

URBAN STREAMS AND PHYSICAL ACTIVITY PROMOTION: TOWARD AN ECOLOGICAL-EXPERIENTIAL APPROACH

Autor: **Irene Gargiulo, Marta Benages Albert , Xavier Garcia Acosta, Pere Vall Casas**

Universidad o Institución a la que pertenece: Universitat Internacional de Catalunya, Barcelona, Spain

Directors de la tesis: Pere Vall Casas, Marta Benages Albert, Xavier Garcia Acosta

E-Mail: irenegar@uic.es

ABSTRACT

Physical activity nearby urban streams is a relevant issue of public health. Ecological models offer an holistic understanding of the factors that influence this practice. However, issues related to the experiential processes behind people-place interactions remain overlooked. Through the analysis of a Barcelona metropolitan stream, this research proposes and tests an integrated ecological-experiential approach. Twenty-four in-depth map-based and go-along interviews were conducted with lay-public. Qualitative content analysis using ATLAS.ti software revealed six place-experience patterns related to users' motivations for physical activity. Likewise, physical and social factors influential to physical activity were identified. Such factors became barriers or facilitators depending on the perception of each pattern, and the most controversial issue was safety. The diverse perception of factors can lead to conflict when the itineraries related to different experiential patterns coincide. Such finding suggests that the design of inclusive and specialized itineraries is required for physical activity promotion.

Key words: physical activity, urban streams, ecological models, place experience

1 INTRODUCTION

The World Health Organization recognizes physical inactivity as the fourth leading global risk of mortality, responsible for the 44% of the worldwide deaths. Particularly in the urbanized world, it is an important contributor to the burden of non-communicable diseases as cardiovascular diseases, diabetes and cancers and their associated risk factors such as overweight and high blood sugar and pressure (World Health Organization, 2009). Against this backdrop, the integration of Physical Activity (PA) in people's daily routines has become a central public health issue (World Health Organization, 2013).

In this regard, ecological models are comprehensive frameworks aimed at guiding researcher and practitioners in understanding and predicting the factors (barriers and facilitators) that influence the practice of PA, with the goal of driving evidence-based planning strategies (Giles-Corti, 2002; Bauman, et al., 2012). As the term "ecology" suggests, they take a broad view by posing the accent on contextual factors for PA engagement, assuming that the dynamic interaction between individuals and their social, physical, and policy environments shapes human behaviors (Stokols, 1992). Giving support to the design of multi-level interventions, they promote durable population's behavioral changes toward a way of life that integrates PA in people's active living (i.e., daily recreational, occupational, transportation and household routines). Hence, they encourage the transversal contribution of several disciplines as urban planning, transportation, leisure and recreational, public policy, economics, and political science, in the research of factor that influence PA (Sallis, 2006). However, PA research literature remains sectorial and mostly focused on psychological, cognitive and emotional individual-level factors, thus showing modest effects on long-term changes at a population level (Glanz, 2008).

In addition, growing evidence exists on the role of natural environments (particularly green and blue spaces), as contributors to health and wellbeing by offering recreational or leisure-time PA opportunities for city-dwellers (Korpela, 2014, 2015; Nieuwenhuijsen, 2014; Gascon, 2016). Sallis (2006 : 308) defines leisure-time PA as "physical activity by choice", that is, PA considered meaningful and enjoyable by people in their free time and showing a great potential to enhance active living (Godbey, 2001). In this line, leisure and recreational studies contribute to explore the role of greenways trails as natural corridors of open spaces, as unique resources towards communities recreation, active living, active playing, social interactions, and therefore for health promotion (Moore, 2001; Godbey, 2005). Thus far, the most consistent empirical studies have focused on the effect on PA of objectively measurable environmental factors of greenways, such as proximity to residential areas, minimal size or size pro-capita, aesthetic, characteristics, safety, features and equipment (Starnes, 2011), by relying on quantitative analysis (Bauman, 2012; Foley, 2015). However, controlling these factors alone cannot ensure that people will habitually use these spaces (Schipperijn, 2010; Bell, 2015a), and much less for their health and wellbeing (Hitchings, 2013).

