

# Evaluation of the feasibility study of a Nature Based Social Prescription Intervention in Barcelona

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**TFG vinculat a la participació al projecte de recerca:**



**Re-imagining Environments for Connection and Engagement: Testing Actions for Social Prescribing in Natural Spaces**

MEMBER OF THE:



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## **Abstract:**

Nature-based social prescription (NBSP) increases social connectedness and positively influences physical and mental health by intrapersonal, interpersonal, and environmental pathways. It is plausible that different types and qualities of green spaces afford different experiences and so may work through multiple potential pathways to improve health and quality of life. The objective of this TFG is to explore the feasibility and acceptability of the study procedures regarding the nature-based activities and the measures to evaluate them, in the frame of the RECETAS feasibility study conducted in Barcelona.

A sample of 13 people, 8 allocated in the intervention arm and 5 in the control arm, were recruited. The intervention was "Circle of Friends" in nature to reduce loneliness. It had 8 weekly sessions of 2 hours. The control arm received an individual NBSP interview as usual care.

Results proved that the structure of the "Circle of Friends" intervention allows the implementation of nature-based activities and showed high acceptability of the nature-based activities. Both the Neighborhood attachment and aesthetics scale showed high acceptability. Nature Connection Index showed very low scores.

Some procedures were further developed after the feasibility and are applied in the RECETAS Trial, which will allow to bring solid evidence on how the "Circle of Friends" in nature intervention improves quality of life and what is the role of nature in it.

**Keywords:** nature-based social prescription, quality of life, perceived biodiversity, feasibility

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## **Resum:**

La prescripció social basada en la natura (NBSP) augmenta la connexió social i influeix positivament en la salut física i mental per vies intrapersonals, interpersonals i ambientals. És plausible que diferents tipus i qualitats d'espais verds ofereixin experiències diferents i, per tant, puguin oferir diferents i múltiples vies potencials per millorar la salut i la qualitat de vida. L'objectiu d'aquest TFG és explorar la viabilitat i acceptabilitat dels procediments d'estudi sobre les activitats basades en la natura i les mesures per avaluar-les de la prova pilot de l'assaig clínic de RECETAS a Barcelona.

Es va reclutar una mostra de 13 persones, 8 assignades al grup intervenció i 5 al grup control. La intervenció va ser "Cercle d'amics" a la natura per reduir la solitud. Va tenir 8 sessions setmanals de 2 hores. El grup control va rebre una entrevista individual de NBSP com a atenció habitual.

Els resultats van demostrar que l'estructura de la intervenció del "Cercle d'Amics" permet la implementació d'activitats basades en la natura i van mostrar una alta acceptabilitat de les activitats basades en la natura. Tant Neighborhood attachment and aesthetics scale van mostrar una gran acceptabilitat. El Nature Connection Index va mostrar puntuacions molt baixes.

Alguns procediments es van desenvolupar després i s'apliquen a l'assaig RECETAS, que permetrà aportar evidències sòlides sobre com la intervenció "Cercle d'Amics" en la natura millora la qualitat de vida i quin és el paper hi té la natura.

Paraules clau: prescripció social basada en la natura, qualitat de vida, biodiversitat percebuda, viabilitat

## 1. Background

People of all ages and abilities enjoy higher levels of health and well-being when they have nature nearby, in the form of parks, gardens, greenways, rivers, lakes, seaside, naturalized schoolyards and playgrounds as well as landscaping at home and work (Kaiser et al., 2014). Over the past decade, the evidence suggesting that nature contact is good for various aspects of physical and mental health has grown substantially (Gregory N. Bratman et al., n.d.). Framing nature as a vital support system for human health and well-being, are based on concepts of ecosystem services. Increased exposure to green space has been associated with indicators of good health (such as lower cortisol and blood pressure) and better self-reported health. Spending time in nature has also been associated with a lower risk of specific health conditions (including pre-term birth, low birthweight and type 2 diabetes) and reduced risk of death from all causes (WHO, 2016). Specially in dense and artificial urban environments, access to natural areas and the distribution of blue and green space are relevant features for quality of life, health and well-being (WHO, 2021). Rapid urbanization and changing lifestyles compromise our interactions with natural environments, having an impact on our health.

Nearby nature and nature-based activities in local, easily accessible, blue and green spaces offer important health and wellbeing benefits. People's connections with nature are also related to environmental quality as they strongly agreed that litter and neglected facilities were disincentives. This suggests that how blue and green spaces are managed will strongly influence people's choices to spend time in them. People most strongly agreed that showing them what nature is around them motivates them to conserve it (Britton et al., 2020).

Several mechanisms have been proposed to yield improvements in psychological and physiological outcomes in response to exposure to greenspace independently of increased physical activity. These diverse mechanisms include, but are not limited to: psychological stress reduction; attention restoration; exposure to cleaner air and secondary plant compounds (phytoncides); and improved social networks (Koselka et al., 2019). Social connectedness experienced while spending time outdoors with others is increasingly being explored as another avenue to reduce stress and encourage children's cognitive development (Leavell et al., 2019).

In this context, greening cities by promoting green or blue spaces, such as increasing tree canopy, not only would tackle issues as climate change and resource scarcity, air pollution, extreme heat, and other environmental issues, but may contribute to improving the quality of life, health outcomes, promote social connection, and achieving socially just cities for vulnerable populations (Haase et al., 2017).

Therefore, for urban dwellers, nearby nature, with social structures, can improve health and mental well-being and reduce loneliness. People need time in nature for its healing benefits and its role in allowing people to interact in nature. Investments in nature-based solutions and green infrastructure that address rapid urbanization and its adverse consequences on environmental systems in our cities, can be harnessed for health and well-being even in times of health emergencies. Moreover, living in a socially cohesive society ensures equal opportunities for all to achieve their full potential in life and natural spaces where people live, work and play have the power to foster social cohesion (Marlier & Atkinson, 2010).

**Loneliness** is the perception of feeling alone, even if surrounded by people, because of a mismatch between the quantity and quality of the social relationships that we have, and those that we want (Perlman & Peplau, 1981). Loneliness is a growing public health concern due to its impact on morbidity and mortality by being as dangerous to one's health as smoking or obesity: it reduces people's lifespan, and it is associated with chronic diseases such as cardiovascular disease, diabetes, cerebrovascular disease, and as well as anxiety, depression, cognitive decline (Hawkey & Cacioppo, 2010; Luanaigh & Lawlor, 2008) and mental well-being (Holt-Lunstad et al., 2017)(Holt-Lunstad et al., 2017). Loneliness

knows no geographic, economic, cultural, and social boundaries and affects all age groups, while being crossed by inequality axes such as social class, gender, disability, age and place of origin. Attempts to address loneliness so far have been mostly person focused and weak, or ineffective, so there's a need to shift the locus of intervention from individuals to the community context (Astell-Burt et al., 2022).

**Social prescription** is a non-medical community referral approach to connect individuals with community resources to support wellbeing (Jopling & Howells, 2018; Martino et al., 2017). The applications of social prescribing are diverse and can be used to benefit any condition that might be improved through behavior change, increasing activity, and increasing connectedness—all three being related (Leavell et al., 2019). **Nature-based social prescribing** (NBSP) has been defined as a social prescription that specifically include access to nature as one of the main components. Nature-based experiences can facilitate dynamic processes of social or interpersonal interactions (Fullam et al., 2021; Rogerson et al., 2016).

Nature-based social prescription increases social connectedness and influences physical health and mental well-being by certain intrapersonal, interpersonal, and environmental pathways. Involving how people feel when experiencing these places, and what impact living near them can have on mental and physical health and well-being. The increased attention to everyday nature significantly increased overall sense of connectedness and pro-social orientation (Passmore & Holder, 2017). Emerging research shows that spending time outdoors with others can reduce feelings of loneliness (Julie Morgan, 2018, 2019) (Adams & Morgan, 2018; Mygind et al., 2019). It is plausible that different types and qualities of green spaces afford different experiences and so may work to reduce different forms of loneliness and its concomitants through multiple potential pathways, both in general and in people with particular life circumstances (Astell-Burt et al., 2022).

Therefore, nature-based social prescribing (NBSP) offers a novel socio-environmental innovation to reduce loneliness by creating the social and environmental infrastructure needed to support social and community cohesion (Leavell et al., 2019) while offering a pathway to the overloaded health care system which cannot sufficiently address loneliness.

In Catalonia, the prescription of nature is also an axis of work of the Table "Health and Nature", which has health and nature institutions such the Sub-Direcció General per la Promoció de la Salut, from Generalitat de Catalunya, Government of Catalonia. In both initiatives, the prescription is made from the Map of Assets and Health of Catalonia, which includes assets related to physical activity, culture, volunteering or participation in associations and also the interaction with green spaces and nature, such as healthy itineraries in the Natural Parks of Catalonia, forest baths, etc. There's a Guide to prescribing community assets of the Social Prescription and Health Program, to facilitate the implementation of social prescription and to improve the approach to patients who could benefit from Social Prescribing.

### 1.1. RECETAS Project

Aquest TFG s'ha realitzat en el marc del projecte RECETAS.

**RECETAS (Re-imagining Environments for Connection and Engagement: Testing Actions for Social Prescribing in Natural Spaces)** is a project that addresses loneliness and the role of nature-based social prescription (NBSP) to reduce it.

The RECETAS consortium is led by Dr. Jill Litt from ISGlobal (Barcelona, Spain) and it is composed of 13 institutions from 9 different countries. It is using multidisciplinary approaches to implement Nature Based Social Prescribing (NBSP). The project, which began in March 2021, will last 5 years. It is financed by a 5

million euro grant from the European Union through its Horizon 2020 program (Ref: 945095). More information about the project: <https://recetasproject.eu>

Project partners in the region of Catalonia are: ISGlobal as project coordinator, the Universitat de Vic - Universitat Central de Catalunya (UVic-UCC), the Fundació Salut i Entorn - Universitat Autònoma de Catalunya (FSIE-UAB), and the Agència de Salut Pública de la Generalitat de Catalunya. The clinical trial to be conducted in Catalonia is led by Dr. Laura Coll Planas (UVic-UCC). UVic-UCC is responsible of the implementation of the intervention, for the assessments, the process and the qualitative evaluation.

RECETAS is part of the process of implementing the social prescription for all Primary Health Care in Catalonia, which is coordinated by Catalan Public Health Agency from the Catalan Government (which is a partner of the project), within the framework of the Drugs and Behavioral Addictions Plan 2019-2023, the Interdepartmental and Intersectoral Public Health Plan (PINSAP) and the National Strategy for Primary Care and Community Health (ENAPISC).

### **1.1.1. General Hypothesis of RECETAS**

Nature-Based Social Prescribing (NBSP) intervention in vulnerable people suffering from loneliness is more effective than usual social and health care on improving their quality of life and loneliness during 3-, 6- and 12-months follow up.

### **1.1.2. Recetas Objectives**

The main objective of the RECETAS project is to devise, validate, and exploit solutions that address loneliness through NBSP and engagement with nature-based solutions and green infrastructure.

