist explains that although the exercises are good for the participants it feels like they should be done outside to enable their full potential.

Today I had to have Basic Body Awareness exercises indoors and it felt so poor. We are doing something good which we can not do outside, but it still always feels like all this (the forest) is right outside – what are we doing inside in that room?

The physiotherapist further elaborates the great value of having an old forest close by the rehab garden for exercising Basic Body Awareness since many of the participants feel positive about using it for the exercises and that it is also easy to use without losing a lot of time when travelling, which can then be spent on doing the exercises instead.

The old trees...it is special...and there is so much air in the forest, it feels like it is a favourite type of forest for many people...and the closeness to the rehab garden...so that we can use the time for exercising Basic Body Awareness.

The physiotherapist also describes the connection between the Basic Body Awareness exercises and the other activities in the rehab garden as being helpful and enhancing the effect of each other, since they are helping the participants in both creating an awareness of the body and how they are using it while doing the exercises and other activities as well.

The things we are doing in the Basic Body Awareness exercises are opening the senses in order to be aware when doing the other activities and the other activities are helping to get more awareness of the body – It feels like they are fertilising each other

The enhanced effect of doing Basic Body Awareness outdoors compared to indoors is also due to the use of symbolic themes which are connected to the different seasons. The physiotherapist exemplifies that generally it is often calmer and more restful exercises in the winter and in spring, the exercises are focusing on awakening and experiencing the senses again.

In the winter there is much rest and Basic Body Awareness exercises while lying down, finding slow movements...Now it is a time (spring) when you wake up and experience the senses again. It usually happens automatically, to feel the sun again and hear the birds again. It is like hearing everything for the first time and feeling everything for the first time

The different seasons with its various weather conditions can of course be a challenge when doing certain exercises outdoors, especially while lying down and being seated. The conservatory, the greenhouse, warm clothes, sleeping pads, sheepskins and blankets are all valuable assets in enabling the participants to exercise in an outdoor environment, but sometimes the weather conditions are too demanding and exercises are done indoors instead. The physiotherapist explains that the weather is experienced very differently by the participants and that exercising outdoors is very much dependent on the participants in the group.

It is very much depending on the different persons, some get easily cold – no, do we have to go out?– while others just love to go outdoors and feel that it is the best way to relax, you have to be a bit flexible and get to know the group.

The other physiotherapist elaborates that if the weather conditions are too tough for the participants it can be hard to stay focused on the exercises and focus will instead shift to the present weather conditions.

The weather can not be too challenging, because then you will lose focus on the performance of the exercises

The physiotherapist can however also think of how challenging weather conditions can be used in exercises e.g. when experiencing the difference between making resistance or accepting the surrounding conditions – experiencing different thoughts, feelings and tensions in the body and how it is affecting the walking pace at different weather conditions.

What happens if I am trying to get away (from the cold and the rain) or if I am accepting the circumstances?, walking pace?, thoughts?, feelings?

Exercises While Lying Down in a Protected Environment

Exercises while lying down is expressed by both physiotherapists as being dependent upon a warm, safe and enclosed environment without disturbances since the aim of the exercises is to be stress-reducing, which is especially difficult while being exposed in a vulnerable position while lying down on your back.

You are exposed while lying on your back and then you're not supposed to feel that something would attack you or disturb you.

One of the rehab gardens was found by the physiotherapist to be too exposed towards the surrounding roads concerning the sound of car traffic and the curious eyes of the pedestrians on the walking path, since the hedge is too thin – especially during the winter period. The physiotherapist working at this rehab garden states that this has in fact resulted in the preference of using the indoor

environment when doing exercises in a position while lying down. In order to enable exercises while lying down, the interviewee expresses a desire to grow a bamboo hedge, hence creating a "green screen" all year round which would shield the garden from the view of the pedestrians. It would also generate a rustling sound which would mask the sound of the pedestrians and some of the car traffic with a more calming, natural sound.

Exercises which are done while lying down are often calmest and safest when done inside. I am thinking that it does not feel safe if there are people walking by. It can of course be done during the summer when it is warm, because then it also becomes like a green screen – but it is a bit too thin. We need to make it thicker in order to get a more protected lawn where one can get the feeling of being left in peace.

At the other rehab garden there is no car traffic and only the occasional hiker passing by on the path leading into the natural reserve, which lies just outside the garden. The place used for exercises while lying down has a stone wall on one side which is used for terracing the garden; bushes are growing right behind the stone wall on the higher level of the garden and on the lower level there is a greenhouse and trees and bushes surrounding the spot used for exercises while lying down – with the exception for the open view down onto the path leading into the forest of the natural reserve. There were previously bushes which were shielding the view from the path but these have been cleared away to make way for a new seating area with a fire pit. Preparations have been made for putting up a willow fence around the new seating area and the physiotherapist expresses the intentions of using it for shielding the view from the walk path since it can initially feel uncomfortable for the participants when doing their exercises. Although the participants in the garden are visible from the path at the moment, the physiotherapist claims that they are quickly getting used to the hikers and that they are feeling comfortable anyway with the help of the others in the group when doing exercises lying down.

When you are in a group and find your place in the group, it creates a feeling of protection and safety

Both physiotherapists have had the experience that some of the participants have displayed initial unease while lying down in the grass due to insects and one of them elaborates that the participants can be unfamiliar with lying down on a lawn and might for example also be uncomfortable with watching the big naked sky.

It is like lying down out in the wild nature. You might not have anything covering your legs – it is unfamiliar for some people with grass. It is unfamiliar – it can feel like the sky is so big if you are not used to it.

They might also want to shield themselves from the naked sky and the sun and hence place themselves in the shade by the greenhouse or under the canopy of a tree. The physiotherapist who uses the lawn for exercises while lying down, states that generally the participants are finding it easier to relax while lying down

outside, focusing on the surrounding natural environment e.g. the warmth of the sun, the rustling of leaves or bird sounds. The physiotherapist explains that doing Basic Body Awareness Therapy inside, where there are much less impressions from the surroundings and much more internal focus can be difficult to endure for some of the participants. But there are also weather conditions to consider where some of the participants prefer doing exercises while lying down indoors and therefore you have to pay attention to the different needs within the group.

