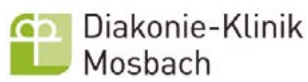
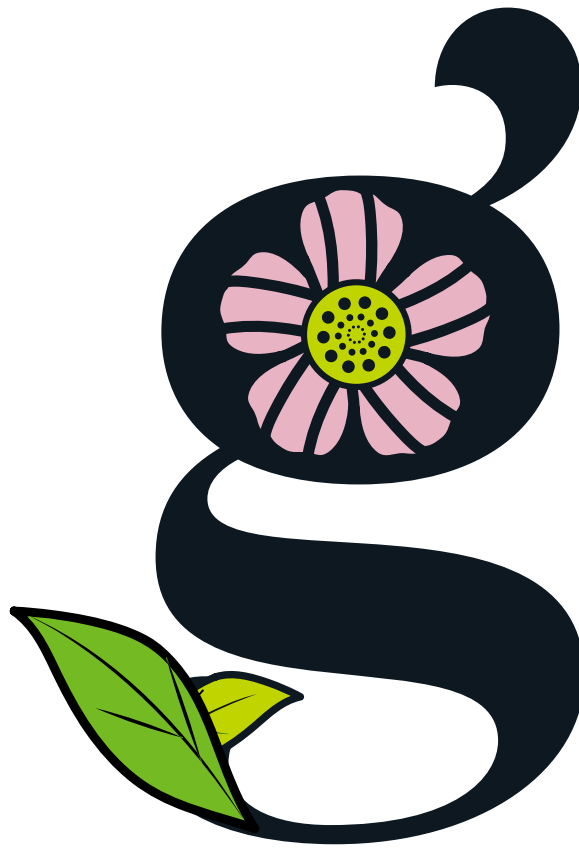


HEALING gardener[®]

Methodological guide



Co-funded by
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Introduction

By Karin Palmlöf

Humans benefit from nature in many ways. It not only provides us with air, water, food, raw materials and protection, but it is also good for our health and well-being. As a young woman who participates in a therapeutic horticulture program (a therapy that uses the relationship between plants, nature and people to achieve holistic wellness), says, “I have anxiety attacks and sleep very badly. My involvement in the garden has helped me get to know myself better and act as I am. The plants calm me down, they are not in a hurry, they don’t judge me. They just need someone to take care of them. That’s my job. Being here working with someone who supports me, it calms me down. I always sleep better when I’ve spent the day in the garden.”

This paper will explain the methodology of Horticulture and Social and Therapeutic Gardening -a discipline of its own within nature-based therapies. It will talk about the theories, hypotheses and research that have led to demonstrate the effectiveness of therapy and interventions in the garden and/or orchard. We will review how it has evolved over time and how it is applied today.

RELATIONSHIP OF THE HUMAN BEING WITH NATURE. SCIENTIFIC FOUNDATIONS AND EVIDENCES THAT SUPPORT THE THERAPIES BASED ON NATURE.

Contact with nature produces a calming effect by reducing stress and anxiety levels*. However, it is not only the relationship between plants and people that helps to improve mood, but also being exposed to natural sunlight. This is a powerful stimulator for the segregation of serotonin, also known as the hormone of happiness. Since when its levels increase in the neuronal circuits, it generates sensations of well-being, relaxation, satisfaction and increases concentration and self-esteem. Being outdoors, working in the orchard and garden, exposed to light and the different beneficial bacteria found in nature, helps to have a stronger immune system.

However, human beings have been gradually disconnecting and losing this relationship with nature, especially in the new generations. This was stated by journalist and writer Richard Louv in his book “Last Child in the Woods”, where he warns about the negative effects it can have on physical and psychological health. He describes it as “nature deficit disorder”. It is not yet classified as a disease, but more and more studies are showing how it affects health. For example, decreased use of the senses, attention problems, increased obesity and respiratory diseases, lack of vitamin D, etc. We are becoming an “indoor” generation, spending less and less time outdoors. According to one study, 90% of our time is spent indoors.

Nowadays, many scientists and other health professionals see contact with nature as a “tool” to improve people’s overall health. Claiming that it is a cheap and accessible solution for most people, it only needs the support of the authorities. As in the United Kingdom where NHS started a pilot Nature Prescriptions project back in 2017 and has continued to expand it ever since. The study carried out prior to the implementation of this service demonstrated the savings to the health system. This has been a milestone for nature-based therapies. For this reason, some of the theories and hypotheses that support these therapies are reviewed below:

The biophilia hypothesis

The word biophilia means love of life and was coined by evolutionary biologist Edward O. Wilson of Harvard University in his book *Biophilia* (1984). The hypothesis indicates that contact with nature is essential for human psychological development. The theory holds that, during the millions of years in which they closely related to their environment, Homo sapiens developed a deep and congenital emotional need to be in close contact with other living beings, be they plants or animals. Satisfying that vital desire, says Wilson, is as important as forming relationships with other people. Just as we feel good when socializing, we find peace and refuge when we go to a forest, the sea or are with our pets.

Attention Restoration/Recovery Theory (ART)

One of the most influential theories is Kaplan and Kaplan's Attention Restoration/Recovery Theory (1989), where nature is considered to play an important role in the recovery from mental fatigue. Nature allows us to rest, think calmly and recover our over-saturated and over-stimulated minds from day-to-day life, which is vital for good health, as well as improving our ability to refocus and be more effective when we reconnect with our daily routine.

According to this theory, a restorative environment or nature is one that is made up of these four elements:

- **Fascination** for the natural world that is full of interesting objects. Let's think of leaves, flowers, insects, etc., that capture our attention without any effort, as if we were meditating.
- **Being far away** is the sensation of escaping from our routine to a space that, however small, induces us to change.
- **Extent**, the environment gives us the feeling of being in a completely different world so we "lose ourselves" in it, whether in small gardens or vast open landscapes.
- **Compatibility** is the affinity of human beings with nature, the environment, which means that we feel calmer and more at ease in a natural environment than in a man-made artificial one.

Stress Reduction Theory (SRT)

Another theory that helps explain the benefits of being in contact with nature is Roger Ulrich's Stress Reduction Theory. It states that nature not only has an effect on the mind, but can also help the body heal.

In his best known study, "View Through a Window May Influence Recovery from Surgery" (1984), Ulrich investigated the effect of views from a hospital window on patients recovering from abdominal surgery. He found that patients whose rooms overlooked trees had an easier time recovering than those whose rooms faced a wall of the building. Patients who were in visual contact with nature left the hospital faster, had fewer complications and required fewer painkillers than those forced to "look at the wall".

Familiarity with these theories, in addition to studies and research in this area, helps to better understand nature therapies.