The project aims to assess the effectiveness and to explore the processes and perceived impacts of NBSP interventions in vulnerable people suffering from loneliness in six cities: Barcelona, Helsinki and Prague will assess the intervention with Randomized Controlled Trials (RCT); and Marseille, Cuenca (Ecuador) and Melbourne will conduct observational pre-post studies.

The NBSP will also be tested in different population characteristics: older people (Helsinki, Prague, Cuenca), socioeconomic vulnerable adults (Barcelona), migrant population (Marseille), LGTBIQ+ migrant population (Melbourne).

## **1.2. RECETAS Barcelona Trial**

The Barcelona RCT will be implemented in 12 different areas of Barcelona City and Province, with a final sample of minimum 316 people. In each area the following methodology will be conducted:

1. Co-creation process: a nature-based activities menu will be created with the local organizations involvement. The menu will be used in RECETAS intervention and group control, but it will arise local health actives to be used further of the RECETAS project.
2. Recruitment: Between 24 to 30 people will be recruited in each area. After the signature of the Informed Consent to participate, the first assessment will be performed. After the first assessment, they will be randomized in the intervention group (IG) or control group (CG).
3. Participating in the Circle of Friends intervention, or CG (individual nature-based social prescribing).
4. Evaluation at 3-, 6-, 12- months of all participants.
5. Process Evaluation.

### 1.2.1. Barcelona Trial Objectives

The main objective of the study in Barcelona is to assess the effectiveness of a 3-month Nature-Based Social Prescribing (NBSP) intervention in vulnerable adult (more than 18 years old) people suffering from loneliness on quality of life compared to usual social and health care at end of intervention, and at 6-, and 12- months, through a Randomized Controlled Trial (RCT).

The following figure (Figure 1) shows the designed structure of the RCT within RECETAS project.

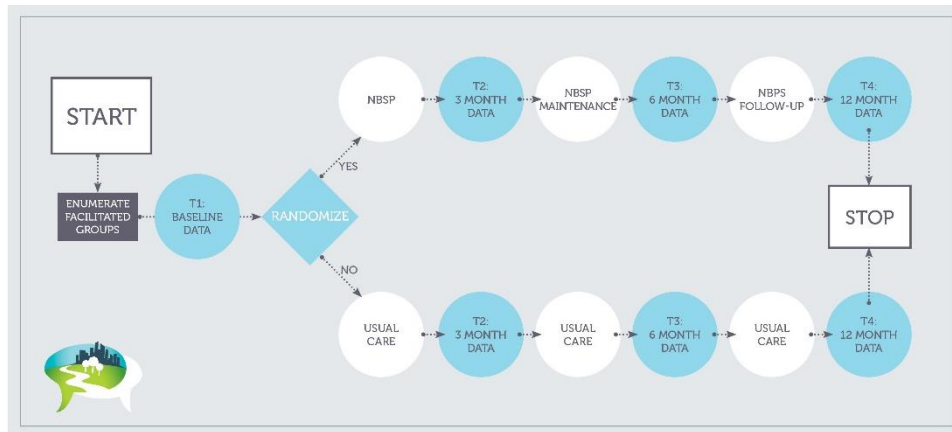


Figure 1. RECETAS RTC design.

### 1.3. Barcelona Feasibility Study

A feasibility study (pilot) will be conducted from September to December 2022 prior to the launch of the RCT in January 2023. Feasibility studies are used to determine whether an intervention is appropriate for further testing, and to identify not only what—if anything—in the research methods or protocols needs modification but also how changes might occur (Bowen et al., 2009).

The general aim of the feasibility study is to explore the feasibility and acceptability of the study procedures to improve the design and implementation of the definitive trial. Specific aims of the feasibility study are:

- Pilot Aim 1: Assess the feasibility of recruitment of participants and recruitment centers (e.g., clinics, social centers, human resource centers...).
- Pilot Aim 2: Explore the ability to perform study procedures in each intervention site.
- Pilot Aim 3: Assess the adherence and attrition to the interventions (and identify potential determinant factors).
- Pilot Aim 4: Assess the acceptability of the intervention in terms of the NBSP menu and the psychosocial components of the intervention adapted from the Circle of Friends methodology.
- Pilot Aim 5: Explore the distribution and variability of variables assessing loneliness and quality of life for a specific sample.

The feasibility study will also allow to test the organization, coordination, and communication of the different RECETAS partners involved in the different phases of the Barcelona RCT implementation, and between the RECETAS team and the local formal and informal organizations that will participate (Primary

Health Centers, Local Health Plans, Community resources, local social and environmental organizations, etc.) in order to success in its implementation.

## **2. TFG Objectives**

The objective of this TFG in the frame of the RECETAS feasibility study conducted in Barcelona is to **explore the feasibility and acceptability of the study procedures regarding the nature-based activities of the intervention and the measures to evaluate them.**

The specific objectives are:

SP1. To evaluate whether and how NBSP based on the structure of the “Circle of Friends” intervention allows the implementation of nature-based activities.

SP2. To evaluate the feasibility to measure the “nature dose” and the characteristics of the nature, such as biodiversity, structure, quality, etc., that the participants have been exposed to during the activities.

SP3. To assess the perceived impact of the participants regarding the nature-based activities of the intervention.

These objectives will be addressed considering the eight key areas of focus by feasibility studies proposed by Bowen et. Al (2010), with special attention to the acceptability, implementation, adaptation, and limited-efficacy testing.

Therefore, mainly the TFG addresses part of the feasibility Pilot Aim 4: Assess the acceptability of the intervention in terms of the NBSP menu and the psychosocial components of the intervention adapted from the Circle of Friends methodology.

However, it is also related with Pilot Aim 1, since recruitment influences the profile of participants and thus affect nature-based activities, such us the influence of the recruitment process to the nature activities possibilities, the applicability of the study procedures on nature dose, the adherence and the attrition regarding the nature activities.



### 3. Methodology

#### 3.1. Study area

The feasibility study took place in Roquetes neighborhood in Barcelona, from September to December 2022.

#### 3.2. Study design

The feasibility study was expected to have a duration of about 12 weeks, between October – December 2022, but finally overall had a duration of 17 weeks for two different reasons: First, we needed more time to complete the recruitment of people; Second, there were 3 sessions that were on a holiday, and it was not possible to change the schedule of the group.

The design of the feasibility study follows the design of the trial, except for the follow up the participants for the 6- and 12- months evaluation. At the end of it, all participants will be assessed (3-months evaluation). There will be a qualitative study embedded, with the facilitators learning diaries with the objectives and description of all the sessions, and personal interviews with all the participants who agreed from the intervention group and the control group. Finally, a focus group with the participants who ended the intervention was done. The quality study will address the specific objectives 1.1 and 1.3.

Figure 2 shows the design of the feasibility study of the RCT's.

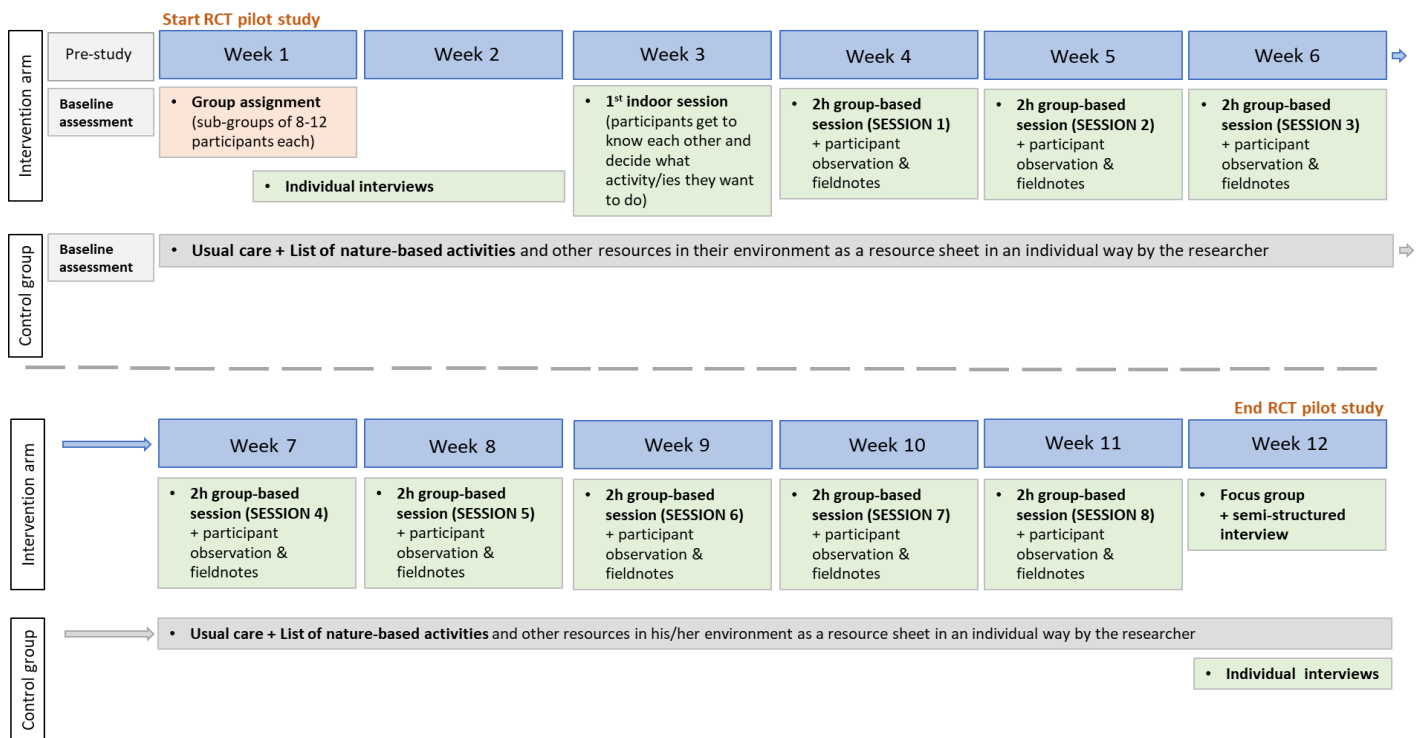


Figure 2. Framework of the pilot RCTs.

#### 3.3. Study population and sample

A sample size calculation is not required for feasibility studies (Cocks and Torgerson 2013; Lancaster, Dodds, and Williamson 2002). However, in this case, it was estimated the number of participants required in the feasibility study to be around 10% of the real study sample size. For the Barcelona Trial a sample of 316 people is calculated, so for the feasibility study we aimed to recruit 30 people. It was decided to have

an unequal randomization of 2:1, with a considerable number of participants in the intervention group to gain experience in delivering the intervention and to identify potential setbacks more easily.

### **3.4. Study population and sample**

Participants will include adults aged 18 and over suffering from loneliness in Roquetes neighborhood, Barcelona.