The physiotherapist who uses the rehab garden regularly mentions that they have also talked about inviting everybody to bring their own sleeping pad and try exercises while lying down at a high place with trees in the forest nearby the rehab garden. The physiotherapist explains that the glade which is usually used for standing exercises is too exposed to the surrounding paths where people are walking and sometimes even biking past.

You would probably not want to lie down at this spot, because people are walking here and there could be mountain bikes passing by...it is important to find a protected spot...it is really lovely to lie down outside but it is mostly standing and walking exercises

The physiotherapist who was experiencing the rehab garden as too exposed for exercises while lying down was describing an alternative outdoor environment for these types of exercises, located on a cliff in a small glade in the nearby forest. The cliff is located at a high ground in a secluded space which so far has never been visited by anyone other than the participants while doing their exercises while lying down. The physiotherapist describes that on the cliff in the forest glade, the only sound is the wind in the trees and the air is full of the fragrances of the forest. On a sunny day the cliff is warm and the participants bring sleeping pads to keep warm and comfortable on the hard rock.

It is a fantastic place up there. It is really a safe place. There has never been someone else at that place while we have been lying down which makes me feel safe...and if someone were to go past that place they would not walk right through it which makes it a really good place to lie down outdoors.

It is also described by the other physiotherapist, that a good place for exercises while lying down outdoors is on a sun-warm cliff in a high and secluded place in the forest. At such a place both physiotherapists are guiding the participants in a short relaxation exercise and thereafter the participants are free to watch the sky or the surrounding trees or they could choose to close their eyes and listen to the sounds of birds and the wind or smell the fragrance of the surrounding forest. There are also sometimes opportunities for the participants to choose to lie down during the stops on the nature walks. One of the physiotherapists has an example of a moor where some of the participants choose to walk away to their own spot and lie down during a stop on which the participants are encouraged to individually explore their senses. The physiotherapist explains that it is hard to instruct all the participants to lie down during a forest walk if you are not bringing

sleeping pads because not everybody wants to lie down in the forest if it is not done on a cliff.

It can be very unusual for some and then they are not feeling..., it is so individual how safe you are feeling in nature – so you have to be flexible.

Seated Exercises in a Calm Environment

Seated exercises is described by the physiotherapists as being dependent on a calm environment when exercising grounding, posture, breathing, awareness of the body and using the senses to get aware of the surroundings - e.g. feeling solar heat and hearing birds singing.

It can be very lovely when we are seated because there is always one part when we are just listening... and if it is springtime it is really lovely with the birds singing

When the weather allows it, seated Mindfulness exercises are performed every morning in one of the rehab gardens on a paved patio on the south side, adjacent to the main building. On the patio there are garden chairs and a large oblong table. The physiotherapist remarks that the garden chairs on the patio are not that ideal ergonomically for physiotherapeutic exercises since they do not have flat seats, but that they can be used if the participants are seated at the front end of the seats. There is an awning, a bamboo hedge and a conservatory shielding the patio on two sides and from above. The physiotherapist acknowledges that the bamboo hedge is a nice screen which is green all year around and makes a nice calming sound when rustling in the wind. The patio has a southern view towards the two levels of the terraced garden which has a greenhouse on the lower level and further away overlooking the newly built seating area with a fire pit and the allotments on the other side of the path which is leading into the surrounding forest. The newly built seating area is located on the other side of a small stream which creates a calming rippling sound as it passes through the outskirts of the garden. It has not yet been used that much by the physiotherapist but it has suitable benches for seated exercises. The benches are set in a circle and have flat seats which according to the physiotherapist is good for practising seated Basic Body Awareness. The seats also have high backboards to shield the participants from the surroundings and the wind and there are also preparations made for putting up a willow fence on the side with the path leading into the forest, in order to create a more secluded place.

This is also a good place for practising seated Basic Body Awareness. You could bring a wedge cushion or otherwise I think it is fine with the flat seats. It is also somewhat protected by these high back boards

At the other, smaller rehab garden there is no fire pit but they are using a public seating area with a fire pit in the nearby forest. It is located in a small secluded

glade and has four benches made out of logs surrounding the fire pit in a square. The physiotherapist explains that it is not used especially for physiotherapeutic exercises but rather for other gatherings and exercises like e.g. symbolically applying something undesirable onto a stick of wood and then throwing it into the fire in order to get rid of it.

Then they get to load their stick with something they want to get rid of and throw it onto the fire

The physiotherapists also reflects on the one thing which is missing for conducting seated exercises inside the forest during the longer walk called the Forest Bath – a small stream where one could sit down in calmness and meditate, just listening to the sound of the rippling stream.

Make a stop and sit down by the stream, meditating and listening to the rippling sound, because it is also some primitive trait which makes us feel good listening to that sound.

When the weather is not suitable for using the new seating area or the patio in the rehab garden, the conservatory is used by the physiotherapist for the regular seated Mindfulness exercises, which are held every morning. It is located adjacent to the south side of the main building, side by side with the patio. The conservatory is made of wood and has glass panels which allows the participants to view the sky, garden and surrounding forest. Inside the conservatory there are vine plants growing all the way up under the glass sealing and right outside there are several bird tables. In the conservatory there is a large oblong table and indoor chairs with flat seats which are better suited for the seated physiotherapeutic exercises, compared to the garden chairs out on the patio. At the other rehab garden, the greenhouse is used for sitting down talking about thoughts and feelings which occur during the exercises and also for different Mindfulness exercises, depending on what the current theme is.

In the greenhouse we have seated discussions, time for reflection and Mindfulness exercises depending on what theme we are on right now.

When the weather is good, the participants at both rehab gardens are invited to find their own peaceful spot in the garden and e.g. sit down and reflect on choosing exactly that location in the garden – there is for example a secluded spot located in between two hedges in one of the gardens which is frequently used by the participants for privacy.

There is an exercise in which you are choosing a calm spot to sit down in the garden. To find peace in a safe spot...it will surely reflect upon which environment you have had during your childhood, where you have felt calm. This is not a large garden but it is a small garden with some secluded spots, different ground covers and vegetation where you can find that.