In this sense, important aspects of place-experience of PA are missing. Conradson (2005 : 308) defines place-experience as the result a "*complex set of transactions between a person and their broader socio-environmental setting*". Therefore, place-experiences are not pre-determined outcomes, but different people perceive and make use of a place differently, according to its physical characteristics as well as personally relevant phenomena and the subjective and collective meanings attached to places of particular interest or significance (Conradson, 2005; Bell, 2015a). In this sense, several studies highlight the need for understanding the factors that enhance health by exploring how and why people use and interact with natural environment, as a critical issue to promote their everyday use for PA (Richardson, 2010; Andrews, 2012; Völker, 2013; Foley, 2015; Finlay, 2015; Thomas, 2015; Bell, 2015a; Korpela, 2015). Consequently, more research is required on the practice of PA from an integrated ecological-experiential approach. Specifically, insights into place-related personal experiences of PA may support the design of effective policies aimed at promoting PA in greenways trails. According to this hypothesis, this research proposes and tests an integrated ecological-experiential approach. The specific objectives are:

- (1) Defining place-experience patterns (PEPs) depending on the motivations for participating in PA in the place to explore commonalities in the way people experience greenways.
- (2) Assessing the perceptions linked with environmental factors that influence PA (grouped in physical and social in this case) to determine their role as barriers or facilitators among each pattern;
- (3) Exploring coincidences and divergences among the perceptions of the different PEPs and the physical and social factors.

2 METHODOLOGY

2.1. Methodological approach

A qualitative approach was defined. Ethnographically and phenomenologically-inspired, it ensured a holistic formulation of the interactions between individuals and the broader socio-physical environment where the activities take place, and therefore of place-experience (Hammersely, 1994; Buttimer, 2015). Accordingly, qualitative data guaranteed sensitivity in understanding the meanings behind the socio-physical environmental factors that influence PA by deepening the diverse ways that different people relate and value the same everyday natural environment whilst performing a particular activity (Völker, 2013; Bell, 2015b; Thomas, 2015).

2.2. Case study context

The approach is developed in the Caldes Stream, a significant example of everyday recreational greenway within the Metropolitan Area of Barcelona, Spain (See Figure 2). Along its 22km, it connects an urban system integrated in four municipalities: La Llagosta, Santa Perpètua de Mogoda, Palau-Solità i Plegamans, and Caldes de Montbui, with approximately 70.000 inhabitants (Diputació de Barcelona, 2015). It comes as a succession of public open spaces, forestry and agroforestry areas, and low-density residential and industrial estates, which follow one another, up to the source of the River, where natural pristine elements prevail. Accordingly, it provides a wide gradient of landscape features, which correspond to interesting experiential variations on different kinds of PAs. Besides, after decades of degradation that have characterized the heavy industrial exploitation of the 60's and the 70's, Caldes Stream is today the scenery of a growing social use that has followed efforts to improve the environmental quality, prevent flooding risk, and recover the socio-cultural assets. Progressively, it has become a significant everyday leisure setting for riparian inhabitants, as well as metropolitan users (Benages-Albert, 2015). Hence, it plays a strategic role for communities' active living, and thus for health promotion.

2.3. Data collection

The process of data collection lasted 11 months (from January to November 2016) and counted on two phases, as shown in the Figure 1. An early exploratory fieldwork (from January to May) counted on documentary research, observations, and interviews with relevant experts and allowed gaining familiarity with the context, besides obtaining a first list of lay public contacts. The actual fieldwork (from June to November) begun by relying on contacts provided by the previous phase, and continued thanks to a snowball effect. In-depth map-based interviews and in-depth go-along interviews gathered experiential data of the context as perceived from the lay public (Descombe, 2007).