The inclusion criteria for the feasibility study were:

1. To be able to give informed consent in Catalan or Spanish and able to participate to the group dynamics and communicate in at least one of these languages.
2. Aged 18 or over.
3. Currently experiencing loneliness according to the screening question “Do you suffer from loneliness?” (answers “feels lonely ‘sometimes, often, or always’”).
4. Can walk to the center independently.
5. Able to participate in a group dynamics.
6. Willing to undergo study measurements.

The exclusion criteria for the feasibility study were:

1. Unable to go outdoors independently due to poor mobility or severe disease.
2. Poor hearing or sight in case it prevents them to participate of the group dynamics and activities in the nature.
3. Mild, moderate, or severe cognitive decline (test de Pfeiffer >2 fails).
4. Any mental health disorder that might interfere with the group dynamics.
5. Severe disease with poor prognosis < 6 months.

### **3.5. Intervention**

#### **3.5.1. Menu of Nature Based Activities and sites in the neighborhood**

A Menu of Nature Based Activities and sites is used both for the control and intervention group. The menu in Roquetes has been co-created involving several organizations which work with nature-based initiatives or social prescribing or both, and which have contributed either in a general way throughout the process or through the inclusion of activities in the menu. The activities included in the menu are:

- Open and freely accessible nature areas for the people taking part in RECETAS.
- Current activities in nature promoted by government or grassroots organizations which can accommodate the group of RECETAS participants.
- Possible new activities which either government or grassroots organizations can organize specifically for the RECETAS project.

Finally, the Menu included 28 activities, involving 15 different organizations, and 3 urban gardens (Annex 8.1).

### 3.5.2. Circle of Friends

The implemented intervention in RECETAS project is an adaptation of the “Circle of Friends” (Jansson & Pitkälä, 2021) intervention, to include nature-based activities and to adapt it to the different study populations in each city. It has been tested for the past 20 years in Finland in older people with success. According to a ten-year follow-up (2006-2016), nine out of ten participants felt their loneliness had been alleviated in the group, and over 60% of the participants had continued the meetings after the facilitated group (Jansson & Pitkälä, 2021).

In the feasibility the intervention will be tested as its planned for the Trial. The intervention is highly moldable, and it needs to be adapted depending on the progression of the group. However, the general scheme is:

1. Two facilitators of the RECETAS team (trained with the Circle of Friends methodology), will be responsible for both the group in the intervention arm, and the control group, to conduct the personal interview and do the follow-up. The facilitators will conduct participant observations and fieldnotes will be reported.
2. Groups of 12-15 participants.
3. Face to face interview with both or one facilitator of the group, prior the group beginning. The NBSP intervention will start with an initial one-to-one session where participants will be interviewed individually by the trained facilitators to be asked about loneliness and health-related quality of life, their interests in nature, and to hear their expectations and reasons for joining the group.
4. 9 group-based sessions: These sessions will take place once a week for 2 hours (including trips). For each session the trained facilitators will set specific objectives and will decide on which group activities or dynamics can be done to achieve those objectives.
  - 4.1. First session: Participants will get to know each other; they will discuss and agree with a set of “rules” or characteristics the group should have. Finally, they will be presented the different activities offered in the NBSP menu and will be able to make other propositions of activities or places to visit. Finally, they will choose one or more activities for the following sessions. However, this selection might be flexible and changeable over time, depending on the participants’ preferences, availability, etc. The process of proposing and choosing activities might be repeated during the intervention.
  - 4.2. The next 8 sessions will generally be outdoors, and participants will be engaged with the chosen activity or activities from the NBSP menu. The aim is to promote interaction between participants and the accessibility and engagement with nature and with nature-based activities available in the city. Besides the activities or visits to natural spaces, the facilitators will propose activities to talk about loneliness, to promote engagement with the group, to build confidence between participants, and to empower the group so they continue meeting after the intervention is over.

Individuals randomly assigned to the control group will receive usual care and they will be given a list of nature-based activities and other resources in their environment as a resource sheet in an individual way by the researcher. At the end of the intervention, they will conduct individual interviews to evaluate their experience and their health-related quality of life and loneliness.

### **3.6. Measures and information collection techniques**

To evaluate if the structure of the “Circle of Friends” intervention allows the implementation of nature-based activities the notes written after each session (see model at Annex 8.2) and the learning diary of the facilitators will be analyzed, focusing on the number of sessions with nature contact, time in nature in each session, total duration of each session, and sessions with nature contact and activities to talk about loneliness, promote confidence and building interactions among the participants.

To evaluate the feasibility to measure the “nature dose” and the characteristics of the nature, such as biodiversity, structure, quality, etc., that the participants have been exposed during the activities, it will be analyzed the characteristics of the natural spaces visited, and the possibility that facilitators might do it with smartphone apps, and the perception of participants, analyzing the learning diaries and the individual interviews and the focus group. The Neighborhood attachment scale and Neighborhood aesthetics (Saelens et al., 2003), the Nature Connection Index (Hatty et al., 2020) will be used, to test their sensibility and their acceptancy by participants.

To assess the perceived impact of the participants regarding the nature-based activities of the intervention, a qualitative analysis of the personal interviews and the focus group will be done.

### **3.7. Analysis**

#### **3.7.1. Data collection**

Data collection in the baseline assessments will be a self-administred paper questionnaire with an assessor assisting if they have questions or doubts.

The 3- months assessments will be in 1 to 1 interview with the assessor and the participants, using Research Electronic Data Capture (REDCap) available through ISGlobal, leader of the project. It is a secure web-based software system that allows researchers to create online forms for data capture, management, and simple analysis. All the data uploaded to the REDCap will be anonymous. The personal data of the individuals that participate at the project will be pseudoanonymised by Uvic-UCC and FSiE and identifying information will not be shared with other participants of the project. REDCap is easy to use for research teams and the data system is HIPAA compliant. All data collected in the trial will be treated confidentially, only the responsible for the recruitment, the assessors and the RECETAS facilitators of the group will have access to the personal data, only for contact purposes. Only the anonymized code assigned to participants in the study will be listed in the worklists. In the final report or in case of communicating these results to the scientific community, participants’ identity will remain anonymous.

#### **3.7.2. Analysis**

In order to answer all of the objectives mix quantitative and qualitative research methods have been used.

The quantitative approach to evaluate the suitability of the Neighborhood attachment and aesthetics scales, and the Nature Connection Index and to try to assess changes after participating in the project. The main objective is to assess the acceptance of these scales by the participants, by analyzing the missing answers in each item of the scales. In order to assess the “nature dose”, specific objective 2, the total duration of the sessions and the total time spent around nature will be calculated, as well as the average duration of the sessions and the average time spent around nature depending on the type of activity and/or quality of nature exposition.

The qualitative approach to explore the perceived experiences of participants and professionals involved, to understand how the natural sites visited during the study have been perceived by participants, the connection of participants to nature and specially with the NBSP and how the characteristics of the site or the activity might influence this perception. Motivation and contextual issues for participation, time spent in nature-based activities have also been assessed. In order to do so, the semi-structured personal interviews and the focus group will be analyzed using thematic analysis (*Braun, Clarke, Hayfield*). First, they will be transcribed, then the parts focusing on aspects related to their feelings toward nature and the nature-based activities on the menu will be selected and analyzed with an inductive approach, taking special focus on the topics of interest, but not only, for this TFG: feelings and connection towards nature, suitability of the activities offered, expectations and evaluation of each activity done, duration of the sessions, perceived nature and biodiversity. Finally, the sites haven't been translated to English, they are written with the language they were said.

The qualitative approach also to explore the feasibility to assess the biodiversity and other natural characteristics of the natural sites visited, and to assess whether the intervention structure allows to include the natural visits without affecting its structure. The learning diaries and the field sheet of each session will be analyzed, together with the fragments of the personal semi-structured interviews and the focus groups and visual medium of photography regarding the nature activities and their feelings towards nature. Different questions have been added in the script of the semi-structured interviews to help understanding how participants have perceived particular NBSP.

### **3.8. Ethical Aspects**

This TFG is embedded to RECETAS Project, which has already received the Favorable Report of the Research Ethics Committee from UVic-UCC (Code: 214/2022), and the Research Ethics Committee of the IDIAPJGol (Code CEIm: 22/170-P).

Moreover, RECETAS team counts with the support of an ethics advisor who also serves on the RECETAS advisory board. In 2022, RECETAS has conducted a full ethics review of the project with the European Commission that ensures we are safeguarding participant privacy and safety at every step of the project. Therefore, this TFG will comply with all the ethical codes, including the Good practices guidelines of UVic-UCC.

#### 4. Results

Recruitment was harder than expected initially. From the 26 people contacted the final sample was 13 people, 8 people were allocated in the intervention arm, and 5 people in the control arm. However, the personal interview for the NBSP only was conducted to one of the people in the control arm. Figure 3 shows the flowchart diagram of the participants. 3 people dropped out the study before randomization, and 1 after the beginning of the group. 2 people stopped attending the sessions (one for mental health illness, and the other to start a rehabilitation program) but didn't drop out as they were assessed at 3-months and accepted to be interviewed. Although any mental health disorder that might interfere with the group dynamics is an exclusion criteria, 2 people were included showing moderate depression and mild cognitive impairment in order to assess whether their inclusion was suitable for the trial or not, and test the degree of illness that could be included. The person with moderate depression was not able to commit and attend all the sessions and because some topics or situations might unbalance them. The person with mild cognitive impairment couldn't commit to the session (came and went at own criteria during the sessions) and couldn't follow some of the dynamics as well as establish relational ties with other participants.