Exercises While Standing in a Natural Environment

Both physiotherapists are using the rehab garden for the basic exercises while standing and when there is not enough time for going out into the natural environment in the adjacent forest. The basic exercises while standing, promoting grounding and postural stability, free breathing, flow and mental awareness are done in one of the rehab gardens on the smooth and hard paved surface of a patio. The patio is surrounded by a single hedge towards the car park and double hedges on the side towards the neighbouring houses and there is a trellis made of reinforcement mesh, shielding the patio from the path running from the entrance at the carpark by the main building. It is according to the physiotherapist important that participants feel safe and undisturbed during these basic exercises. When the weather is not suitable for being outdoors, the same type of hard paved ground surface is used for doing the exercises in the greenhouse, which is located at the side of the patio that faces the centre of the garden. The physiotherapist working at the rehab garden explains that the hard and even ground surface on both the patio and in the greenhouse is especially good for the basic starting procedure of the exercises while standing when practising grounding techniques.

Out in the garden on the paved patio we are practising to find postural stability on the ground, balancing the body and get a feeling of the breath and flow at a place where there is a solid and safe ground surface which also is protected in between the hedges and a greenhouse. In the daytime there is not much activity on the path so then you can feel safe there.

At the other rehab garden, the lawn is used for the same type of grounding exercises by the physiotherapist and it is often combined with guiding the participants in some standing stretches. Other staff members are also guiding the participants in exercising standing stretches when they are having a break from doing other activities in the garden. Both the physiotherapist and other staff members are on those occasions using the nearest available spot on the lawn when guiding the participants in the standing exercises, hence there is no need to make the effort of leaving the current place in order to switch between activities. There is also a newly built seating area with a fire pit on the outskirts of the garden which is used for exercises while standing on gravel when there is not enough time for doing the exercises in the forest. When there is enough time for doing a longer exercise, the physiotherapist has a place in the nearby forest which is described as a sort of “outdoor room”, used for Basic Body Awareness exercises while standing. It is a medium sized glade upon a height with a flat ground covered with leaves. The physiotherapist is focusing on grounding techniques when doing exercises while standing in the glade, in order to release tensions in the participants' bodies.

It is really special to be standing on a yielding ground...it is much focus on finding your feet and legs and to release load (onto the ground)...creating an awareness

There are old trees surrounding the glade and the physiotherapist expresses the great advantage in doing exercises while standing in an environment where the big trees can serve as good examples of both rooting to the ground and finding the centre line when stretching straight and high up towards the sky.

To be outdoors and ground yourself on the real ground creates another feeling than being indoors on a floor, watching the big trees and their roots, you are helped by the surrounding nature, finding the centre line while watching the surroundings, it makes it easier to understand that the trees are also doing like this, finding the straightest way up, and that trees are really demanding strong roots to be able to stand.

The other physiotherapist who conducts a forest walk called a Forest Bath also has a special place which is used for standing contemplation on how a big tree is growing onto a big rock while it is spreading its roots all the way to the surrounding ground and managing to stay straight during the hardest conditions, facing the hard wind upon the cliff.

And then the question arises, how can a tree grow like this? It is so fascinating, you could expect it to fall at any time

Standing exercises like practising weight transfers can also be used as a transition into walking exercises, creating awareness of how to shift the body weight by using the feedback of the forest floor. Grounding techniques while standing are used by both of the physiotherapists as the first exercise on Nature Walks and Forest Baths when entering the natural environment in the forest by the rehab gardens. They are both using a small glade surrounded by old trees upon a height where they gather the participants for preparation prior to the walk, by exercising grounding techniques: getting in contact with the ground, their bodies and perceiving the surrounding natural environment with all of their senses, perhaps finishing the exercise with a slow 360 spin. Both glades have a smooth but quite soft forest floor consisting of a lot of oak leaves which makes a rustling sound with every small movement of the participants and one of the physiotherapists makes an example that the participants attention could be instructed to focus on for example movement in the surrounding nature.

It is different from time to time but on a day like this there could be a focus on movement – the trees are moving in the wind and there are birds flying in the air.

Both physiotherapists are stopping at several places along the way during a typical forest walk. It can be premeditated stops at the usual places or spontaneously chosen places. The physiotherapist who is conducting Nature Walks in the company with a nature guide explains that sometimes the stops could be for example, at a quite dense part of the forest and then you will have to adjust the physiotherapeutic exercises accordingly, interacting with the natural environment. The exercises at each stop are also adjusted according to the status

of the participants, e.g. if the participants are very tired at one of the stops, the physiotherapist is guiding them in a standing relaxation exercise.

If I am feeling that the participants are very tired, I have done a standing relaxation exercise. To ground yourself and find the centre line, where you do not have to tense yourself. To just stand and breath can be very exciting, to find that small movement that occurs when you are trying to stand still and trying to find your way back to the centre. Then it could be more of a standing relaxation in which you suddenly discover that you can stand and rest at one place.

The exercises while standing are also adjusted according to the status of the participants, due to different seasons. The physiotherapist concludes that they are generally practised in shorter time and with the use of more movement during the cold period of the year in order to keep the participants warm.

The physiotherapist doing Forest Baths is practising the awareness of the participants and the use of their senses by inviting them to stop at several places along the way: standing and experiencing the nature, focusing on different senses e.g. feeling the moss on the ground and the bark of a tree, stirring the ground with a stick at different places to smell the different fragrances of the soil, smelling the junipers and the buds on the pine trees, tasting blueberries and juniper berries, watching dead wood on the ground and imagining the shapes of dragons or wondering about who has made the round holes in the dead wood. Standing and watching the dead wood, buds and flowers can help the participants to reflect on the cycle of life and also the connection to different seasons of the year.

It is sprouting, blooming and withers. I am thinking about including the whole cycle and that it is just the same as with us – sometimes we are like a withered leaf and sometimes we feel like a little sprout.