1. Doing, Being, Becoming, Belonging: Occupational Science in the Therapeutic Garden

Occupation in the therapeutic garden is a compilation and balance between its four dimensions: doing, being, becoming and belonging. A balance among the four dimensions is needed for the individual to achieve a state of health and well-being. Each dimension is interrelated and influence each other when performing occupations. The four dimensions fluctuate throughout lifetime, depending on place, occupation, and time (Hitch et al., 2014). 'Doing' is closely linked to occupation and its realization. It is the performance of a meaningful activity. 'Being' refers to the notion of being true to ourselves and our abilities in what we do. It is linked to our self-esteem. 'Becoming' refers to the idea of future being, our personal transformation and the attainment of skills (Wilcock, 1998). 'Belonging' is the feeling of external acceptance and interpersonal connections (Wilcock, 2006).

The therapeutic garden provides the ideal environment for the development of the four concepts. Occupational therapists support the individual to facilitate doing, being, becoming, and belonging to or being part of the therapeutic garden:

Doing

In the garden, participation in or various activities (meaningful to the user) are 'done' that the environment and the cycles of nature allow us, such as horticulture, relaxation, physical activities, among others. This therapeutic performance in occupations promotes different aspects of the user's individual health and well-being.

Being and becoming

We can 'be' true to ourselves without judgement or limitations in the garden. For many people, simply being in the garden is enough. They can sense well-being by being themselves and contemplating the environment, its beauty and its changes (Leaver and Wiseman, 2016). Likewise, the therapeutic garden enables personal transformation through occupation in the garden. We have the possibility of 'becoming' what we want and accomplishing the change we need to achieve well-being or health. For example, a user may participate in group therapies to 'become' a social being. Nature makes us reflect and derive metaphors from our experiences, for example about how we sow the seeds and then "become" a flower, could be a metaphor for how we can lay the foundations in order for our mental health to "flourish".

Belonging

The therapeutic garden also invites the user to ‘belong’ or be part of a community or place where they feel comfortable and safe. According to Damiant and Waterhouse (2010) in their analysis of practice, the therapeutic garden promotes health and well-being in a meaningful way through belonging to the garden. They specify what the most appropriate characteristics for the therapeutic garden environment to promote belonging are: positive affirmation, elements of choice and self-determination, availability of private and common spaces, physically and emotionally safe environment (Rebeiro, 2001). In group gardening we receive positive affirmations, we become experts, productive members of the community, when people inside and outside the garden community enjoy and recognize the results of gardening work. In the therapeutic garden, users have the opportunity for choice and self-determination when they choose the activity that is meaningful to them. Within the activities they can make garden planning decisions, and the activities are adapted to their needs. The garden environment also offers a space that fosters a feeling of independence, privacy and security. The user can work independently, taking time for personal reflection. The user feels safe within the privacy offered by the most secluded places in the garden. We also have the opportunity to communicate our emotions, socialize and become part of a group or community. Private spaces, along with the occupational therapist’s therapeutic use of self, contribute to the creation of an emotionally stable environment. (Damiant and Waterhouse, 2010)

2. The use of metaphors and sensory stimulation

According to the Merriam-Webster dictionary a metaphor “is a figure of speech in which a word or phrase denoting one kind of object or action is used in place of another to suggest a likeness or analogy between them”. In therapeutic gardening we can use an object, activity, or idea and treat it as a metaphor. We can use a plant or gardening activity as a symbol or as something that stands for or suggests something else by reason of relationship, association, convention, or accidental resemblance.

The therapist can use metaphors as a therapeutic tool in order to bring an alternative viewpoint or

frame of reference to the service user’s situation (Bonazzi, 2021). By using metaphors found in nature or gardening we can help the service user view their mental or physical health condition in a new light, contributing to the transformation of their behavior or frame of mind. Just as Daniela Silva Bonazzi (2021) explains, “A metaphor serves as a lens through which we look at a particular situation by embedding it within a second separate context which becomes the lens through which we are now able to see the original situation in a new light.” The metaphor offers us a new perspective or point of view on the original situation, allowing the individual to redirect behaviors or ways of thinking.

We can extract metaphors from different moments in the gardening or horticulture process. For instance, Bonazzi (2021) explains that the process of making a plant soil mix can be used as a metaphor to help service users grasp the importance of preparing a “good foundation” for optimal growth and development. “A good plant substrate contains soil which gives structure to the plant, compost or humus to provide nutrients and microorganisms, sand which allows water to flow through the soil, and peat moss which retains water, provides organic matter and prevents compaction” (Bonazzi, 2021). Humans need a “good foundation” as well, such as a balanced diet, an education, balanced leisure, productivity and self care occupations, along with physical and mental health and wellbeing, in order to grow and flourish in whatever way is meaningful for that individual.

Weeding is another common activity in gardening that can be used as a metaphor, for instance, for those in a mental healthcare setting. “Weeds are fast growing plants usually considered undesirable because they deplete the soil from nutrients needed for desirable plants – a weed is “a plant in the wrong place”” (Bonazzi, 2021). These plants can be compared to negative or intrusive thoughts that need to be “cleared” in order to let air or oxygen in, have a clear mind and move forward.

The garden as a tool for mindfulness

When setting up our therapeutic garden, one of the most important features is the sensory garden which offers sensory stimulation to the service users. This intrinsic characteristic of plants, trees and flowers gives us an ever-present intervention. The sensory stimuli a therapeutic garden provides can be used with many user groups and be used as a tool to reach a variety of therapeutic goals, i.e., cognitive goals (reminiscence

therapy), emotional, and others. One intervention that stands out is the use of sensory stimulation as a mindfulness practice.

According to the Berkley University Greater Good Magazine, mindfulness means “maintaining a moment-by-moment awareness of our thoughts, feelings, bodily sensations, and surrounding environment, through a gentle, nurturing lens” (Greater Good Science Center, 2023). Sensory stimulation in the garden affords a more grounding experience during mindfulness practice. The sounds, smells and tactile information gently connect the user to the environment around them.

There are five senses that can be stimulated for the purpose of practicing mindfulness within the sensory garden setting: smell, touch, taste, hearing, and vision.

Smell is one of the most memorable senses. It transports us to another place, but also has the unique ability of transferring our attention immediately to it, distracting us from intrusive or circular thoughts. Breaking invasive thought patterns of worries or daily tasks through an enticing or pleasant smell can help the service user connect to the present moment. Smells help bring our attention to the “now” in a calming manner. Bonazzi (2019) expresses how smelling herbs helps bring children to the present moment, before engaging in the planned activity. Touch also helps us stay in the present moment; when we feel a soft leaf or sticky sap, our attention is brought to that object and our curiosity is sparked. When it comes to stimulating our sight, the healing garden is always providing beautiful, interesting or strange objects to look at. A plethora of studies have demonstrated that viewing nature presents physiological relaxation benefits. “Visual contact with flowers, green plants, and wooden materials have positive effects on cerebral and autonomic nervous activities compared with the control”(Int J Environ Res Public Health, 2019). When it comes to sound, the natural sounds that are present in a garden also provide healing and wellbeing during mindfulness sessions. For example, the sound of rain against the roof or birds chirping in a tree bring us to the present moment and a calm state of mind. Taste is also a great tool to bring us to the present moment through joy, surprise or even disgust. It also allows for reminiscence when recalling a certain flavor that transports us to a memory of a feeling, event or person.