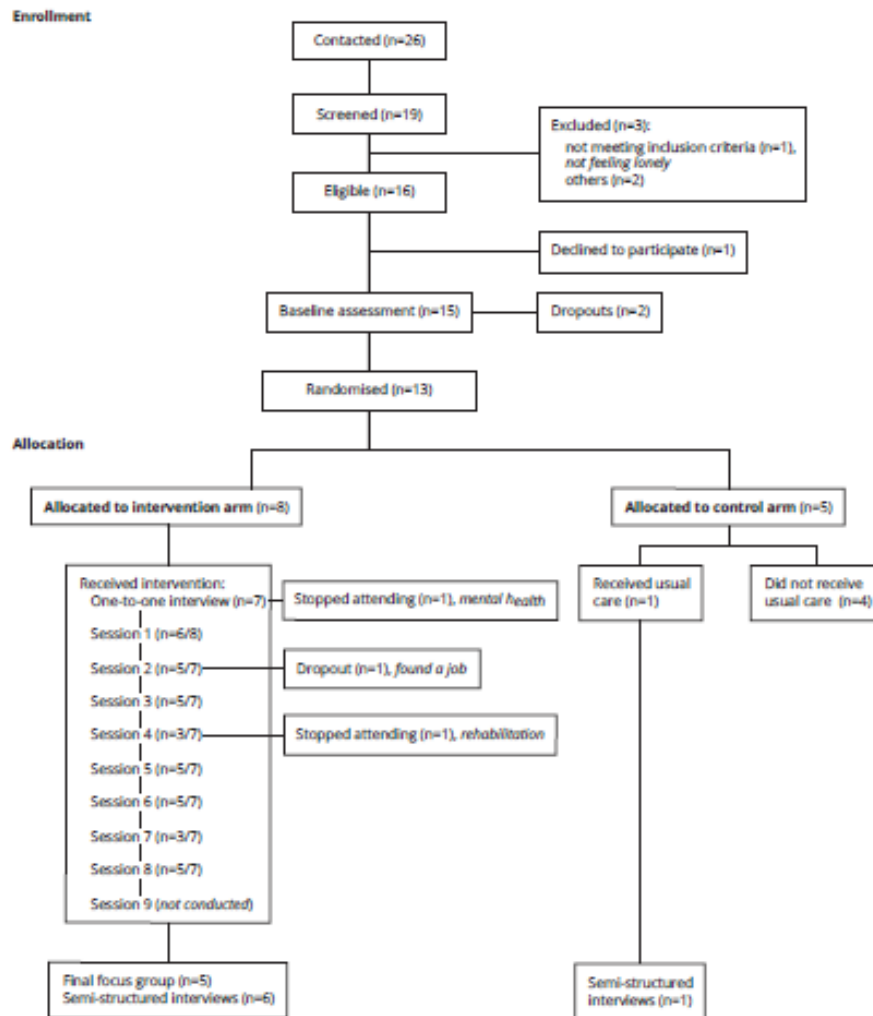


Figure 3. Participants flowchart.

The distribution of the sample in terms of age, gender and education level is shown in table 1.

		Valid cases
<b>Age</b>	Median (range)	66.2 (50 - 74)
<b>Gender</b>	N (%)	13
	Male	2 (15.4%)
	Female	11 (84.6%)
<b>Education</b>	N (%)	12
	Can't read or write	1 (8,3%)
	Incomplete primary education	1 (8,3%)
	Primary education	4 (33,3%)
	Secondary education	4 (33,3%)
	Superior professional education	1 (8,3%)
	Medium University degree	1 (8,3%)

Table 1. Sample characteristics.

Table 2 shows the characteristics of the participants.

Gender	Age	Assessments done (1=baseline, 13= both, 3= 3-monts)	Group assignment	Sessions attended	Drop out study or stopped intervention	Reasons for dropping out the study or stopping the participation in the intervention
Female	51	1	Intervention	0	Yes	New job
Female	69	13	Intervention	3	Stopped	Started rehabilitation program
Male	63	13	Intervention	7	No	
Male	66	13	Intervention	8	No	
Female	53	13	Intervention	1	Stopped	Mental health illness, socioeconomic problems
Female	72	13	Intervention	7	No	
Female	65	13	Intervention	5	No	
Female	66	3	Intervention	7	No	
Female	74	13	Control	Not applicable	No	
Female	68	1	Control	Not applicable	Not interviewed	
Female	67	1	Control	Not applicable	Not interviewed	
Female	72	1	Control	Not applicable	Not interviewed	
Female	74	1	Control	Not applicable	Not interviewed	

Table 2. Participants characteristics

#### 4.1. Feasibility to include nature-based activities in the “Circle of Friends” intervention (SP1)

The following table (table 3) shows the number of sessions conducted, the participants in each session, the duration of the session, and activities related to nature done, its duration and relevant comments for the analysis of each session, for the intervention group. The person who was in the control group and did not receive the individual NBSP and the information of the menu was not asked to record the activities or the amount of time spent in nature. However, she was assessed in the qualitative study with an individual interview and asked about that, and any activity extra activity in nature was done.

Session	Date	Participants	Duration of the session	Nature-based activity	Duration of the NB activity	Comments related to the nature activity
1	18/10/22	6	120 minutes	None	0	Group was anxious to do nature activities.
2	25/10/22	5	120 minutes	Rodrigo Caro Garden	60 minutes	Meeting at civic center, 15 minutes to the garden, with aromatic plants and Mediterranean vegetation. One participant talked about one tree and its fruits. They talk more than watch nature. Participants knew the park. Activity: get to know each other with questions in cards. It was warmer than expected and there were mosquito bites. Ended session in the park, because the 2 hours were over.
3	8/11/22	5	120 minutes	Parc Fornells and Roquetes health circuit	45 minutes	Meeting at civic center, 15 minutes walk to the health circuit. Both the health circuit and Parc Fornells were urbanized areas, with trees. At Parc Fornells we did a reflection activity on feelings. We needed a stone or another natural element, but it was not possible to get it because there was dirt and dog excrements everywhere on the way and the Parc. 1 participant guided us, the place was his suggestion. Ended session in the park, because the 2 hours were over.
4	15/11/22	3	120 minutes	Parc de la Guineueta	90 minutes	Meeting at civic center, 30 minutes walk to the park. Walking 15 minutes through the park. Mindfulness and rise awareness of the nature surrounding us (eyes closes, just listening and muting other city sounds). We listen and see lots of birds.



						<p>Q&amp;A about friendship and loneliness sitting in a table in the park, with shadow.</p> <p>Ended session in the park, because the 2 hours were over.</p>
5	21/11/22	5	150 minutes	None		<p>Visit the Casa de l'Aigua (Water House), where the water were distributed to Barcelona, but it was all inside the building.</p> <p>Session ended at Casa de l'Aigua because the visit was longer than expected, participants agreed.</p>
6	29/11/22	5	120 minutes	Parc Fornells, Pictures of Nature and loneliness	60 minutes	<p>We started at the civic center to plan the final sessions.</p> <p>20 minutes walk to the park, very urbanized, but it was convenient the location.</p> <p>Activity of Pictures and loneliness. The pictures showed different natural settings.</p> <p>Nature dose through pictures.</p> <p>Session ended at the Parc because time was over.</p>
7	13/12/22	3	165 minutes	Can Solé, Horticulture and forest. Collserola	105 min	<p>30 minutes to get to the place, and 30 minutes to come back.</p> <p>Guided tour to the garden, the seed bank, the forest, the nature classroom. All the participants enjoyed the visit, especially walking through the forest.</p> <p>To plant seeds of wild strawberries, onion and peas and brought these at home</p>
8	20/12/22	4 (5)	225 minutes	Castell de Torre Baró. Nature, presence and emotion activity (Forest Bath). Natural Park of Collserola.	120 minutes	<p>We met directly to the Castle (25 minutes' walk from the civic center).</p> <p>Activity was 1 hour long, then 30 minutes to get to the forest, and 30 minutes coming back to the Castle. Nature all the way.</p> <p>Activity: 10 minutes' walk through the path, surrounded of Mediterranean pine forest, but near some neighborhoods that climb the mountain and the highways and the metropolitan area. At the horizon other mountains, far away. Arrived in a clear in the woods: meditation activity. After, dwell around and sense the nature. Reflection: we couldn't hear much the nature (birds specially) because the noise of the highways, although they were not visible and far away, it was too present.</p> <p>1h it was for farewell picnic because it was the last session</p>
<b>TOTAL</b>			<b>1140 minutes</b>		<b>480 minutes</b>	<b>42% of time spent in nature</b>

Table 3. Intervention sessions and nature-based activities summary

As seen, 8 out of the 9 sessions of the intervention were done, despite finishing a week later than planned, but the 9<sup>th</sup> session was not possible to conduct because Christmas holidays started. The intervention start day was planned to be 4<sup>th</sup> of October in order to overcome this holiday's issues, but it was not possible due to recruitment difficulties. Moreover, the sessions were on Tuesday morning, and there were 2 holidays on Tuesday during the 10 weeks since the intervention started (18<sup>th</sup> of October) till Christmas, but it was not possible to meet any other day of the week due to lack of compatibility of schedules between the participants. In two sessions there was only one of the two facilitators (1 different each time), due to illness. Despite this, the intervention was able to be implemented with a high degree of fidelity in relation to what was planned, although with a smaller sample, which conditioned the achievement of some objectives.

As a summary the following table (4) shows the main results regarding the type of space visited and the average time spent in contact with nature (nature dose).

	Nº	Average time of the session (min)	Average time in nature (min)
Sessions with specific nature activity	2	195	112,5
Sessions with visits in urban gardens	2	120	75
Sessions with visits in urban parks with some natural element	3	130	45
Sessions without any natural contact	1	120	-
<b>TOTAL</b>	<b>8</b>	<b>141,25</b>	<b>63,75</b>

Table 4. Average time spent in contact with nature (nature dose) .

Regarding the feasibility of including nature and nature-based activities in the structure of the “Circle of friends” intervention, only the first session was conducted entirely indoors and there was no contact with natural elements. In 3 sessions indoor and outdoor activities were combined. 1 session was outside the meeting point, but the activity was indoors, so only the time to go from one place to another was outdoors. Thus, 3 of the 8 sessions had only the entire time outdoors. This has conditioned the contact time with nature. It is also observed that the time of the session is extended when there are activities organized by another organization or guided visits to natural sites. In general, this is because the minimum time for a visit or activity is usually 60 to 90 minutes, and when added the time to and from the activity, the welcoming and farewell of the group, and if any activity is planned to fulfill the objectives of the session (alleviate loneliness, establishing bonds, reflections, etc.) then the 120 minutes for one session are not enough. In general, it has not been a problem for the participants, but it has been necessary to adjust the logistical organization of the facilitators.

It has been possible to include contact with natural or naturalized spaces, of different characteristics, in most sessions by combining the outing with the activities related to the “Circle of friends” intervention. In order to do that, the visited site needs to be relatively close to the meeting point of the group, and to have a minimum of infrastructure to carry out the proposed activity (benches, tables, shade, etc.). This determines the sites that can be visited and, in addition, to carry on the intervention is necessary to adapt to the immediate environment and its possibilities, which can be very changing from one area to another or sometimes there might not be any suitable site around. Although these sessions are positively valued by the facilitators because they have allowed the group to move forward, they have not been among the best valued by the participants, who generally prefer those sessions that have taken them to spaces they consider more beautiful, natural, biodiverse, and unknown. The participants are generally attracted to the

project to participate in nature activities, and very often a program of already set nature activities is expected with a group of people who have signed up. This is a key aspect in recruitment in order not to generate expectations that do not correspond to reality, to explain that apart from the activities in nature, you participate in a group of people with an interest in getting to know other people through activities in the nature and share the feeling of loneliness.

#### 4.2. Feasibility to measure nature dose (SP2)

It has not been possible to test any specific methodology to measure the characteristics of the natural sites to which the participants have been exposed in terms of real or perceived biodiversity, structure, quality. It was tried that the facilitator who acts as an observer can write down some basic characteristics of the natural site, as well as the use of photographs of the most present vegetation, or Apps of recognition of plants to assess the biodiversity of the site. Finally, after testing those methods in two sessions, it was rejected for three reasons. First, it would be a subjective and non-comparable measure from one facilitator to the other because it depends on the knowledge and perception of each one. Second, it requires time and full attention so the facilitator wouldn't be able to observe the group in the same way. Finally, it was seen that the participants' and the facilitators perception of the natural sites was different.