The Forest Bath includes several stops along the way in order to reflect on different natural patterns in the landscape, e.g. in the mosses, on the leaves and the branches against the sky. The physiotherapist also makes one stop at a place where nature has covered up most of the signs from human activity on the rocky ground of a hillside, which is also suitable for storytelling about how people have laboured with quarrying stones which were used for construction works in the nearby town. There are many different types of natural environment along the way in the forest and at another place the physiotherapist invites the participants to choose their own tree to connect with by standing close to the tree, feeling its surface with their hands and perhaps holding it in their arms, hugging it, talking to and listening on it – which is expressed as very appreciated by the participants. At the end of the Forest Bath the physiotherapist uses a special place for standing exercises consisting of big slow motions aimed at opening up the chest and breathing in the grand view of the bay in a safe environment up on a cliff, with the protection of the forest behind the participants.

And then we arrive at this place and the participants usually draw breath and exclaim: the ocean! We stop at this place doing tai chi inspired movements, using the view – which is like a revelation after having been walking in the forest

On the way back to the rehab garden they make a stop along the way on the outskirts of the forest and stand as quiet as possible at one place, listening to the rippling sound of a small stream.

If we are standing really still and listening, we can after a while sometimes hear the rippling sound of a small stream

Exercises While Walking in a Spacious Environment

Exercises conducted while walking are mostly done in the spacious environments of a walk path, field and forest. Since the lawn is pretty small in one of the rehab gardens and there can be up to seven participants in a group, there is the use of a nearby, larger field with apple trees which is preferred (especially at apple-blossom) for exercises like walking backwards, when there is otherwise the risk of participants colliding.

At this place we can also practise, especially during apple-blossom which feels special. Here we have been doing many exercises while walking, walking backwards and forwards. It can feel good to have a lot of space sometimes also and there are usually not many people in the surroundings either.

At the other rehab garden the physiotherapist exemplifies that it can also be useful with a small lawn when doing interactive exercises like setting boundaries and following each other e.g. in an exercise where the participants are to practise on how to relate to themselves and each other when deciding when, where and how they are to walk between two different places on the lawn.

It is mostly interactive exercises out on the lawn, one is called Nu Färdig (Now Done) in which the participants practise on how to relate to each other, setting boundaries to themselves and each other.

When they are not leaving the garden, the lawn is also used for practising walking with different feelings, tensions, balance and pace. The physiotherapist is otherwise using a nearby walk path for exercises like that, enabling walking on different types of ground surfaces: asphalt, gravel, sand, grass and sometimes also snow and ice.

The other physiotherapist is using a nearby glade in the forest for practising creating an awareness of how it feels to walk on different ground surfaces in the forest: like leaves, sticks and rocks. The practice starts with a grounding exercise to create an initial awareness of the participants feet and its contact with the forest ground.

It can start with focusing on the feet and releasing weight on them and that you are feeling the contact with the whole foot (on the ground). Then they get to walk around for a while and it is much more interesting walking there (in the forest) where you can try a lot of different ground surfaces than walking in a room.

The physiotherapist further elaborates that the glade in the forest is also used for other exercises while walking, aiming at teaching the participants to move more effortlessly, releasing tensions in the body while getting inspired by the movement of other animals. It is often more suitable using the glade for exercises while walking instead of standing still at one place when the weather is cold, hence creating more movement and relaxation to keep the participants warm.

There are a lot of exercises aiming at finding and balancing the right tension in the body and moving with the least possible tension, getting inspired by animals, to move with more variation and try to find relaxation in the moment. There is often more movement in the exercises when practising outdoors due to the cold weather.

The physiotherapist has also experienced that it is useful in cold weather to combine the walking exercises used in Basic Body Awareness together with the Nature Walks so that the participants can keep on moving in between the different exercises.

Sometimes there is a focus on doing Basic Body Awareness walking exercises while doing the Nature Walks: practising on walking and exploring feet and legs, walking and focusing on starting the movement in the centre of the body and then finding the movement of the arms... I am guiding the participants during the Nature Walk so that it becomes a walking exercise in Basic Body Awareness which then could be done although it is cold weather.

The physiotherapist is conducting the Nature Walks in the company of a nature guide who uses the different seasons to create suitable themes for the different stops along the way. The physiotherapist is connecting the exercises according to the theme of the present walk e.g. the sensibility of the butterflies antenna could be used symbolically for walking exercises like creating an awareness of the surroundings when walking backwards. The trails are very smooth and easy to walk on since they have recently been prepared for mountain bikes but the physiotherapist tells me that there are rarely any mountain bikes around when they are having their Nature Walks.

In order to be able to take part in the Nature Walks, one of the inclusion criteria for being accepted to the rehab program is the full ability to walk on different grounds. The program consists of weekly, two hour walks in the forest and the physiotherapist remarks that some of the participants are training their stamina before starting the program in order to be able to participate in the Nature Walks. The two hour Nature Walks are done on trails at a moderate pace with planned stops along the way and also if it is necessary for the participants to take a rest in the hilly terrain. The physiotherapist mentions that the other physiotherapist working in the same rehab garden takes it slower during the Nature Walks than

the interviewee does and explains that the preference of choosing a higher pace is due to an experience of participants disliking when the pace is too slow.

At the other rehab garden the physiotherapist is conducting a forest walk, called a Forest Bath. It is a two hour walk out in the terrain at a very slow pace which is done at the end of the rehab program. The physiotherapist explains that it is done at the end of the period since it could be problematic walking so slowly with participants who might be too stressed in the beginning of the rehab program.

During the rehab period, the participants have reduced their stress, opened up to each other and to themselves and gotten into a process which has taken them to the stage where they can feel all right with walking so slowly.

The physiotherapist describes that the Forest Bath out in the terrain is much appreciated by the participants who have the muscular strength and full range of movement but do not have the physical and mental stamina to go out on a forest walk by themselves.

They are so low in both physical and mental energy...they have the muscular strength and a full range of movement but they do not manage to get out on their own.

The Forest Bath starts off track, out in the terrain so that it facilitates a slow pace with as many impressions as possible. After starting with a standing grounding exercise, the participants are invited to focus on different senses during the walk, beginning with hearing the sounds of leaves rustling and sticks breaking under their feet when slowly walking through the forest. There are also sometimes the sound of human activity which is also used as an exercise in acceptance of the things we can not change.

I am using the part of the forest with the most sticks and leaves for listening exercises. It is usually often bird sounds, like a woodpecker, bird song and such. Then there is of course the sound of e.g. a motorcycle far away which you will have to learn to accept and I am talking about that too.