Mindfulness in the Healing Garden can also be used as a tool to cope with sensory overload for children or adults with autism or sensory processing disorder. Using mindfulness with the calming and soft natural stimulation of the Healing Garden can help those with sensory processing difficulties to self-regulate.

3. Preparation of a monthly and yearly schedule

When preparing the yearly and monthly schedule for our Healing Garden service we must always consider several factors that will guide the interventions. These factors include:

- the local climate, sowing/planting/harvesting calendar,
- yearly traditions/custom,
- type of service user group,
- individual/group objectives, and
- time and scheduling constraints.

How to plan a yearly and monthly schedule:

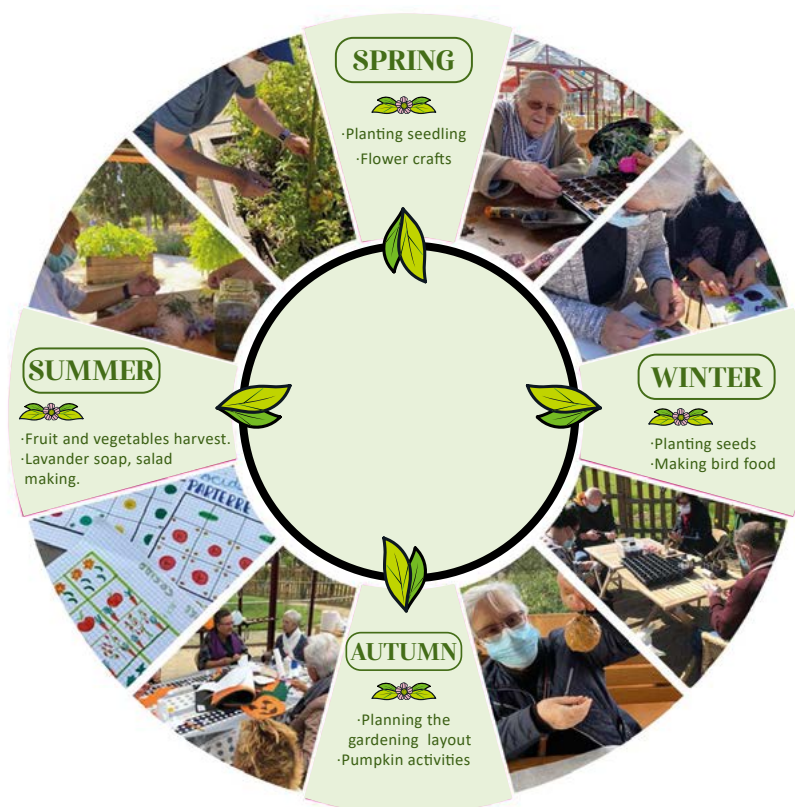


Image 1. Planning seasonal activity in the therapeutic garden. Elaborated by Jardines Terapéuticos Palmiöf

The activities or interventions that will be carried out throughout the year will be affected by the local climate, for this reason we must plan our yearly schedule around the different seasons. Each country and region will have a different climate and the planting and harvesting calendar will vary. It is important to understand when it is appropriate to sow the seeds that will eventually be planted and later harvested, when pruning or other garden maintenance jobs should be done throughout the year. Once we are aware of when these jobs or activities should be done we can schedule them into our yearly activity plan. For example, in Spain, specifically in the region of Madrid, seed sowing can be carried out during the months of January, February, and March. Plants will begin to need to be transplanted around March, April and May, or some during the autumn months. Harvesting will happen from June to September/October and other plants during the winter season. It is also possible to sow and plant in the autumn months in order to harvest in winter or beginning of spring. Some plants such as chard, spinach, cabbage resist frost and are a great variety of vegetable to provide horticulture activities in slower months of the year, horticulturally speaking. We can plan to carry out these activities and integrate them into our intervention plans. Another aspect to take into consideration when it comes to climate is the times of the year when it is coldest and hottest, as it will be necessary to carry out different activities depending on the temperature, or whether it rains or snows. During rainy, snowy or cold seasons activities should be organized in an indoor setting such as a greenhouse or classroom.

In addition to the climate, we can include local customs and festivities when planning the yearly schedule. Each country and region has traditions that are significant to the community. It is important to include these celebrations into the planning as a way to provide temporal orientation and connect local traditions that are well known and essential to community members to the natural cycles of the garden. By incorporating local festivities, we are allowing members of the therapeutic garden to feel like they are part of a community.

Season	Spring	Summer	Fall	Winter
Horticulture tasks	-Sowing/planting seeds -Planting seedlings	-Harvesting	-Harvesting -Preparing soil for winter	-Planning planting season -Preparing garden for planting
Weather	Mild, rainy, possible frost	Heat, possibility of extreme heat, dry	Warm, cooling, possible rain	Freezing temps, cold, snow
Festivities	Easter, Earth Day	Summer Solstice	Halloween	Christmas, Carnival

Image 2. Example of combining, horticulture and festival activities with the season.

Climate is not the only factor that can affect how we prepare our annual and monthly activity plan. We must consider when the service users will be participating in the therapeutic activities in order to determine the type of activities that will be scheduled throughout the year/month. When organizing one must consider participation continuity, the months of the year the service users will participate as well as the number of hours they will be taking part in the service throughout the week/day to day. For example, if the service users plan to take part in the therapies for the full year, they will be able to take part in activities that are prolonged in time, such as the planification of the yearly planting and harvesting cycles. However, if the service users only participate for a limited time in the year, may it be 1-2 months or only sporadic sessions throughout the year, then the activities must be adapted to this time limitation. For instance, nature-based crafts are a great option when we have limited time for the participants to carry out the activity. If we want to plan a limited time horticulture activity transplanting seedlings into bigger pots is a great alternative. The service users can then take the plants home or they can stay in the garden to be then transplanted to the ground with another group.

When each month approaches, we must refine the weekly activities depending on the weather patterns and how the planting and harvesting season has gone so far, as well as consider the weekly participation schedule of each group or individual.

See Appendix A and B for example of monthly preparation that includes therapeutic objectives.

4. Designing and preparing the session

In order to design and prepare a therapy session there are several factors to take into consideration.