What has been tested and analyzed during the pilot is the description of the spaces, duration of contact with nature, and the impressions that the facilitators have recorded in the field diaries. As is presented in table 3, the 42% of the total duration of the sessions was spent in contact with some type of nature, this means 480 minutes (8 hours). Table 4 shows that the average time of the sessions with nature activities organized by other organizations was much higher than the others, also increasing the contact time with nature, although some of the time was used to get to/return from the site.

The Neighborhood Attachment scale can take a range of values from 1 to 4, 1 showing low attachment to and strong attachment the neighborhood. As can be seen in Table 5, participants had high average values the Neighborhood Attachment scale both before and after the intervention, overall increasing after the intervention. The histograms (figure 4) showing the change in in the scale indicate that most participants increased their scored (meaning their attachment to the neighborhood increased), while only one participant showed a decreased attachment. While these results are only indicative, given the limitations of such small sample sizes, they suggest that the scale has adequate responsiveness to change. Regarding its acceptancy, there's only one missing in the baseline, corresponding to one person who wasn't evaluated, and 5 missing values at 3-month, which correspond to the 5 people who were not assessed. This is indicative that the scale had a good acceptance between participants.

Table 4. Neighborhood attachment scale distribution scores

		Neighborhood attachment (T1)	Neighborhood attachment (T2)	Change Neighborhood attachment (T2-T1)
N	Valid	12	8	7
	Missing	1	5	6
Mean		3,1250	3,2292	,3810
Std. Deviation		,82611	1,05386	,95604
Minimum		1,00	1,17	-1,50
Maximum		4,00	4,00	1,50

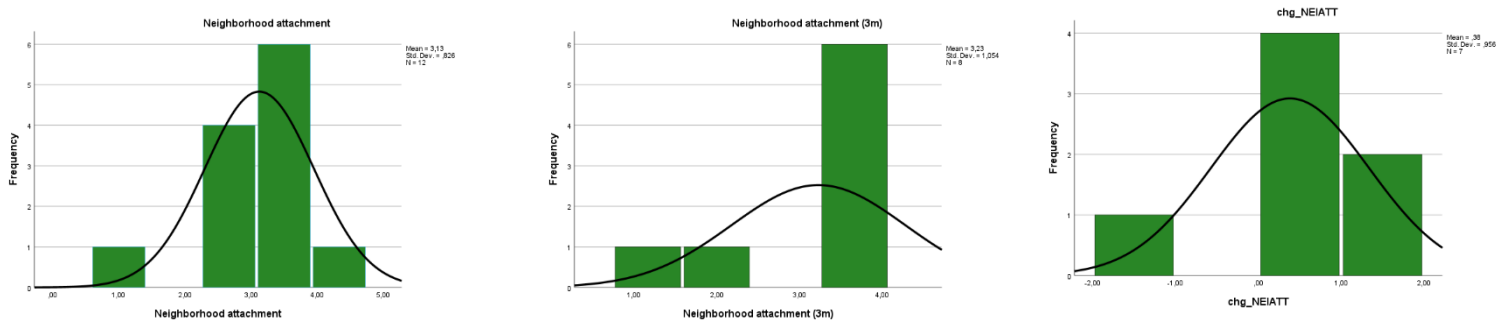


Figure 4. Histograms for Neighborhood attachment scale

Because with such a small size and missing values is not possible to run an analysis for each item of the scale to better assess in which ones the interventions have had impact. Table 6 (Annex 8.3) shows the distribution of the responses for each item of the Neighborhood attachment scale.

The Neighborhood Aesthetics scale was not possible to calculate due to some problems during the recording as one of the items has missing values for all the participants assessed, both in the baseline and after intervention assessment, which probable indicates a problem recording the item more than a not acceptance of the scale. Table 7 (Annex 8.3) shows the distribution of the responses for each item of the Neighborhood aesthetics scale.

The Nature Connection Index was only asked at the post-intervention assessment, because when the baseline was carried out it had not yet been decided by the research team on 'nature dose' which scale would be the most appropriate to use in the project, therefore it's not possible to analyze whether it changed or not.

The Nature Connection Index can take a range of values from 0 to 100, 0 being the lowest and 100 the highest connection with nature. The results show extremely low rates of the Index, with a mean of 3 and a range from 0 to 8. Thus extremely low connection to nature, even after the intervention is over. This suggests that further testing is needed to ensure the reliability of these results and whether the items to calculate this item were correctly understood, both by the participants and the assessor. That could be some misunderstanding of the questions asked, although there were only 5 missings, from the people who didn't carried out the 3 months evaluation, which indicates that all participants who undertook the 3-months evaluation answered all the items of the Index.

Nature Connection Index (3m)		
N	Valid	8
	Missing	5
Mean		3,0000
Median		2,5000
Mode		,00
Std. Deviation		3,25137
Range		8,00
Minimum		,00
Maximum		8,00

Table 8. Nature Connection Index distribution scores

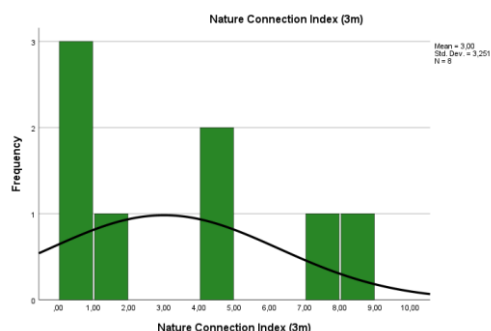


Figure 4. Nature Connection Histogram

Regarding the Neighborhood Attachment and Aesthetic scales, and the Nature Connection Index the main objective in the feasibility study and this TFG was to assess their acceptance among the participants, if they were understood and if the results seemed adequate, due to the small sample. Therefore, the results shown are only indicative given the limitation of such small sample sizes, they suggest that the Neighborhood Attachment and Aesthetic scales have adequate responsiveness to change, while the Nature Connection Index needs further assessment to analyze whether the participants understood the questions or is adequate to use in the trial.

### 4.3. Perceived impact of the nature-based activities (SP3)

#### 4.3.1. Enjoyment of the activities

The activities that were liked the most and generated more positive comments were Can Soler and Castell de Torre Baró (7<sup>th</sup> and 8<sup>th</sup> sessions). Regarding Can Soler they highlight the biodiversity in the place and the different environments they could see (forest, fruit trees, vegetable gardens, etc.), the quality and maintenance of the place, and that it was a discovery. From Castell de Torre Baró, that they could enjoy the site in a different way and discovered new paths around it.

*“Can Soler, este, aparte de que me gustó, no había estado nunca.” Male, 66, intervention*

*“ahí en el campo que tiene la, las plantitas y las cosechas que hay ahí. Después nos mandaron detrás de la masía, los olivos que tantos años, ciento y pico de años, que los cortaron y ya cogieron aceite, los olivos... Y después nos marchamos por un caminito, “to” tapado por las ramas de los árboles y había unas “alcinas”, ay qué... qué guapas eran // yo me quedaba ahí toda la vida.” Female, 66, intervention*

*“Yo al Castillo iba, pero iba solo al Castillo, no subía toda esa montaña”. Female, 65, intervention*

They are followed by Parc de la Guineueta and Jardins Rodrigo Caro (4<sup>th</sup> and 2<sup>nd</sup> sessions). The first to discover a very nice big garden near their neighborhood, and the second because it's a nice garden in their neighborhood, where they like to go.

*“los olores en Rodrigo Caro creo que está muy bien porque, a parte me parecen bien y ya he ido y no una vez sino varias veces, entonces me gusta ir”. Male, 66, intervention*

*“El parque este también, que no lo había visto nunca, de la Guineueta, también me gustó”. Female, 72, intervention*

There was only one participant that complained about one of the activities, Castell de Torre Baró (8<sup>th</sup> session), because she had to walk too much and it was difficult to understand its purpose.

*“lo del castillo, le digo: anda el otro día no anduvimos tanto o mas que aquí y encontramos el Tibidabo a dos pasos, y ahora solo hacemos que andar y no encontramos al Tibidabo aquí arriba. Yo no le encontré la gracia ninguna.” Female, 66, intervention.*

#### 4.3.2. Acceptance of the activities

There were different opinions about the opportunities to get to know new places or go to already known places, but the most commented is that they got to discover familiar places in a different way. One participant mentioned the lack of time to be able to go to places.

*“Una persona del barri que ha nascut aquí es posa a fer coses aquí doncs no veu cap cosa nova (...) però si estàs en un barri, bueno clar, que si l'altra gent com la que estavem en el grup igual no coneixia aquests dos parcs que jo vaig anar.” Female, 69, intervention*

*“Seria bo anar a altres barris, que dius, doncs a mirar si hi ha un altre lloc, una altra muntanyeta que, bueno, no seria una idea?” Female, 69, intervention*

*“Las salidas muy bonitas todas, he conocido nuevos lugares con las compañeras”. Female, 65, intervention*

*“Conocia solo el parque y el Castillo solo, no la montaña”. Female, 65, intervention*

*“Sí, sí, bueno, el del Tibidabo que no lo conocía, este de... de taller, que no lo conocía, había estado arriba en Torre Baró, pero no había..., me había preguntado una amiga, ese es el camino del cementerio, y yo no lo sabía”. Female, 66, intervention*

*“Tampoco se puede hacer mucho en 2 horas”. Female, 72, intervention*

*“Hemos ido por donde hemos ido normalmente ya lo conocía yo menos la semana que fuimos ahí por encima del Vall de Hebron que no me acuerdo cómo se llama lo del huerto.” Male, 66, intervention*

In general, the sessions where known places have been visited with the group received positive comments because they were seen or shared in a different way they are used to. In these sessions it was possible to work on the empowerment of the participants, as they liked being able to explain characteristics and anecdotes of the place to the facilitators, who did not know them, even they have been able to act as guides. However, what has had the best evaluation, as already said, are those sessions where completely new activities have been visited or carried out, and which had a greater and higher quality natural component. In this sense, it will be necessary to see in future analyzes if these sessions have had a greater impact on the physical and emotional state of the participants immediately afterwards, or if they have a greater overall impact than the rest of the sessions.

#### 4.3.3. Suitability of the activities

Regarding the suitability of the activities in nature if the group is very diverse in terms of functional capacity and mobility it is difficult to develop activities in nature in which everyone can feel at ease and satisfied in a similar way, since some activities can be a very big effort for some people, and some others can be uninteresting to the others. In this regard, there has not been anyone who has given up doing any activity for this reason, despite explaining that some have involved an effort that have brought temporary consequences (increased pain in the following days), but they continued doing the activities because they felt good within the group and liked to meet each week and didn't want to give it up. On the other hand, one person expressed lack of interest because wanted more activity. This person stopped coming to the sessions but for another reason.