The walk is mostly conducted in silence, except for the stops along the way which are used for standing reflections on perceiving and experiencing the surroundings. On the way back to the rehab garden after the Forest Bath the physiotherapist also continues to keep the focus of the participants on the surroundings and if the participants sometimes start talking too much about stressful things in everyday life, then the physiotherapist uses something along the way to shift the focus and calm the participants.

And then we are watching, when walking by a cherry tree –oh, there is a cherry tree and it looks like that—....and if they start talking too much about everything, which often happens after such a spiritual and sensual experience, if they start talking about the stress of everyday life, then I can use something like a hush to restore the calm on the way back – it works

Result Summary

The result in this thesis shows that the general positive effect of the outdoor environments in physiotherapeutic exercises for rehabilitating work-related stress is due to the sensory stimulation of the natural environment, which is helping the participants to reduce stress and hence enable self-awareness. More specifically the result shows the importance of a protected environment when conducting exercises while lying down and that a calm environment plays the most important part in the seated exercises. The protected and calm environment is of importance when conducting the basic exercises while standing, whereas it can otherwise be more beneficial with the impressions of the natural environment in the forest. The spacious environments in the adjacent forest, walk path or field are best suited for the exercises done while walking, except for the most interactive exercises which benefit from the small enclosed rehab garden. The exercises while walking are the least dependent on the weather conditions and the exercises in standing positions can also be done during shorter intervals even if the weather conditions are more demanding i.e. windy, rainy or low in temperature. The seated exercises and especially exercises while lying down are highly dependent on favourable weather conditions and are hence often conducted in sheltered environments such as in a greenhouse, conservatory or inside a villa.

Discussion

The general positive effect of using natural environments when rehabilitating work-related stress can seem obvious and somewhat exerting to try and explain for the physiotherapists who are used to working in these environments and see how it is affecting the participants. It can be argued that the general preference for natural environments due to our biology and evolutionary history has already been vastly discussed (Wilson 1984) and proven as an important factor when rehabilitating work-related stress (Pálsdóttir et al. 2018). This is also the case regarding the general preference of environmental features which have been important during human history, like prospect and refuge (Appleton 1975), e.g. in savanna landscapes (Orians 1986) and the environmental qualities of shelter, natural, serene and cohesive in stress rehabilitation (Pálsdóttir et al. 2018; Stoltz & Grahn 2021).

The result of this master thesis is however focusing on describing the specific qualities of outdoor environments which has a positive, as well as a negative effect in combination with the different types of physiotherapeutic exercises when rehabilitating participants suffering from work-related stress. It can for example be one of the physiotherapists use of a specific place upon a high cliff, surrounded by the forest and displaying a grand view over a bay, which according to Appleton (1975) has the positive qualities of prospect and refuge, hence standing in sheltered yet viewing open qualities according to the PSDs (Stoltz & Grahn 2021). These qualities can create a safe yet exhilarating feeling when practising the standing physiotherapeutic exercise of big tai chi like motions, opening the chest and breathing deep, slow breaths which reduces stress and promotes the feeling of having endless possibilities – freedom! If the environmental qualities of both prospect and refuge, described by Appleton (1975) are beneficial in this type of exercise while standing, it could be compared to an example of the single presence of the sheltered quality of a refuge and the absence of viewing the open quality i.e. prospect, which is expressed by the physiotherapists as positive for enabling the feeling of safety in the vulnerable position when conducting the exercises while lying down. It is exemplified by both of the physiotherapists as using a sheltered cliff surrounded by the forest and also by the use of a sheltered spot in the rehab garden when conducting these exercises. Both physiotherapists express the importance of feeling safe and being without disturbances when practising exercises while lying down, which is also manifested by the statement that one of them mainly uses the indoor environment and that they are both planning for making a more sheltered environment in the rehab garden which would be positive for the practise of these exercises. The importance of the sheltered quality in a rehab garden when rehabilitating work-related stress has previously been described by Pálsdóttir et al. (2018) and Stoltz & Grahn (2021) and a sense of security is seen as the most important factor for stress reduction in

a supportive garden (Ulrich 1999). The sense of security is described by Ulrich (1999) as a prerequisite condition for the other stress-reducing resources e.g. privacy and a sense of control. The need for privacy and a sense of control could be difficult to accommodate in the studied rehab gardens since they are quite small and display more of an open quality according to the PSDs (Stoltz & Grahn 2021). It could however be better facilitated in for example the individual seated exercises by creating small spaces where the participants could be alone in a serene environment, minimising the social quality and enabling a social quietness, which has been identified as an important factor when rehabilitating work-related stress (Pálsdóttir et al. 2018). In a larger rehab garden this can be accommodated by placing a bench in between a double hedge and using a gravel path, which would enable the participant to hear if someone is coming and thus also give them the option of walking away in another direction (Cerwén et al. 2016). The sheltered quality of a refuge is described by the physiotherapists as important in the seated group exercises, which are conducted together with all of the participants on the patio, in the conservatory, greenhouse or inside the villa. One of the physiotherapists also describes the stress-reducing and restorative effect of doing seated exercises on the patio listening to bird sounds. The protected and calm environment on the patio, dominated by natural sounds creates a serene quality which has been identified as one of the most important restorative qualities when rehabilitating work-related stress (Pálsdóttir et al. 2018; Stoltz & Grahn 2021).

Regarding exercises while standing, one of the physiotherapists expresses that it is beneficial with the small and sheltered environment in the rehab garden when practising the basic grounding techniques on a hard surface of the patio, whereas the other physiotherapist rather uses the nearby glade in the forest due to the opportunity to practise in a more natural environment, on a soft forest ground and with the help of watching big trees rooting to the ground while reaching in a straight line up to the sky. Both sheltered and natural environments are regarded as stress-reducing and restorative when rehabilitating work-related stress (Pálsdóttir et al. 2018; Stoltz & Grahn 2021). As such the choice between using the sheltered garden or the natural environment in the forest may be done according to the present needs of the participants. It can be beneficial with a sheltered environment when the participants are in need of a safe and undisturbed environment, practising the basic grounding techniques while it can otherwise be more beneficial to use the natural environment in the forest.