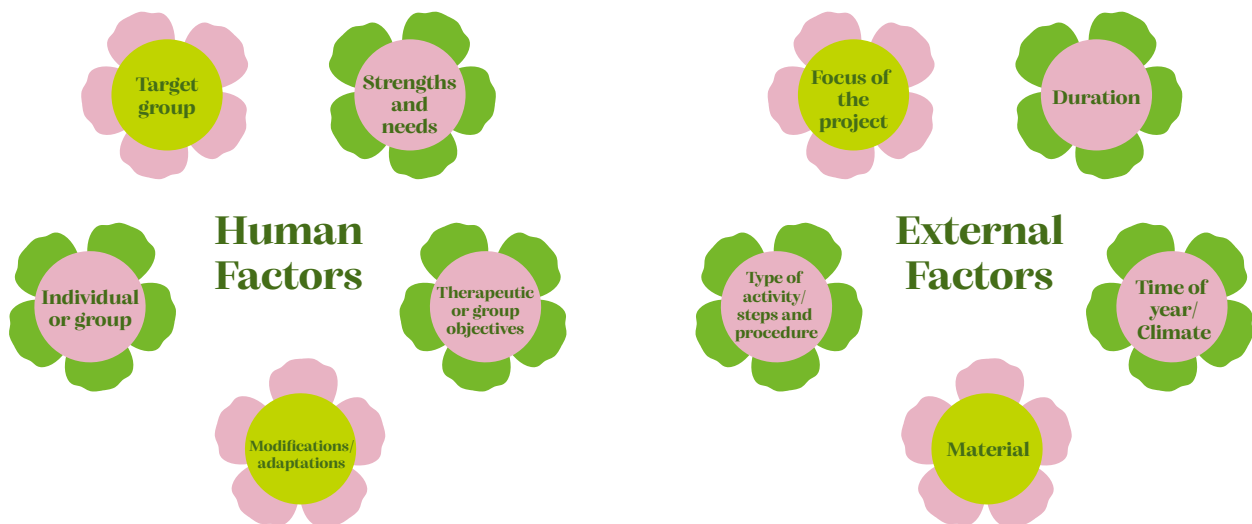


Image 3. Factors to consider when preparing a session.

a) Target group:

The population group you are working with will directly impact the type of activity and how we organize the session. We must consider the age group, possible interests, and general strengths and needs of the population in order to design the session in a way that is appealing and motivating to that particular population. Nevertheless, the majority of the activities we prepare for the session can be carried out by most populations. We may choose one activity that is geared towards several populations, but the focus will be different depending on the type of service users. For instance, if the activity we have chosen is planting tomato plants, the objectives for older adults will be different compared to those of a group of primary school children with learning disabilities. The older adults may have more experience and knowledge about gardening, they may have memories associated with the smell of a tomato plant, and therefore we will be able to do reminiscence therapy. The group of primary school children will most likely work on fine and gross motor skills, it is possible they will be learning a new skill as they probably have never planted a tomato plant. They will be acquiring new knowledge. The focus will undoubtedly be play and learning.

b) Cultural considerations:

The population participating in the healing garden activities will belong to a particular culture. Even within the same country, different regions, generations and social backgrounds have varying beliefs and values. The design of the therapies must take the aforementioned factors into consideration in order to benefit the service users and appeal to their interests as much as possible. By analyzing what cultural considerations may affect the session we are preparing, we are also avoiding any insensitivities that may affect the participants negatively.

c) Individual or group session:

When planning a session, the activity and focus will need to be adapted if the session is with only one person or with a group. During individual sessions the therapist can pay close attention to the needs and more easily and quickly adapt or grade the activity. During group sessions the therapist's attention will be divided and will not be as personalized. For this reason, it is important to consider having more than one therapist or professional during group sessions, especially if the objectives are therapeutic (individualized), as one therapist will find it harder to assess and observe the individuals in a larger group.

d) Areas of Application:

Therapeutic, Vocational or Social/recreational focus. Depending on the type of focus we will implement the type of evaluation, and objectives will vary.



Image 4. Areas of application of Horticulture Therapy

Social/Recreational: The focus falls on the general well being, quality of life and social participation of the service user. Gardening is mainly used as a leisure activity.

Therapeutic: Therapeutic programs work on maintaining one’s health and or assisting with recovery. It is person centred and specific individual health goals are defined. A healthcare professional must oversee the therapeutic process.

Vocational: Programs designed to develop the skills that will lead the service user to find employment. The tasks are adapted and graded in order for the learner to be able to acquire these skills and utilize them in a productive work setting in the future. Vocational rehabilitation refers to retraining or learning horticulture and gardening skills the service user has lost due to injury, illness or disability in order to access a job in this field again or for the first time.

e) Duration:

This factor refers to the amount of time allocated to each session.

Long sessions will allow you to organize an activity that requires several steps or various activities in one day, and to add one or more breaks to let service users disconnect and restore their attention. On the other hand, shorter sessions only allow for one activity or two short activities. Activities will have to finish in the time allocated or be able to continue the next session.

45 MINUTES	1,5 HOURS	4 HOURS
<ul style="list-style-type: none"> One type of activity or two short activities 	<ul style="list-style-type: none"> Two activities or one long activity 	<ul style="list-style-type: none"> Three activities or one long activity. Scheduled breaks included
<ul style="list-style-type: none"> Horticulture or craft, informal colloquiums on a subject or mindfulness 	<ul style="list-style-type: none"> Horticulture or craft and mindfulness or informal colloquiums on a subject 	<ul style="list-style-type: none"> Horticulture, craft and mindfulness, colloquiom or one long horticulture or craft activity with relaxation breaks

f) Time of year/climate factors:

It is likely we have previously planned out our yearly and monthly activities based on the seasonal changes and climate factors specific to our region. However, there will be changes in the climate from year to year, and when we are getting closer to the week we have planned a certain activity the weather may not allow us to carry it out. For this reason, when preparing our sessions we may need to adjust and change the setting or activity.

EXAMPLE: We may have planned to plant our tomatoes in the ground in the first week of May, but the

weather forecast the week before tells us there will be torrential rain for the majority of the week making it very difficult for the groups to work outdoors. We will need to switch this activity for the one that was planned following week that can easily be done indoors, such as a craft.

g) Indoor or outdoor activities:

Flexibility is key when implementing a therapeutic garden program. Weather patterns can change in a matter of hours and having different indoor and outdoor activities at your disposal make it easier to always have a back-up when plans go awry. And planning indoor or easily transferred to indoor activities during the colder/rainer/hotter months is recommended. By implementing indoor sessions in our therapeutic garden we are also allowing for program continuity while incorporating all of the life cycles of the plants and garden.

EXAMPLE: We can use dried flowers we have planted and later gathered throughout the year to plan a Christmas wreath activity using dried plants and flowers.



h) Service user’s interests:

When we prepare a session it is important to take the service user’s needs into consideration. Interest checklists are great tools to figure out a person’s interest. Although a formal interest checklist exists, it may not suit your service. Creating a homegrown interest checklist that includes activity ideas that are relevant to the service will allow you to better define what an individual’s interests are in relation to the available activities in a therapeutic garden. Interest checklists can be carried out during the initial assessment.

i) Service user's strengths and needs:

In order to decide what interventions should be carried out, understanding the individual's or group's strengths and needs is essential. In a person centred service the focus is on what a person can do versus what makes them dependent. Therefore, similar to the 'Strengths Based Approach' in Occupational Therapy, by understanding their strengths we are empowering the person to take part in defining goals and finding support for the person based on their capacities. We must also understand the person's needs in order to better adapt and grade the interventions being carried out.