*“Me ha gustado mucho las salidas (...) no puedo caminar, y andaba aunque me dolía, andaba porque me gustaba la compañía de todos.” Female, 66, intervention*

*“Avui anem aquest parc avui a l'altre, i no se no m'agrada d'aquesta manera”. Female, 69, intervention*

#### 4.3.4. Group-decision about the activities

When deciding the activities together with the group it might happen that not all the activities that one would choose are done, but in general this makes it possible to get to know sites that might not otherwise be known, and the importance that everyone adapts at some point so that everyone can do the most desired activity.

*“Probarlo todo un poco si a ella le gusta más el mar y un día vamos al mar, pues a lo mejor me interesa más ir un poco más al mar (...) o a alguien que no le gusta la naturaleza, el campo, a lo mejor cuando va al campo, pues también le interesa un poco más”. Male, 66, intervention*

#### 4.3.5. Feelings and connection towards nature

Regarding their feelings with nature and their general connection with nature are freedom, happiness, relaxation, tranquility, spirituality and transcendence, fascination.

*“Me siento en otro planeta”. Male, 63, intervention.*

*“Para mi dios es la naturaleza, es lo que nos da la vida, es lo que nos da de comer, de beber y de vivir .Sin naturaleza no existiríamos”. Male, 66, intervention.*

*“Se queda en el alma”. Female, 66, intervention.*

*“ Libertad, me siento libre”. Female, 72, intervention*

*“Veo el mar y ya soy feliz, ya soy (...) esto, esto me fascina. Pasear al lado del mar (...) me relaja mucho a mí”. Female, 72, intervention*

*“Una tranquilidad que yo que sé”. Female, 66, intervention*

*“Entre los pinos nos relajamos más que de hacerlo en otro sitio”. Male, 63, intervention*

*“Perquè a demés també oxigena el cervell de tants de cotxes”. Female, 53, intervention*

#### 4.3.6. Usability of the Nature Based Activities Menu

About the NB activities menu and its usability, it was seen that some more specific information about how to contact (email, telephone number) would be interesting.

*“E-¿O sea que has encontrado una actividad de estas que te interesan?”*

*P-Sí, bueno a mí ese que del huerto me interesa, si es verdad, pues si está ahí pues sí que... pero si no, pues no pero, no sé dónde está, es que no entiendo.*

*E-¿No queda claro ahí donde está?”*

*P-Claro está, o bien dado esta pero faltaría un horario por definir y poner una web.*

*E-Y pone una web, ¿a lo mejor necesitarías un teléfono de contacto?”*

*P-Del proyecto de agricultura ecológica y el espacio verde urbano de la cooperativa, ¿Imagino que la cooperativa me dará la información que quiera?”*

*E-¿O sea que aquí ahí una web para buscarlo? ¿Te ayuda o preferirías otra cosa como un teléfono o una dirección.?”*

*P-Sí sí sí , Pone la cooperativa pues ya ire a la cooperativa.” Female, 74, Control*

## 5. Discussion

Although there is growing evidence of the effectiveness of social prescribing programs, the findings around the effectiveness and cost-effectiveness of social prescribing are mixed, largely due to an absence of rigorous evaluation (WHO, 2022). There is also growing evidence on the positive effects of nature and green spaces on many different aspects of health, but there is also the need for more solid evidence in this field. Moreover, the current literature is agnostic with respect to assessment of the different types and qualities of green space, and the associations or pathways between green space and loneliness (Astell-Burt et al., 2022). RECETAS project aims to provide solid scientific evidence, through clinical trials, of the effectiveness of social prescription. Feasibility Studies are used to determine whether an intervention is appropriate for further testing (Bowen et al., 2009). In order to ensure that the RCT and pre-post studies planned within RECETAS project it was determined to conduct a feasibility study in each study area, with a common protocol adapted to each territory, study population.

The contact with nature, or “nature dose” was calculated as the time exposed to a natural environment, whether it was a urban green space or a natural site. The average time spent in nature each session was 63, 75 minutes (45 – 112,5). In those sessions which included specific engagement activities with more natural sites than the urban green space the average time was 112,5 minutes. Spending at least 120 minutes a week in nature is associated with better self-reported levels of good health and wellbeing (White et al., 2019). Thus, the nature based “Circle of Friends” intervention can provide, as an average, half of the exposure required to achieve these results while still encouraging participants to continue engaging with nature during the week. An adapted structure of the intervention, allowing longer sessions would provide almost all the exposure needed.

Despite the growing evidence on nature based social prescribing, there are very few studies which attempt to actually measure green space (quantity, quality, type, amount) exposure and the pathways or links to health outcomes (Barnes et al., 2019). Most of them use subjective measures like time spent in green space and frequency of the visits, perceived amount of green space, perceived contact with nature, and access to green space (walking distance), and finally rates about how much people feel connected with nature. Some try objective measures like land use data, biodiversity indexes or similar (Astell-Burt et al., 2022). The subjective measures assessed in this study are time spent in nature, time to the sites, specific activity engagement (if any). It was tried to assess biodiversity perception and natural characteristics through the facilitators but this was discarded for two reasons: it was not possible to include this task to the facilitators without compromising the “Circle of Friends” intervention, and because perceived biodiversity is a subjective measure that should be taken for each participant. It was not possible to assess any objective measures. After analyzing the process and the results it was decided to obtain objective measures of biodiversity and other characteristics of the green spaces visited. Also a questionnaire was added both for participants in intervention group and control group. In the intervention group to assess the subjective measures of perceived biodiversity, feelings towards the site visited, and their contact with nature during the last week. Studies show strong correlations between positive emotion and perceived biodiversity (Cameron et al., 2020), being a possible pathways to improve mental well-being around nature. In the control group to assess time spent in contact with nature last week, and if any specific activity from the NB activities menu were done, with who, and possible costs.

This is consistent the findings through the qualitative analyses that although participants enjoyed to visit known places around their neighborhood, explaining their own stories and specially guiding the facilitators and other participants that might not know the place, they preferred the visits and activities to unknown natural sites, specially those more biodiverse, bigger, and more natural than the urban parks or gardens.



The Attachment to the neighborhood, the perceived Aesthetics of the neighborhood scales, and the Nature Connection Index were tested to assess their acceptancy. Although data shown are from a small sample so not reliable, the scores suggest moderate to strong Neighborhood attachment and very low Nature connection between the participants. Findings suggest that those with the most access to nature and higher nature relatedness experience higher rates of wellbeing and a stronger sense of belonging to natural spaces (Anders et al., 2023), so it will be necessary to analyze in the trial if those participants with higher NCI have better outcomes in the intervention.

Through qualitative research showed how the group built ties between them and how visiting green spaces with the other participants gave a different, more rich and positive experience. Other studies have found how green spaces can reinforce and foster new ties that evoke the warm feeling of embeddedness within community (Astell-Burt et al., 2022), or how interventions involving nature have significantly higher sense of connectedness and prosocial orientation, and elevating experiences (Passmore & Holder, 2017). It seemed that those ties help to have a more positive perception of the activities done, they were better because they were done with the group.

The structure of the “Circle of Friends” intervention allows the implementation of nature based activities. Moreover, the activities in nature help to achieve the goals of the “Circle of Friends” intervention allowing to create ties between participants in a more relaxed mood, sharing meaningful activities and with the enhancing effect of nature. There are, though, some challenges that need to be taken into account when facilitating the groups:

- Capacity of mobility of the group. A very heterogeneous group might have more difficult to create ties because some participants might get frustrated if the activities don't much their mobility capacities, whether for excess or deficiency. Recruitment is key to ensure that there is a minimum of physical functionality.
- Balance between nature activities vs. “Circle of Friends” activities. In order to ensure contact with nature and the development of the intervention of “Circle of Friends” facilitators need to find a balance within different elements: natural sites visited, necessary dynamics for the group process, duration of the sessions, and the rhythm of empowerment of the group.
- Longer sessions needed to get to some natural sites. To be able to visit those sites often the 2 hours planned for each session are not enough. Some strategy might be empowering the group, in the second half of the intervention, to meet directly at the site if it's possible, or to end the session in the site without coming back to the meeting point of the group. Some visits still would take longer and then it's needed to talk about it and see if everybody can and want to stay longer.

The limitations of the study are focused on those topics that couldn't be fully assessed for the RCT and proposals to overcome:

- Longer recruitment time. Thus, it was not possible to implement the 9 sessions of the “Circle of Friends” intervention. Participants didn't point out it as an issue during the interviews but were not asked about it. In the RCT is important to make sure to start the groups when the 9 sessions are doable to ensure the maximum fidelity in the implementation of the intervention and not to dilute the efficacy.

- Smaller sample than initially planned, so the results of the quantitative analysis are merely indicative, and only it's been possible to assess their acceptance. During the first and second group of the RCT it will be necessary to ensure that the usability of the measures proposed is suitable as it was in the feasibility.
- Not all the measure instruments could be assessed both in baseline and 3 month evaluation of the participants, making more difficult to establish their sensitivity to change. The questionnaire to evaluate the perceived biodiversity was not tested at all, and after the first 2 groups of the RCT we will see its acceptance.
- Only one person of the control group received the NBSP personal interview, so there's no possible to compare its experience with others and the findings are limited. For the RCT is suggested to have a guide to ensure that the basic structure and content of the NBSP is given to all the participants in the control group.

The main strength of the study is that as part of the research team and being one of the facilitators of the group it's been able to incorporate all the knowledge generated during all the process, from the definition of the feasibility study protocol, to its implementation, and the experience of being in contact with the group each week has given intrinsic information from the intervention characteristics that has given further knowledge and information than if I would only analyzed the results. During all the feasibility study, both trained facilitators have reported all the potential setbacks experienced, and at the end all the research team, including the facilitators, have met to discuss about the experience and identify potential procedures that might need to be changed and improved for the real study, and all the learning made by all the researchers were shared and the identify changes to the trial protocol were made. Moreover, some improvements were already put in place during the pilot, being able to test them before the trial, for example, changing the methodology to perform the assessments.

Another strength of the project is that the qualitative study has allowed to analyze the perceptions of the participants both in relation to the nature activities and how nature have impacted on the relationship between them. This knowledge can be transferred to the nature dose and perceived biodiversity for the RCT. Also, having tested all the "Circle of Friends" intervention and not only some activities in nature has allowed us to organize these activities to nature at develop guidelines to ensure the fulfillment of the two main objectives of the study, to have a high contact with nature at the same time that it is possible to apply the objectives of the "Circle of Friends" methodology which it has already been proven.

## 6. Conclusions

This study has been able to prove that it is feasible to introduce nature activities in the “Circle of Friends” intervention maintaining its structure and objectives. It has also allowed to identify the key points that should be taken into account when including the nature activities in the intervention: 1) the duration of the sessions, 2) the types of activities to be carried out according to the mobility of the group, 3) balance between the activities to nature and the objective of the intervention. It has also been possible to verify that the exclusion criteria of mental health and mobility with the criteria of exclusion should be more strict during recruitment.