Since the sheltered rehab gardens are quite small, both physiotherapists are using the larger and cohesive environment in the forest for exercises practised while walking. Being able to walk in a cohesive environment is regarded as an important factor in stress rehabilitation (Pálsdóttir et al. 2018) and the feeling of being away in an environment which has a sufficient extent are considered important factors for a restorative environment (Kaplan 1995). During the forest walks, the physiotherapists encourage the participants to practise perceiving the

serene quality of the surrounding natural environment which according to Kaplan (1995) enables the restorative effect of soft fascination. At several stops along the way the physiotherapists introduces exercises like standing and perceiving e.g. patterns on mosses, leaves, trees stems and branches which all have a moderate complexity of natural fractal patterns and hence enables soft fascination (Van den Berg et al. 2016). Soft fascination is also achieved during the exercises while standing in the forest listening to natural sounds such as the wind in the trees, birds and the rippling of a small stream (Cerwén et al. 2016; Ratcliffe 2021). The exercise of standing and perceiving different natural smells while touching different plants in the forest has also been shown to have an stress-reducing effect when rehabilitating work-related stress (Pálsdóttir et al. 2021).

The result of this thesis has shown that a fundamentally important factor for managing physiotherapeutic exercises outdoors is the weather conditions. The physiotherapists have stated that many of the participants, suffering from stress-related illness are feeling easily cold which is also confirmed by other studies (Pálsdóttir et al. 2018). According to one of the physiotherapists, the wrong weather conditions can be very distracting for the participants and easily reduces the focus on the intended exercises. It has however also been suggested by one of the physiotherapists that tough weather conditions can be used in some exercises of awareness and acceptance – but otherwise the exercises are best practised seeking the sheltered quality inside a greenhouse, conservatory or even indoors.

Conclusion

Drawing general conclusions is always difficult when conducting qualitative research and in this thesis it has been done by discussing and comparing the physiotherapists descriptions in the results section with previous studies on environmental qualities and rehabilitation of work-related stress.

Generally it is concluded that the impressions of the natural environment reduces stress and enables self-awareness for the participants while doing the physiotherapeutic exercises. Enabling the participants' stress reduction and self-awareness in the exercises is generally highly dependent on favourable weather conditions and is especially important in the exercises while lying down and being seated and is of somewhat lesser importance in the exercises while standing and walking.

The specific environmental qualities which are especially important in the different types of physiotherapeutic exercises are the sheltered quality while lying down, the serene quality while being seated, the natural quality while standing and the cohesive quality when conducting exercises while walking. The environmental qualities which are described in this thesis are however present to a greater or lesser degree in a combination with each other and in order to achieve a

stress reducing and restorative effect, it is important to consider the spatial relationship of the specific qualities e.g. when standing in a place with sheltered qualities while viewing an environment which is displaying open qualities i.e. prospect and refuge.

The results section of this thesis displays in more detail the spatial combination of the specific qualities of outdoor environments and how they are affecting the different types of physiotherapeutic exercises when rehabilitating work-related stress. It is intended to directly reflect the descriptions of the physiotherapists and hence enable the use of this thesis for guiding other physiotherapists in using outdoor environments for rehabilitating work-related stress. Furthermore it can be of help using these descriptions and themes in case of replicating this study without having the educational background of a physiotherapist, since they do not necessarily need to be interpreted by a physiotherapist. An obvious limitation with this study is the amount of interviewees, due to a lack of physiotherapists working with stress rehabilitation in outdoor environments – which also is a sign of the importance of conducting more research in this area.

Previous research has been conducted on the preferred qualities of stress-reducing and restorative outdoor environments used in multi professional interventions regarding the rehabilitation of work-related stress. I would however argue that there is a need for further research on the effect of specific environmental qualities on different types of physiotherapeutic exercises for rehabilitating work-related stress since it would better support physiotherapists when using outdoor environments. It would hence be valuable to conduct participant evaluations of the effectiveness of the different physiotherapeutic exercises and the effect of the specific qualities of the outdoor environments by e.g. using Profile of Mood States (Sonntag-Öström et al. 2011). The evaluations would be best performed at several occasions during longer periods, in order to collect data regarding changing environmental qualities due to different seasons and weather conditions.

Gaining more knowledge about interventions regarding work-related health problems could reduce a lot of human suffering and a significant economic loss in most countries. Work-related stress is becoming a more common health problem in Sweden and it is thus of importance to gain more knowledge about interventions regarding work-related stress. Physiotherapists are one of the most common medical professions working with rehabilitation of work-related stress in Sweden, which is why it is important to learn more about how physiotherapists can use the stress-reducing and restorative outdoor environment.

References

- Abrahamsson, K., & Tenngart, C. (2003). *Grön rehabilitering: Behov, möjligheter och förutsättningar för en grön rehabiliteringsmodell*. Växjö: LRF Sydost.
- Adevi, A. A., & Mårtensson, F. (2013). Stress rehabilitation through garden therapy: The garden as a place in the recovery from stress. *Urban forestry & urban greening*, 12(2), 230-237.
- Appleton, J. (1975). *The experience of landscape*. Chichester: Wiley.
- Arbetsmiljöverket (2019) *Arbetsrelaterad dödlighet – delrapport 2*. <https://www.av.se/globalassets/filer/publikationer/kunskapssammanstallningar/arbetsrelaterad-dodlighet-rap-2019-4-del-2.pdf> [20-09-21]
- Bengtsson, A., & Grahm, P. (2014). Outdoor environments in healthcare settings: A quality evaluation tool for use in designing healthcare gardens. *Urban forestry & urban greening*, 13(4), 878-891.
- Virginia Braun & Victoria Clarke (2006) Using thematic analysis in psychology, *Qualitative Research in Psychology*, 3:2, 77-101,
- Brinkmann, S., & Kvale, S. (2015). *Interviews: Learning the craft of qualitative research interviewing*. Sage Publications.
- Cambridge Dictionary (2022). *Meaning of quality in English*. <https://dictionary.cambridge.org/dictionary/english/quality> [14-06-22]
- Cerwén, G., Pedersen, E., & Pálsdóttir, A. M. (2016). The role of soundscape in nature-based rehabilitation: A patient perspective. *International journal of environmental research and public health*, 13(12), 1229.
- Dolling, A., Nilsson, H., & Lundell, Y. (2017). Stress recovery in forest or handicraft environments—An intervention study. *Urban forestry & urban greening*, 27, 162-172.
- European Environment Agency (2022) *Environmental Quality*. <http://www.eea.europa.eu/help/glossary/eea-glossary/environmental-quality> [14-06-22]
- Folkhälsomyndigheten. (2020). *Stress*. <https://www.folkhalsomyndigheten.se/fu-stress/> [20-09-21].
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.
- Glise, K., Ahlborg, G., & Jonsdottir, I. H. (2012). Course of mental symptoms in patients with stress-related exhaustion: does sex or age make a difference?. *BMC psychiatry*, 12(1), 1-11.
- Jonsdottir, I. H., Nordlund, A., Ellbin, S., Ljung, T., Glise, K., Währborg, P., & Wallin, A. (2013). Cognitive impairment in patients with stress-related exhaustion. *Stress*, 16(2), 181-190.
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge university press.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of environmental psychology*, 15(3), 169-182.