Strengths and needs are also defined when assessing the service users.

j) Individual(Therapeutic)/group objectives:

After assessing a group or individuals, group or therapeutic objectives will be defined. By catering our chosen activity for a session to a group or therapeutic goal we will be able to better achieve said goal. When preparing a session we must always keep the goals and objectives in mind, as well as the clinical reasoning behind the chosen activity. This way we will not deviate from the goal and will be able to carry out our therapeutic plan within the determined timeframe.

k) Choosing the activity:

Once the above factors are outlined, we can go ahead and choose which activity will be carried out. The activity must be appropriate and relevant to the climate, time of year, goals and objectives, target group, etc.

i) Material and tools:

When we have chosen the activity for the session we can begin to determine the necessary tools and material for the activity. Depending on the strengths, needs and objectives of the group or individual adapted tools may be needed in order for the service users to participate in the activity. It is important to consider the number of participants and prepare all material beforehand.

m) Procedure/steps:

Understanding the steps and procedure of the chosen activity will help us determine the time that needs to be allotted to said activity and possible adaptations and modifications. The occupational therapist in our service will also be able to carry out a full activity analysis in order to understand the demands of the activity and identify the physical and temporal needs, the required client factor and performance skill needs for the activity, and the therapeutic benefit of the activity.

n) Possible adaptations, modifications or grading of the activity:

To ensure that the activity fulfills its therapeutic purpose, it is essential for either an occupational therapist to provide support and guidance or for the occupational therapist themselves to grade and adapt the activity based on the needs and objectives of the service user. Grading refers to changing the complexity of what is to be performed, and adapting refers to modifying or substituting objects used in performing the activity.

Example:

Type of group	Adults with learning disability
Cultural considerations	Spanish
Individual or group session	Group session
Therapeutic, Vocational or Social/Rec:	therapeutic
Duration:	45 minutes, once a week, 11 months
Time of the year/Climate factors:	Beginning of Spring- Madrid, Spain
Service user's interests:	Horticulture and gardening, crafts, meal preparation, nature walks
Service user's strengths and needs:	Strengths: Very motivated to carry out activity Needs: Difficulty with sequencing, attention and concentration

<p>Individual or group therapeutic objectives:</p>	<p>General well-being</p> <p>Self-care (meal prep)</p> <p>Fine motor skills</p> <p>Cognitive: Sequencing, praxis(motor planning), language, attention, concentration</p> <p>Emotional/Mental health: Meaning and purpose</p>
<p>Activity:</p>	<p>Sowing cucumber seeds in a seedbed</p>
<p>Material:</p>	<p>Seedbeds, seeds, small shovel or large spoon with a thick handle, soil, watering can, small planting signs, permanent marker, green house</p>
<p>Procedure/steps:</p>	<ol style="list-style-type: none"> 1.Check appropriate clothes for gardening 2.Stretch 3.Ready to listen 4.Review and collect material needed, review instructions. 5.Fill seed bed with soil.....
<p>Possible adaptations, modifications or grading:</p>	<p>Small, light, thick handled or adapted shovel, seed dispenser, colorful popsicle sticks for indicating where to plant or where seeds have been planted.</p>

5. Assessment

Before initiating any intervention, the therapist must carry out an assessment. The therapist will collect general information about a group or individual. This includes physical, cognitive and mental health, as well as the person's strengths and needs. The assessment and type of information will also depend on the field of the professional that is working in the Healing Garden, i.e. occupational therapists, psychologists, physiotherapists, etc. This will influence the goals and objectives that are determined through the assessment. Each professional will identify the goals that are relevant to their area of expertise. These goals will guide the intervention and help the service user achieve greater health and well-being.


Not only must we assess the intrinsic factors that affect our groups or service users, we must also carry out risk assessments to ensure the service user is safe when carrying out all activities. For this assessment the therapist should identify what could go wrong, how could that happen and what would be the effect. The therapist must then analyze, how often is this effect likely to occur, how severe would be the effect, and what would be the cost of that effect. Once these factors have been identified and analyzed it is important to control how one will eliminate the risk/effect, how to avoid the risk/effect, and how to make the risk/effect less likely (College of Occupational Therapists, 2010).

In addition, the therapist will identify the individual's interests and meaningful occupations or those that are common to the group. Identifying these are essential for later curating our interventions as engaging in pleasurable tasks and activities (in terms of means or process) enables the client to move towards improved health, function or quality of life (in terms of end or outcome).




Areas of application:

There are three areas of application within the horticulture therapy model, social/recreational, therapeutic and vocational areas of application. The social/recreational area of application refers to a group setting, where the purpose of the intervention is geared towards general well-being. The therapeutic area of application focuses on the individual and their specific therapeutic goals and objectives based on individual cognitive, sensory, physical, and emotional strengths and needs. Vocational area of application refers to vocational rehabilitation needs and the promotion and development of work skills in a horticulture or gardening environment/job. The areas of application determine the type of assessment that will be used in the service as well.

SOCIAL / RECREATIONAL

 General assessment-informal.
General well-being





Examples

-  Warwick-Edinburgh Mental Well-being Scale (WEMWBS), Wellbeing tool for Youth
-  Informal Interview
-  QoI-AD

THERAPEUTIC AND VOCATIONAL

 Individual assessment-person centered.

Examples

-  SIPT
-  Movement ABC
-  Canadian Occupational Performance Measure
-  MOHO OSA (Self-assessment)

Social/recreational assessments evaluate the service user's general well-being, quality of life or general aspects of the group's health. The professional carrying out the assessment is looking to get an overall picture of the health and well-being of the group as a whole. Inversely, therapeutic and vocational assessments focus on the individual's strengths and needs, as well as specific details of the person's health. The assessment is person-centered, this means the therapist evaluates the details specific to the person, not as part of a group.



6. Defining Goals

One of the main purposes of the initial assessment is to define goals for the group or individual service users.

Areas of application:

Social/recreational goals

These goals are general or group objectives. The focus is on the group as a whole. Each service user is assessed and the information gathered allows the therapist to define the common objectives that have been identified. These goals are centred around quality of life, general well-being, common interests, and socialization

Therapeutic or vocational goals

Therapeutic or vocational goals are individual to each service user. These goals are specific health objectives related to the person's cognitive, physical, sensory and emotional health. The purpose of the therapeutic or vocational goals is to determine what aspects of the person's health, wellbeing or work skills need to improve or maintain through the activities carried out in the therapeutic garden setting.

Person Centred Approach:

Therapeutic or vocational goals must be person centred. This requires the inclusion of the patient and family in care decisions and respect for their views, transparent communication, and a comfortable care setting. A person centred approach supports the person, at the 'centre of the service', to be involved in making decisions about their life. The therapeutic goals therefore should take into account each person's life experience, age, gender, culture, heritage, language, beliefs and identity. The Healing Garden services should be flexible and supported to suit the person's wishes and priorities. When assessing and defining person centred therapeutic goals the focus should not only be on the person's needs but on their strengths.