It has also allowed how to measure the dose of nature and the impact of the different types and characteristics of natural spaces, and their impact on people. In this sense, RECETAS RCT have ambitious objectives and the difficulty that there’s no solid scientific evidence or other RCT using these measures. This study has assessed the limitations and opportunities to include these measures. Finally, it has been possible to define the nature dose and perceived biodiversity questionnaire that will be used by the RCT.

Finally, the participants perceived impact of nature activities brought insight on their preferences, how them might influence the participation to the group and the relations between their members. Also, if the self-perception of the neighborhood and one's own connection to nature can influence the results of the intervention or change the situation.

As pointed out, there are very few studies using RCT to assess the impact, both in efficacy and efficiency, of Nature Based Social Prescribing, while exploring exploring several pathways that might influence the outcome. The results of the feasibility study will allow to adjust both procedures and parameters, which will help to strengthen the RECETAS RCT design, allowing to bring solid evidence on how the “Circle of Friends” in nature intervention alleviates loneliness and what is the role of nature in it, how to introduce it to social prescription programs, improving the quality of life of people and increasing the sense of connectedness to nature of urban population.

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## **8. ANNEXES**

### **8.1. CO-CREATED MENU OF NATURE-BASED ACTIVITIES IN ROQUETES**



## Horts

### BiblioHort

Biblioteca Les Roquetes - Rafa Juncadella  
Horari per definir  
Contacte: nofuentesjd@diba.cat

Trobades setmanals per tenir cura d'un petit hort creat "ad hoc" en taules de cultiu al pati de la biblioteca.

### Horts comunitaris

Vall de Can Masdeu  
Amb freqüència per definir  
Contacte: canmasdeu@canmasdeu.net  
Més informació a <https://www.canmasdeu.net/horts-comunitaris/>

Grup de persones que treballen de manera comunitària parcel·les hortícoles

### Dijous el Hort

Vall de Can Masdeu  
Dijous a les 10h  
Contacte: canmasdeu@canmasdeu.net  
Més informació a <https://www.canmasdeu.net/participa/dies-oberts/>

Un espai de participació al voltant de l'hort on aprenem i compartim com fer el maneig d'una horta ecològica.

### Plantació i cura d'arbres fruiters

Fundació Els Tres Turons  
Activitat mensual de 10h a 12h.  
Contacte: marta.garcia@els3turons.org

Activitat enfocada a la recuperació de cultius fruiters a través de la plantació, poda i reg.

### Horticultura

Fundació Els Tres Turons  
Activitat mensual de 10h a 12h.  
Contacte: marta.garcia@els3turons.org

Sessió on aprendre què és un hort, conèixer algunes plantes aromàtiques i tècniques de reproducció de plantes.

### L'Hort del Mercat de la Vall

#### Hebron i Teixonera

Cooperativa Tarpuna  
Dimarts, dimecres o dijous de 9:30 a 12h, dissabtes de 10 a 14h o divendres de 15:30 a 18:30h.  
Contacte: info@tarpunacoop.org

Treballar de manera col·laborativa en la realització de diferents tasques hortícoles amb l'objectiu de distribuir les collites als diferents punts de suport alimentari, extreure i fer intercanvi de llavors locals i crear un espai d'aprenentatge i investigació.

### Hort urbà CIRERERS

Cohabitatge CIRERERS  
Horari per definir  
Contacte: info@cirerers.sostrecivic.cat

Col·labora amb el projecte d'agricultura ecològica i espais verds urbans de la cooperativa.

### Exercici i relaxació

#### Reconnecta't amb la natura

Casa de l'aigua de Trinitat Nova  
Cada dos mesos  
Contacte: casadelaiguad8@gmail.com  
Cal reserva prèvia

Passeig tranquil per potenciar els aspectes de la percepció i els sentits.

#### Natura, presència i emoció

Castell de Torre Baró  
Dissabtes de 10 a 12h30. Entre setmana segons demanda.  
Contacte: castell\_torrebaro@bcn.cat

sessions a les quals es convida a ampliar la connexió amb un/a mateix/a i a l'expressió emocional a través de diferents exercicis que fomenten la presència a l'estar en l'aquí i l'ara en contacte amb la natura.

#### Bany de bosc

Humus Therapy (FTHVB)  
Horari per definir  
Contacte: humustherapy@gmail.com

Despertar els sentits en un entorn natural per a millorar la salut en l'àmbit mental, social, espiritual i físic a través d'una sèrie d'activitats.

#### Grup caminaires

Pla Comunitari de Roquetes  
Dilluns i dimecres de 9:30h a 11:30h  
Contacte: piacomunitariroquetes@gmail.com

Grup de caminants dinamitzat per un monitor esportiu.

#### Bany de bosc

Fundació Els Tres Turons  
Activitat puntual de 10h a 12h.  
Contacte: marta.garcia@els3turons.org

Sessió de regulació emocional on s'aprendran tècniques de mindfulness, consciència i treball sensorial.

#### Ruta en bicicleta

PES Cruïlla / Ke taller  
Horari per definir  
Contacte: pablo.arrabal@salesians.cat

Ruta amb bicicleta adaptada al grup i dinamitzada per voluntaris de l'entitat.

### Activa't als parcs

Associació Esportiva Sarrià Sant Gervasi  
Plaça de l'aqüeducte: Dilluns de 10h a 11h; tai Txi i Txi Kung / Dimecres de 10h a 11h; Motricitat i memòria

Casa de l'aigua: Dimarts de 10 a 11h; tai Txi i Txi Kung/ Dijous de 10 a 11h; Motricitat i memòria

Inscripció al lloc de la activitat. Més informació: <https://ajuntament.barcelona.cat/esports/es/deporte-en-el-espacio-publico/activate-en-los-parques>

Programa d'exercici físic i salut que es practica a l'aire lliure, en concret en diferents parcs i jardins de Barcelona, i que vol incentivar l'exercici físic per a cuidar la salut, mantenir una vida activa en l'àmbit psicològic i social, trobar-se en millors condicions, i reduir el risc de malalties mentre es gaudeix dels espais verds de la ciutat.

### Tallers i rutes guiades

#### Punt d'Interacció de Collserola

Vall de Can Masdeu  
Dos diumenges al mes  
Contacte: canmasdeu@canmasdeu.net  
Més informació a <https://www.canmasdeu.net/pic/>

Tallers, xerrades, projeccions i actuacions, totes gratuïtes, ofertes per una gran diversitat de talleristes, activistes i artistes, alguns d'ells membres de la comunitat.



#### Collserola inèdita

Castell de Torre Baró  
Dissabtes de 10h a 12h. Una vegada cada trimestre i segons demanda d'entitats.  
Contacte: castell\_torrebaro@bcn.cat

Itinerari que transcorre pel vessant sud dels voltants del Castell i per una part d'obaga, endinsant-nos en un recorregut agradable i coneixent les característiques principals i espècies de la vegetació mediterrània adaptada a l'escassetat d'aigua.

#### Visites i educació agroecològica

Vall de Can Masdeu  
Dilluns, dimarts, dimecres, divendres o dissabtes, matí o tarda.  
Contacte: canmasdeu@canmasdeu.net

Rutes guiades per la vall i tallers pràctics per aprofundir en la comprensió del nostre estil de vida i el seu impacte sobre el medi ambient, l'agricultura ecològica i la permacultura, el consum responsable, la transformació social o la vida en comunitat.

### Els indicis i rastres dels nostres veïns

Casa de l'aigua de Trinitat Nova  
Cada dos mesos  
Contacte: casadelaiguad8@gmail.com  
Cal reserva prèvia

Descoberta de rastres i indicis de quin animals o animals tenim per veïns. Realització d'una petjada amb fang.

#### L'entorn del Castell

Castell de Torre Baró  
Dissabtes de 10h a 12h. Una vegada cada trimestre i segons demanda d'entitats.  
Contacte: castell\_torrebaro@bcn.cat

Itinerari en el qual s'explica diferents temàtiques ambientals relacionades amb el parc natural de Collserola i Barcelona a través de l'observació de l'entorn. També es convida a descobrir diversos paisatges i adonar-nos de la influència humana a les franges de contacte entre el parc i la ciutat.

#### Canvi climàtic i adaptacions

Castell de Torre Baró  
Dissabtes de 10h a 12h. Una vegada cada trimestre i segons demanda d'entitats.  
Contacte: castell\_torrebaro@bcn.cat

Itinerari en el qual s'explica diferents temàtiques ambientals relacionades amb el parc natural de Collserola i Barcelona a través de l'observació de l'entorn. També es convida a descobrir diversos paisatges i adonar-nos de la influència humana a les franges de contacte entre el parc i la ciutat.

#### Del Castell a la Font Muguera

Castell de Torre Baró  
Dissabtes de 10h30 a 12h30. Una vegada cada trimestre i segons demanda d'entitats.  
Contacte: castell\_torrebaro@bcn.cat

Itinerari que transcorre pel vessant sud de Collserola on s'acompanya a descobrir i a gaudir del paratge bell i tranquil de la font Muguera i a conèixer algunes de les principals amenaces del Parc Natural de Collserola i com l'afecten: els incendis i les espècies invasores.

#### Taller artesanania i reciclatge natural

Associació Som del Barri / Centre Toni i Guida  
2 sessions matí i/o tarda  
Contacte: somdelbarri@gmail.com

Trobar materials a la natura i generar una peça d'artesanania

### Espais verds

#### Jardines de Rodrigo Caro

De l'1 de novembre al 31 de març, tots els dies de 10:00 h a 19:00 h.  
De l'1 d'abril al 31 d'octubre, tots els dies de 10:00 h a 21:00 h.

És un jardí temàtic especialitzat en vegetació de clima mediterrani dels cinc continents. Trobarem fins a vuitanta espècies diferents de plantes aromàtiques, vivaces, gramínies i dinou espècies arbòries.

### Parc de Josep Maria Serra Martí

#### Accés lliure

Aquest espai verd, molt veïnal, no és solament un parc, sinó també un passeig i una plaça.

### Parc del Pla de Fornells

#### Accés lliure

Ascendint per la faldilla de la serra de Collserola, el parc del Pla de Fornells combina el seu caràcter eminentment forestal amb un traçat de disseny molt actual.

### Serra de Collserola

#### Accés lliure

Un dels parcs metropolitans més grans del món.

### iNaturalist

CREAF i GBIF Espanya  
En qualsevol lloc, hora i freqüència.  
Contacte: p.guzman@creaf.uab.cat, l.force@creaf.uab.cat

iNaturalist és una plataforma per registrar observacions de biodiversitat. Amb aquestes dades de la ciutadania, els científics i científiques poden estudiar la flora i la fauna. És, també, una xarxa social per naturalistes, ja que la comunitat d'usuaris ajuden a identificar les espècies que es pengen i poden deixar comentaris. S'aprèn sobre natura només utilitzant-la i funciona com a quadern de camp online propi, on tens les teves fotos d'animals, plantes i fongs, i el lloc i la data de quan els has observat. Podríem recollir i recopilar el conjunt de plantes, animals i fongs d'un indret concret (per exemple, el parc de sota de casa). Podem escollir el grup que més ens agradi: els arbres, els ocells o les diverses plantes de les jardineres, entre moltes altres possibilitats!