- Khoury, B., Lecomte, T., Fortin, G., Masse, M., Therien, P., Bouchard, V., ... & Hofmann, S. G. (2013). Mindfulness-based therapy: a comprehensive meta-analysis. *Clinical psychology review*, 33(6), 763-771.
- Küller, R. (1991). Environmental assessment from a neuropsychological perspective. In T. Gärling, & G. Evans (Eds.), *Environment, cognition and action: An integrated approach* (pp. 111-147). Oxford University Press.
- Köpsén, S., & Sjöström, R. (2020). Patients' experiences of a stress-management programme in primary care. *Journal of Multidisciplinary Healthcare*, 13, 207-216.
- Larsson, E. (red.). (2020). *Gröna Rehabs modell: vid stressrelaterad ohälsa*. (Upplaga 2). Lund: Studentlitteratur
- Lavesson, L. (2013). A pilot study of Rosen practitioners' experiences receiving a modified form of Rosen method bodywork in a garden setting. *RMIJ*, 6(1), 5-16.
- Lynch, K. (1960). *The image of the city*. MIT press.
- Nixon, Ashley E., Mazzola, Joseph J., Bauer, Jeremy , Krueger, Jeremy R. and Spector, Paul E. (2011). Can work make you sick? A meta-analysis of the relationships between job stressors and physical symptoms', *Work & Stress*, 25: 1, 1-22
- Orians, G. H. (1986). An ecological and evolutionary approach to landscape aesthetics. In: Penning-Roswell, E., Lowenthal, D., (Eds.), *Landscape meanings and values* (pp. 3-25). Routledge.
- Pálsdóttir, A. M. (2014). *The role of nature in rehabilitation for individuals with stress-related mental disorders. The Alnarp Rehabilitation Garden as supportive environment*. Doctoral Thesis No. 45. Acta Universitatis Agriculturae Sueciae, Swedish University of Agricultural Sciences, Alnarp. <http://pub.epsilon.slu.se/11218/>
- Pálsdóttir, A. M., K Stigsdotter, U., Persson, D., Thorpert, P., & Grahn, P. (2018). The qualities of natural environments that support the rehabilitation process of individuals with stress-related mental disorder in nature-based rehabilitation, *Urban Forestry & Urban Greening*. 29, 312–321
- Pálsdóttir, A. M., Spendrup, S., Mårtensson, L., & Wendin, K. (2021). Garden smellscape—experiences of plant scents in a nature-based intervention. *Frontiers in Psychology*, 12, 667957.
- Ratcliffe, E. (2021). Sound and soundscape in restorative natural environments: A narrative literature review. *Frontiers in Psychology*, 12, 963.
- Roxendal, G. (1985). *Body awareness therapy and body awareness scale: treatment and evaluation in psychiatric physiotherapy*. Doctoral Thesis, Department of Psychiatry, University of Gothenburg.
- Sahlin, E. (2014). *To stress the importance of nature*. Diss. Alnarp: Swedish University of Agricultural Sciences.
- Sahlin, E., Ahlborg, G., Matuszczyk, J. V., & Grahn, P. (2014). Nature-based stress management course for individuals at risk of adverse health effects from work-related stress—effects on stress related symptoms, workability and sick leave. *International journal of environmental research and public health*, 11(6), 6586-6611.

- Sahlin, E., Ahlborg, G., Tenenbaum, A., & Grahn, P. (2015). Using nature-based rehabilitation to restart a stalled process of rehabilitation in individuals with stress-related mental illness. *International Journal of Environmental Research and Public Health*, 12(2), 1928–51
- Sonntag-Öström E, Nordin, M, Slunga Järholm L, Lundell Y, Brännström R, Dolling A. (2011). Can the boreal forest be used for rehabilitation and recovery from stress-related exhaustion? A pilot study. *Scandinavian Journal of Forest Research* 26, 245-256.
- Sonntag-Öström, E., Stenlund, T., Nordin, M., Lundell, Y., Ahlgren, C., Fjellman-Wiklund, A., ... & Dolling, A. (2015 a). "Nature's effect on my mind"—Patients' qualitative experiences of a forest-based rehabilitation programme. *Urban Forestry & Urban Greening*, 14(3), 607-614.
- Sonntag-Öström, E., Nordin, M., Dolling, A., Lundell, Y., Nilsson, L., & Slunga Järholm, L. (2015 b). Can rehabilitation in boreal forests help recovery from exhaustion disorder? The randomised clinical trial ForRest. *Scandinavian Journal of Forest Research*, 30(8), 732-748.
- Stoltz, J. & Grahn, P. (2021). Perceived Sensory Dimensions: An Evidence-based Approach to Greenspace Aesthetics. *Urban Forestry & Urban Greening*. 59. 126989.
- Tveit, M., Ode, Å., & Fry, G. (2006). Key concepts in a framework for analysing visual landscape character. *Landscape research*, 31(3), 229-255.
- Ulrich, R. S. (1983). Aesthetic and affective response to natural environment. In *Behavior and the natural environment* (pp. 85-125). Springer, Boston, MA.
- Ulrich, R. S. (1999). Effects of gardens on health outcomes: theory and research. In: CC Marcus and M. Barnes (Eds.), *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York: John Wiley, 27-86.
- Van den Berg, A. E., Joye, Y., & Koole, S. L. (2016). Why viewing nature is more fascinating and restorative than viewing buildings: A closer look at perceived complexity. *Urban forestry & urban greening*, 20, 397-401.
- Västra Götalandsregionen (2022). Sök annan grön rehab. <https://www.vgregion.se/ov/grona-rehab/sok-gron-rehab/> [01-02-2022]
- WHO (2020) *Protecting Workers' Health*. <https://www.who.int/news-room/fact-sheets/detail/protecting-workers'-health> [20-09-21]
- Wilson, E. O. (1984). *Biophilia*. Harvard University Press.
- Währborg, P., Petersson, I. F., & Grahn, P. (2014). Nature-assisted rehabilitation for reactions to severe stress and/or depression in a rehabilitation garden: long-term follow-up including comparisons with a matched population-based reference cohort. *Journal of Rehabilitation Medicine*, 46(3), 271-276.