By including the service user in defining their goals they're more likely to engage during sessions. When this happens, clients tend to get inspired by the therapy process which results in a higher chance they'll attend and follow through with their therapeutic gardening sessions. (Peterson, 2022)

SMART goals:

A SMART goal is an acronym for a goal that consists of five different essential factors: Specific; measurable; attainable; relevant; and time-based.

Specific: This section refers to the tangible outcome. What does the client want to do? For example: María will complete a 5-step task of sowing seeds in a seed tray.

Measurable: This section gives concrete data on the degree of the client’s performance. The measurable piece of a goal can come in many different forms: Duration (within five minutes); pain level (client reporting a maximum pain level of 4/10); portfolio collection (for something tangible the client created); client satisfaction.

Attainable: Here the therapist will consider how much time they have with the client along with their current level of functioning. Can the service user independently plan, calculate and measure where to plant? Or will they need visual and verbal cues in order to carry out the plantation?

Relevant: It is important to ensure that the service user wants to reach their goals. Motivation can have an enormous impact on progress. If it is unclear whether you client is motivated and the goal connects with their interests, share your goal ideas with the service user and ask for feedback.

Time-based: “within five days,” “at the time of discharge,” or “by April 1st, 2022.” The time given will vary by how many times a week/month/year the service user participates in the Healing Garden. (SAMHSA, 2023)

Long and short term goals

Therapeutic goals ensure a client is benefiting and progressing from their sessions. Planning goals and objectives as long- and short-term goals allows the therapist and client to track their progress, in addition to identifying when outcome measures should be assessed. A long-term goal is broad and highlights an overarching theme or goal for a client. Long term goals have a time frame of six months to a year. A short-term goal supports the long term goal. They are more specific and there will be multiple short-term goals that progressively lead to the achievement of the long-term goal.

Example:

Patient Information and history: Male, 50 years old, Spanish.

Developed agoraphobia while recovering from a complex motor bike accident. Unable to work due to physical disabilities as a result of the accident. Spent 6 years without leaving his home. Referred to the therapeutic garden by the mental health social worker. Does not have any income, depends on parents for food and housing. Cannot carry out any tasks outside of his home that require interactions with people or in crowded spaces.

Long-term goal:

The user will be able to participate in a horticulture group of 6 people, interacting and collaborating with their colleagues in different planting, sowing and care activities, within a year, without having to be absent due to anxiety symptoms. This will be achieved with weekly therapies and graduation from participation in group therapy.

Specific: *Specifies why the patient needs to achieve this goal, how they will do it, the time frame, and how it is measured.*

Measurable: *It is measured each time the number of colleagues increases and the user can participate without symptoms related to their anxiety disorder.*

Attainable: *It has an extended time frame to allow for many experiences in garden activities, both individually and in groups, as well as learning about symptom management in different social contexts.*

Relevant: *Relevant for an adult with an anxiety disorder who needs to seek meaningful activities in their daily life, learn new skills, and reintegrate into social environments*

Time-based: *This goal will be completed by the end of the year.*

Short-term goals:

- 1. Leave his home weekly and start to participate in therapeutic gardening activities in the garden individually, not in group setting. First day accompanied by social worker.*
- 2. Create a weekly routine and participate in meaningful activities in the therapeutic garden after one month.*
- 3. Participate in group activities after 2 months. Improve Social skills and meet people. Harry Will be exposed to social situations in a small group.*
- 4. Harry will take the initiative to come to the garden on his own even though he does not know his colleagues. He will participate in new social situations with unknown service users out of his own Accord after 4 months.*

7. Adapting and Grading

Adapting:

Adaptation refers to accommodating to a person's needs by doing something that makes doing an activity easier. This may require modifying or substituting the equipment, tools or techniques used to perform an activity. However, the end goal of the activity is always the same. The alteration made by the therapist or client to an object or environment is carried out in order to improve the client's ability to perform.

a) Tool adaptation

Example: Users with arthritis in the hands.

The therapist could provide tools with a curved, padded handle to protect joints from excess pressure

b) Environment adaptations

Example: User hypersensitive to auditory sensory input, difficulty concentrating.

The therapist could indicate carrying out the task in a quieter part of the garden, for instance an area that has intentionally been built for a more private use, surrounded by bushes that lessen harsh sensory stimuli.

In many ways the environment of the therapeutic garden is intrinsically adapted. For instance, raised flower beds or wide paths facilitate a wheelchair user's ability to carry out horticulture and gardening activities, as well as move around the garden with ease.

c) User positioning adaptation

Example: User with a knee or back injury. The therapist could indicate to the service user how to plant in a seated position in order to reduce pressure on the injured area.

Grading:

Grading is accomplished by increasing or decreasing the difficulty or demands of a task to achieve an end goal, such as changing the duration, intensity or materials. Generally, when a person wants to progress a skill you grade up and when it is too difficult you grade down (Optimum Life, 2022).

The therapist may divide a long task into smaller parts, organize material and tools by priority of use or allow more time to perform a task.

For example, when working with a service user with Autism Spectrum Disorder that has tactile defensiveness, the therapist could grade the activity by building up to the tactile exposure. They may start with only removing the plant from the seedbed, placing it in the ground and digging the hole without touching the soil. The next time the child might be able to touch the roots of the plant. The third time planting they may use gloves to push soil, and eventually be able to carry out the activity without a maladaptive response to the tactile sensory input.



8. Essential tools and gardening material

For sowing and planting

Kneeling bench: This bench is useful for those who cannot bend over while digging or raking. It is also made as a bench for those who need to rest or take breaks while working in the garden. The bench has handles incorporated in order to facilitate standing.

Adapted/ergonomic tools:

These tools include:

- thick handles to facilitate gripping
- ergonomic shape to allow for neutral wrist position
- forearm cuff for those who need more stability

Seed dispenser: For a more precise selection, distribution and allocation of seeds

Colored handle tools: For low vision or cognitive decline. High contrast with soil allows for higher visibility when identifying or searching for tools while gardening.

Light weight or small watering cans: For those who cannot carry weighted objects or have reduced range of motion in upper extremities. Also allows for more precise watering.

For plant and garden maintenance

Adapted/ergonomic gardening scissors and tools: Facilitate a more comfortable use of the scissors. Ideal for those with reduced strengths in hands/upper extremities or upper body. Allows for safe scissor use.

The following are images of adapted tools.