### Ciència Ciutadana

#### RitmeNatura

CREAF i GBIF Espanya  
Durant tot l'any, especialment els mesos de primavera i tardor.  
Les observacions s'han d'enviar idealment un cop per setmana però pot adaptar-se a la disponibilitat del participant.  
Contacte: p.guzman@creaf.uab.cat, l.force@creaf.uab.cat

RitmeNatura és un projecte científic que compta amb la col·laboració ciutadana per registrar els comportaments de la natura modificats pel clima. Per participar en el projecte només es necessita el telèfon mòbil, descarregar-se l'aplicació d'iNaturalist i fotografiar la natura indicant quin comportament es veu. Proseguim apadrinar una planta, i anar-ne seguint els canvis almenys un cop per setmana: observar la primera flor oberta o registrar el moment en què la meitat de les flors estan obertes. Amb aquests tipus d'observacions s'ajuda a estudiar i entendre el canvi climàtic i els seus efectes sobre la natura.





## NATURA. BENESTAR. CONNEXIÓ A LES CIUTATS.

El projecte RECETAS explora com les solucions basades en la natura poden reduir la soledat a les ciutats i millorar el benestar de la ciutadania.

@Recetasproject  
@Recetasproject  
www.recetasproject.eu



Menú d'activitats

Prescripció social basada en la natura

Barri de Les Roquetes

## QUÈ ÉS AQUEST MENÚ?

És un llistat de recursos relacionats amb la natura que existeixen en el barri de Les Roquetes i al seu voltant.

Conté informació sobre espais, equipaments, entitats i activitats relacionades amb la natura que estan a disposició de la ciutadania.

Pots consultar la localització, horaris, i informació sobre l'activitat i el contacte per demanar més informació, reservar, o organitzar-la.



Vols consultar la localització dels espais i activitats?



Escaneja'm!

## COM S'HA CREAT?

Mitjançant un procés de cocreació, diferents entitats i administracions del sector de la salut mental, benestar i soledat, prescripció social i natura han compartit el seu coneixement, recursos i informació sobre activitats i programes en el territori.

L'objectiu és incloure-les en un programa de prescripció social basat en la natura.

Pots consultar el llistat a l'altra cara del fullletó.

Esperem que ho gaudiu!



La **prescripció social basada en la natura** connecta les persones amb recursos comunitaris per millorar la seva salut i inclou el contacte amb la natura com un dels components principals pels beneficis en salut que comporta.

*"Somos naturaleza y pensar la vida al margen de la biosfera es simplemente una construcción cultural errónea e ilusa"*

Yayo Herrero



Entitats que han col·laborat en la creació d'aquets menú

Vall de Can Masdeu  
Associació Som del Barri  
PES Cruïlla / Ke taller  
Humus Therapy (FTHVB)  
Cohabitatge CIRERES  
Fundació Els Tres Turons  
SOM NATURA  
Biblioteca Les Roquetes - Ràfa Juncadella  
Casa de l'Aigua de Trinitat Nova  
Cooperativa Tarpuna  
Castell de Torre Baró  
CREAF  
Associació Esportiva Sarrià Sant Gervasi  
Parcs i jardins  
CAP Roquetes  
Agència de Salut Pública de Barcelona  
Serveis socials  
Casal de Gent Gran  
Ton i Guilda  
AFA IE Turó de Roquetes  
Escola Bressol Municipal y Espacio  
Familiar El Torrent

Equip promotor



## 8.2. POST-SESSION DIARY NOTES SHEET

<b>Nombre participants i noms (qui ha vingut). Detallar si algú ha arribat tard o ha marxat d'hora i perquè.</b>	
<b>Lloc i timing</b>	
<b>Com ha sigut la welcome?</b>	
<b>Activitats desenvolupades</b>	
<b>Ha sortit tema soledat i com</b>	
<b>Ha sortit tema natura i com</b>	
<b>Interacció entre participants(descripció). Aïllats? Grups?</b>	
<b>Interacció amb facilitadors</b>	
<b>Facilitat obertura temes delicats</b>	
<b>Incidències</b>	
<b>Estat anímic participants</b>	
<b>Com ens hem sentit facilitadors/es</b>	
<b>Disposició espai (homes i dones separats? //rotllana?)</b>	
<b>Comunicació verbal</b>	
<b>Comunicació no verbal</b>	
<b>Com ha sigut la despedida?</b>	
<b>Observacions (whatsapp, quedades...?)</b>	

### 8.3. TABLES

Table 6. Neighborhood attachment descriptive scores

		Neighborhood attachment		Neighborhood attachment (3m)	
		Count	Column N %	Count	Column N %
1. Este es un barrio ideal para vivir	Totalmente de acuerdo	4	33,3%	4	50,0%
	De acuerdo	7	58,3%	2	25,0%
	En desacuerdo	0	0,0%	2	25,0%
	Totalmente en desacuerdo	1	8,3%	0	0,0%
2. Ahora este barrio forma parte de mi	Totalmente de acuerdo	5	41,7%	7	87,5%
	De acuerdo	6	50,0%	0	0,0%
	En desacuerdo	0	0,0%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	1	12,5%
3. Hay lugares del barrio con los que estoy emocionalmente muy unido	Totalmente de acuerdo	2	16,7%	5	62,5%
	De acuerdo	8	66,7%	1	12,5%
	En desacuerdo	1	8,3%	1	12,5%
	Totalmente en desacuerdo	1	8,3%	1	12,5%
4. Sería muy difícil para mí dejar este barrio	Totalmente de acuerdo	4	33,3%	5	62,5%
	De acuerdo	4	33,3%	1	12,5%
	En desacuerdo	3	25,0%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	2	25,0%
5. Me iría de buena gana de este barrio	Totalmente de acuerdo	1	8,3%	2	25,0%
	De acuerdo	1	8,3%	0	0,0%
	En desacuerdo	3	25,0%	1	12,5%
	Totalmente en desacuerdo	7	58,3%	5	62,5%
6. No dejaría voluntariamente este barrio por otro	Totalmente de acuerdo	5	41,7%	4	50,0%
	De acuerdo	5	41,7%	2	25,0%
	En desacuerdo	1	8,3%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	2	25,0%

Table 7. Neighborhood aesthetics descriptive scores

		Neighborhood aesthetics		Neighborhood aesthetics (3m)	
		Count	Column N %	Count	Column N %
1. Hay árboles a lo largo de las calles en mi barrio	Totalmente de acuerdo	0	0,0%	0	0,0%
	De acuerdo	1	100,0%	0	0,0%
	En desacuerdo	0	0,0%	0	0,0%
	Totalmente en desacuerdo	0	0,0%	0	0,0%
2. Los árboles dan sombra en las aceras de mi barrio	Totalmente de acuerdo	5	41,7%	4	50,0%
	De acuerdo	3	25,0%	2	25,0%
	En desacuerdo	3	25,0%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	2	25,0%
3. Hay muchas cosas interesantes a ver mientras se camina por mi barrio	Totalmente de acuerdo	2	16,7%	4	50,0%
	De acuerdo	3	25,0%	4	50,0%
	En desacuerdo	6	50,0%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	0	0,0%
4. Mi barrio está generalmente libre de basura	Totalmente de acuerdo	3	25,0%	0	0,0%
	De acuerdo	0	0,0%	1	12,5%
	En desacuerdo	5	41,7%	4	50,0%
	Totalmente en desacuerdo	4	33,3%	3	37,5%
5. Hay muchas vistas naturales atractivas en mi vecindario (como paisajes, vistas)	Totalmente de acuerdo	4	33,3%	4	50,0%
	De acuerdo	4	33,3%	4	50,0%
	En desacuerdo	3	25,0%	0	0,0%
	Totalmente en desacuerdo	1	8,3%	0	0,0%
6. Hay edificios/casas atractivas en mi barrio	Totalmente de acuerdo	3	25,0%	0	0,0%
	De acuerdo	5	41,7%	4	50,0%
	En desacuerdo	3	25,0%	1	12,5%
	Totalmente en desacuerdo	1	8,3%	3	37,5%

## **9. Nota final de l'autora**

Realitzar el TFG el marc d'un projecte de recerca has estat molt enriquidor perquè ha permès posar a la pràctica tots els conceptes teòrics treballats fins al moment i provar l'aplicabilitat de les idees teòriques per a un projecte, ja que sobre el paper tot és possible però el repte està en transformar el disseny sobre paper a la realitat. En aquest sentit ha estat un privilegi ple d'aprenentatges no només a nivell metodològic sinó també a nivell humà i de recerca.

El fet d'estar vinculada com a investigadora al projecte per una banda ha estat molt positiu perquè m'ha donat un coneixement intern del desenvolupament del projecte, tant en el disseny i la implementació de l'assaig clínic a Barcelona, com de participar en l'equip de recerca centrat en mesurar l'impacte de la natura a la salut, i participar en les formacions. Continuar vinculada al projecte més enllà del TFG em donarà la possibilitat de veure l'aplicabilitat dels resultats. Per altra banda, a vegades ha estat difícil separar la temàtica del TFG amb la resta d'organització, i altres aspectes de recerca del projecte que van més enllà de l'àmbit d'aquest treball, com altres avaluacions que hem portat a terme durant la implementació de la prova pilot, i altres debats oberts en el si del projecte.

### **9.1. Tasques realitzades en el marc del TFG**

Les tasques realitzades dins el projecte RECETAS en el marc del TFG han estat:

- Desenvolupar l'anàlisi de l'estat de la qüestió específicament per a les preguntes de recerca del TFG, més enllà del background del projecte. Això ha requerit actualitzar i ampliar la bibliografia disponible en el projecte.
- Formació de la metodologia d'intervenció "Cercle d'amics".
- Facilitació del grup pilot, junt amb Laia Briones, de l'equip d'investigació de la Uvic-UCC, i amb mentoratge de Laura Rautatienan, de la Universitat de Hèlsinki.
- Anàlisi de les dades presentades als resultats.
- Discussió i resultats.

El desenvolupament del qüestionari de "Dosi de natura i biodiversitat percebuda" ha estat realitzat conjuntament per tot l'equip del projecte, i especialment del subequip especialitzat en aquest tema.

El disseny tant de l'assaig clínic com de la prova pilot, el càlcul mostral i l'aleatorització detallats a l'apartat de metodologia formen part del disseny del projecte.

## **10. Agraïments**

A la meva família per la seva infinita paciència i suport, tant pel desenvolupament del TFG com per tot el Grau d'Infermeria.

A la tutora d'aquest treball Laura Coll Planas per la seva paciència i per la oportunitat i confiança per participar al projecte RECETAS.

I també a Javier Jerez Roig la possibilitat de participar al Grup de Recerca Methodology, Methods, Models and Outcomes of Health and Social Sciences (M<sub>3</sub>O), la seva acollida ha obert un món nou per a mi.