Acknowledgements

I would like to thank everyone who has helped me with this thesis, especially my opponent, supervisor and examiners. A special thanks to my wife and children for their patience and support!

Appendix 1: Interview Guide (In Swedish)

Jag är en heltidsstuderande på masterprogrammet Outdoor Environments for Health and Well-being vid Sveriges Lantbruksuniversitet. Intervjun ingår i den studie jag ska göra för min masteruppsats. Syftet med denna intervju är att undersöka utemiljöer och dess användning i olika typer av fysioterapeutiska insatser vid rehabilitering av arbetsrelaterad stress. Intervjun kommer att spelas in och skrivas ut av mig personligen. Den uppskattade tiden för intervjun är ca en till två timmar. Det är frivilligt att delta i intervjun och även att när som helst avbryta intervjun och dra tillbaka deltagandet utan ytterligare förklaring. Intervjumaterialet kommer att användas till masteruppsatsen och behandlas konfidentiellt. Det är bara jag och min handledare som kommer att ta del av det faktiska intervjumaterialet. I all vidare bearbetning av materialet och vid presentationen av resultat så avlägsnas personers namn och andra personliga uppgifter. Materialet från intervjun kommer att analyseras och presenteras i resultatet. Det kommer att vara beskrivningar av utemiljöer och aktiviteter vid rehabilitering av arbetsrelaterad stress samt de beskrivningar och tankar som framkommer under intervjun som gäller vilka aktiviteter som genomförs och hur de genomförs.

Intervjufrågor

1. Jag skulle vilja att vi började med att du berättade lite om dig själv och ditt arbete.
2. Kan du beskriva ditt arbete med deltagarna så detaljerat som möjligt?
3. Berätta så detaljerat som möjligt om:
 - 3.1.dina aktiviteter tillsammans med deltagarna?
 - 3.2.de olika platserna där du utför aktiviteterna?
 - 3.3.de olika platsernas påverkan på aktiviteterna?
4. Under intervjun så har vi pratat om...
5. Vill du fråga eller lägga till något innan vi avslutar intervjun?

Tack för deltagandet!

Appendix 2: Consent for Participation (In Swedish)

Medgivande för deltagande i masteruppsats i miljöpsykologi

Studenter genomför intervjuer i samband med sina masteruppsatser i miljöpsykologi inom programmet Outdoor Environments for Health and Well-being vid Sveriges Lantbruksuniversitet. Vi söker ditt samtycke att spela in intervjun samt att använda materialet i det resultat som kommer att presenteras i uppsatsen. Vid all analys av intervjumaterialet kommer namn på personer och platser att tas bort. Presentation av materialet kommer att ske som teman. Intervjun är helt frivillig och kan avbrytas när som helst.

Tack på förhand!

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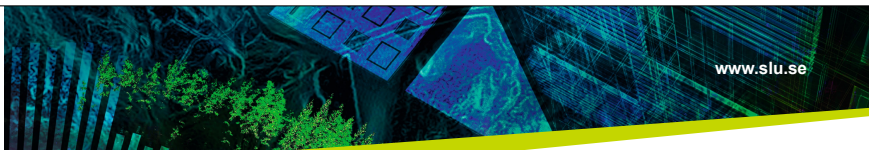

Tel: _____

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Signatur: _____

Appendix 3: Poster

www.slu.se

Outdoor Environments for Physiotherapeutic Rehabilitation of Work-Related Stress


– Lying Down in Shelter, Sitting in Serenity, Standing in Nature and Walking in Coherence

CONCLUSION

The different types of physiotherapeutic exercises are dependent on specific environmental qualities which enables self-awareness due to the general stress-reducing effect of the natural outdoor environment.

The Specific Environmental Qualities

The specific environmental qualities which are especially important in the different types of physiotherapeutic exercises are the sheltered quality while lying down, the serene quality while being seated, the natural quality while standing and the cohesive quality when conducting exercises while walking.



The sheltered environment of a cliff in a forest glade.
Photo by Peter Lundkvist

Lying Down in Shelter

The result shows the importance of a protected environment when conducting exercises while lying down.

Sitting in Serenity


A calm environment plays the most important part in the seated exercises.

Standing in Nature

The protected and calm environment is of importance when conducting the basic exercises while standing, whereas it can otherwise be more beneficial with the impressions of the natural environment in the forest.

Walking in Coherence

The spacious environments in the adjacent forest, walk path or field are best suited for the exercises done while walking, except for the most interactive exercises which benefit from the small enclosed rehab garden.




The natural environment in a forest glade.
Photo by Peter Lundkvist

Weather Conditions

The exercises done while standing and especially while walking are the least dependent on the weather conditions, whereas the seated exercises and especially the exercises while lying down are highly dependent on favourable weather conditions and are hence often conducted in sheltered environments such as in a greenhouse, conservatory or inside a villa.

Further Research

It would be valuable to conduct participant evaluations of the effectiveness of the different types of physiotherapeutic exercises and the effect of the specific qualities of the outdoor environments



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