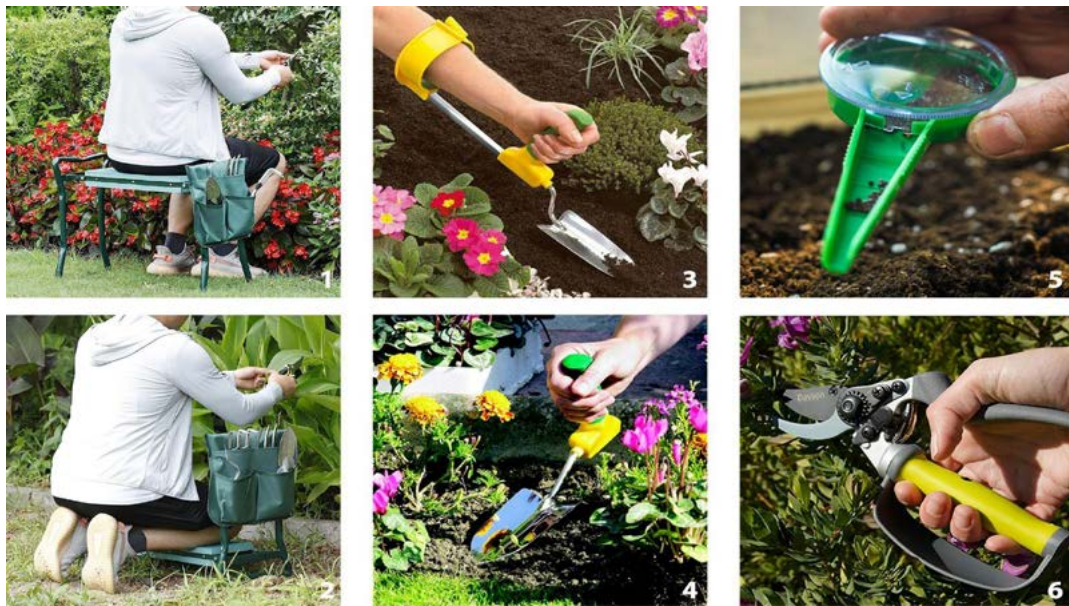


Image 6. Tools to adapt the task



9. Health and Security

Protocols to avoid accidents when using gardens y therapeutic activities

Environmental risks:

Being exposed to extreme temperatures could lead to heatstroke, hypothermia, sunburn, among other risks.

How to lower the risk:

- Make sure the temperature is appropriate for working outdoors
- Ensure there are shaded areas for taking breaks or working under
- Make sure you have a sheltered area with a heatsource when temperatures are low
- Wear appropriate clothing for both high and low temperatures (light colors, hat, gloves etc.)
- Use SPF sunscreen
- Do not work during the hottest hours of the day when the temperatures are highest during the hottest months of the year, especially inside the greenhouse
- Drink water and take regular breaks
- Have a thermos or hot drinks in winter

Pathways and surfaces

Falls risk due to irregular surfaces or changes due to climate (slippery from rain or ice), could cause injury.

How to lower the risk:

- Maintain paths clean and without wet patches. Avoid very wet soil
- Mark any uneven terrain
- Repair or redo paths that may be a fall hazard
- Use material when designing the garden and footwear that is non slippery

Contact with plants

Certain plants can irritate or hurt the skin, this could be due to allergies or the plant's toxic properties.

How to lower the risk:

- Select plants for the activity that avoid such risk
- Use visual cues (pictograms) to warn of risk
- Ensure the use of gloves
- Wash hands after contact with any irritative plants
- Pay special attention to plants that have thorns or are irritating
- Supervise and educate about plants that may be a potential risk
- Do not eat while carrying out any activity

Contact with dirt and soil

Bacteria, parasites or animal excrement could be present in the soil, leading to allergies, infection or illness.

How to lower the risk:

- Ensure the use of gloves
- Ensure the use of masks, particularly with presence of respiratory problems
- wash hands regularly
- Open container carefully due to risk of particle inhalation
- Wet the content to avoid dust
- Pay special attention to cuts or abrasions
- Do not eat while doing the activity

Use of tools and equipment

Incorrect use of tools or equipment could lead to physical injury, such as cuts or lesions.

How to lower the risk:

- Ensure the use of gloves
- Inform of the correct use, make sure the person has understood
- Supervise the person at all times
- Select activities and tools appropriate according to the ability of the participant

Bees, wasps and other insects

Bites or stings could lead to infection or allergies.

How to lower the risk:

- Pay special attention to allergies
- Have a first kit aid with medicines (arrange prophylaxis)
- Inform to move calmly

Physical activity

Lifting weight or carrying heavy items could lead to injuries, especially those in the lumbar region of the back.

How to lower the risk:

- Make sure the tasks are appropriate to the participants
- Teach to handle the load with an ergonomic position. always flex knees to carry any weight and may it never exceed what our conditions allow us
- Make sure that the size and weight of the tools is suitable for the participants

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Appendices

Appendix A

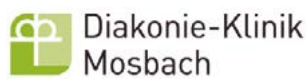
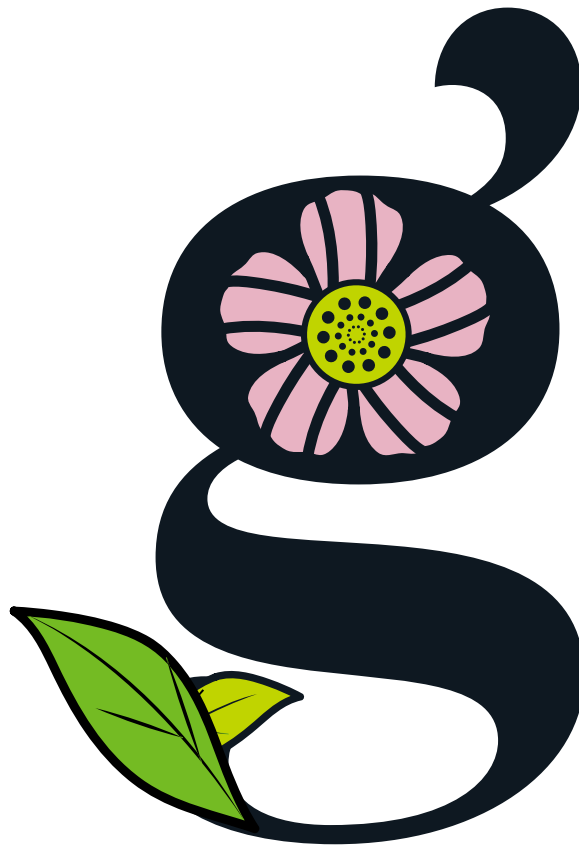
Season	Therapeutic activity	Description	Possible therapeutic goals				
			Healthy aging	Cognitive Stimulation (no cog. decline)	Cognitive Stimulation therapy (cog. decline)	Mental health	Social Integration
AUTUMN	Chestnut Season	Users celebrate the Magosto festival (chestnut festival from the north of Spain). During the session roasted chestnuts are prepared, recipes and customs related to chestnuts are collected. Users learn the history, customs and cultural meaning of this fruit.	Socialization, language and communication, fine motor skills: roasting and peeling, reminiscence, oral and written expression, temporal orientation, reflection on autobiographical experiences	Temporal orientation. Language and communication. Reminiscence, long-term memory, ideational praxis, Planning, organization, inhibition and anticipation. Attention and concentration. Sensory stimulation: gustatory, olfactory. reflection on autobiographical experiences	Temporal orientation. Language and communication. Reminiscence, long-term memory, ideational praxis, Planning, organization, inhibition and anticipation. Attention and concentration. Sensory stimulation: gustatory, olfactory reflection on autobiographical experiences	Improve self-perception of well-being. Discover new interests. Motivation. Carrying out meaningful activities. Create bonds with colleagues.	Socialization, creating and maintaining ties with peers and in the community, establishing interpersonal relationships. Sharing knowledge, memories and common interests
WINTER	Planning the sowing season	Users plan spring bed planting, calculate distances between plants and the orientation and placement of plants.	Executive functions, fine motor skills, temporal and spatial orientation, calculation, new knowledge and skills, communication, following instructions, socialization. Improving self-perception of health and well-being.	Executive functions, temporal-spatial orientation, calculation, new knowledge and skills, communication, following instructions, reasoning skills, praxis	Executive functions, temporal-spatial orientation, calculation, new knowledge and skills, communication, following instructions, reasoning skills, praxis	Motivation, discovering new interests and meaningful occupations. Recovery from psychological and physiological stress. Attention restoration. Improving self-perception of well-being	Socialization, collaboration, cooperation. Creating links in the community. Establishing a routine and participating in activities of common interest with other users.

<p>SPRING</p>	<p>The blooming season- Sayings, conversations and collecting roses.</p>	<p>Users collect roses to prepare natural air fresheners with them and talk about roses and their relationship and memories they have of them.</p>	<p>Executive functions, gross and fine motor skills, change of environment and adaptation to changes, temporal and spatial orientation, motor planning. Reminiscence.</p> <p>Improving the self-perception of health and well-being.</p>	<p>Language, communication, working and long-term memory, and executive functions. Temporal orientation.</p>	<p>Language, communication, working and long-term memory, and executive functions. Temporal orientation.</p>	<p>Motivation, discover new interests and meaningful occupations. Recovery from psychological and physiological stress. Attention restoration. Improving self-perception of well-being</p>	<p>Socialization, creating and maintaining ties with peers and in the community, establishing interpersonal relationships. Finding common tastes and interests. Collaborating and cooperating with peers.</p>
<p>SUMMER</p>	<p>Heated lavender sachets</p>	<p>Users harvest lavender that is season. They pick the lavender flower from its stem. They fill cloth bags or sachets with rice and lavender. They tie the bag with rope. Users talk about sleep hygiene techniques and the properties of lavender. They talk about the uses of this plant. Sensory relaxation can be carried out as well at the end of the session.</p>	<p>Fine motor skills. Motor planning, following instructions. Improving sleep quality. Relaxation and sensory stimulation.</p>	<p>Temporal orientation: season, month, date. Language and communication. Relaxation. Working memory, reminiscence: memories of using lavender (childhood memories). Planning, organization, inhibition and anticipation. Attention and concentration.</p>	<p>Temporal orientation: season, month, date. Language and communication. Relaxation. Working memory, reminiscence: memories of using lavender (childhood memories). Planning, organization, inhibition and anticipation. Attention and concentration.</p>	<p>Improve sleep quality/ insomnia. Recovery from psychological and physiological stress.</p> <p>Improve the perception of well-being. Relaxation and sensory stimulation.</p>	<p>Socialization, creating and maintaining ties with peers and in the community, establishing interpersonal relationships. Collaboration and cooperation.</p>

Appendix B

AUTUMN/ WINTER	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY
PLANT	Sunflower	Olives	Garlic	Fir tree	Borage	Lettuce
THERAPEUTIC ACTIVITY	Collecting seeds	Preserving Olives	Planting planning. Influence of the lunar phases	Christmas wreaths	New recipes	Sowing seeds
OBJECTIVES	<p>Communication, learning and language acquisition: Talking about cultivation, healing effects, symbolism, use in cooking, as bird food; Acquisition of gardening skills and knowledge: sowing, planting and supporting sunflowers. Gross motor skills, praxis: Holding flowers; harvesting seeds; hand-eye coordination, movement planning, force dosage: sowing</p>	<p>Communication about cultural, symbolic reference points, reminiscence: Family and regional recipes for the pickling dressing; healthy eating, food preparation. Motivation. Use of aromatic plants and garlic collected from the garden</p>	<p>Reflecting on autobiographical experiences.</p> <p>Talk about regional recipes; talk about the different names.</p> <p>temporal and spatial orientation</p> <p>hand-eye coordination, motor planning,</p> <p>gardening skills</p> <p>Communicating about cultural, symbolic and metaphorical reference points</p> <p>Olfactory sensory perception</p>	<p>Temporal orientation: winter and Christmas (Christmas tree, Advent wreath); Reminiscence on Christmas time; Communication about cultural, symbolic and metaphorical reference points; Fine motor skills; Visual sensory perception: Observe the change in color of the pine cones, the dark green of the needles, distinguish the male flowers from the female ones</p>	<p>Learning new skills: discover new recipes, nutritional facts. Talk about regional recipes. Communication about cultural, symbolic and metaphorical reference points.</p> <p>Fine and gross motor skills: harvesting borage</p>	<p>Spatial Orientation. Calculation skills: number of seeds, number of seedbeds, space in the seedbed.</p> <p>Praxis. Fine motor skills, pinch grip. Attention and concentration. Following instructions.</p> <p>Communication and language. Nutrition</p>
SPRING/ SUMMER	MARCH	APRIL	MAY	JUNE	JULY	AUGUST
PLANT	Lilacs	Elderflower	Roses	Lavender	Tomato/cucumber	
THERAPEUTIC ACTIVITY	Early spring bouquets	Elderflower cordial	Floral crafts	Lavender sachets	Tomato and cucumber salad	

<p>OBJECTIVES</p>	<p>Temporal orientation: blooms in early spring; Communicate about cultural, symbolic and metaphorical links: Talk about the symbolism of lilacs; its effect as a medicinal plant; Acquisition of gardening knowledge: Cuttings; motor skills, strength and resistance: Cut lilac flowers; tie a bouquet; cut wilted flowers.</p>	<p>Temporal orientation: Flowering in spring Olfactory sensory perception: Perceive the aroma of flowers; Gustatory sensory perception: Drink berry or flower juice; eat flowers; try cordial, etc. Hand-eye coordination, motor planning: Picking flowers, cutting lemon. Calculation and measurements. Olfactory and gustatory perception.</p>	<p>Communication and language; Culture and tradition in Madrid; Communication on cultural, symbolic and metaphorical reference points: on symbolism/history/use in natural medicine of the rose; Reflection on autobiographical experiences and experiences with plants by the user. Acquisition of gardening skills: propagation by cuttings; pruning.</p>	<p>Temporal orientation: blooms in summer; Promote attention and concentration, drive and motivation: Picking and drying flowers; Communication about cultural, symbolic and metaphorical links: Talk about names, what they mean; Promote sleep hygiene and relaxation habits. Olfactory sensory stimulation.</p>	<p>Self-care skills: healthy nutrition, food preparation, Knife and other kitchen utensil use. Communication about traditions and customs, traditional recipes. Acquire gardening skills: Make and apply natural pest control sprays.</p>	<p></p>
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HEALING
gardener

Methodological guide



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