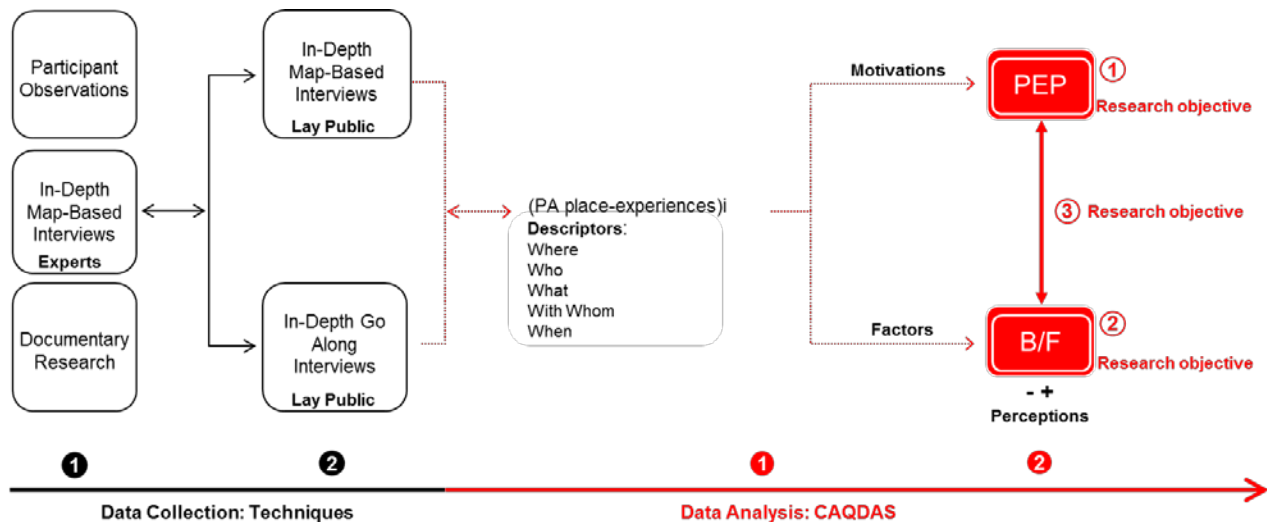


Figure 1 Methods
Own elaboration

2.3.1. Exploratory fieldwork

The author conducted preliminary observations of the place at different hours during working days and weekend days. During this process, notes and photographs documented people-place interactions: the type of users, the type PAs practiced, and the elected places' characteristics (Brownson, 2006). Furthermore, later observations were run in parallel to the in-depth interviews during the whole period of data collection and were directed to the specific places mentioned by the interviewees to physically compare the collected information.

Alongside, documentary research was undertaken by relying on the official municipalities' websites to understand the PA-related plans and initiatives, besides returning a list of experts' contacts. As for observations, further documentary research relied on the material given by the interviewees, including tourism, tracking, and training maps.

Sixteen interviews with experts were conducted. They involved sport and public spaces' decision makers, technicians, and local associations engaged in PA promotion in the studied area. Information on the policy, physical, and social environment was collected to enrich the whole picture and to give impulse to the purposive sampling of the lay public. Furthermore, interviews were complemented with a map of the entire stream at the scale of 1:50.000 where experts could mark the places they were mentioning.

2.3.2. In-depth interviews

One experienced interviewer conducted twenty-four interviews with lay-public: fourteen in-depth map-based interviews and ten in-depth go-along interviews. Insights into place-related personal experiences of PA were gathered and linked with their spatial visualization. In-depth interviews allowed deepening the cognitive, emotional, and behavioral interactions between the individuals and the stream environment. Despite the use of maps, the understanding of the spatial information remained limited (Benages-Albert, 2015). Go-along interviews complemented this information by combining emplaced-gathering of oral data about how people experience their local worlds with emplaced-observations of the people-people and people-place relational dynamics. Limits related to this technique concerned the gathering of information due to the greater involvement required to the interviewee (Carpiano, 2009).

A purposive sampling allowed capturing a wide gradient of PA place-experiences, and thus a diverse group of users, as well as a variety of space-engagements. Interviewees included individuals aged between 25 and 80 years old approached by means of complementary strategies. First, contacts provided by the local associations during the exploratory fieldwork were interviewed. Second, a direct on-site approach of the interviewees along the stream's paths for moderate-intensity PAs, and in strategic spots (parking lots, accesses, fountains, and sport installations) in case of vigorous PAs. Third, a snowball sampling technique was applied asking the interviewees to nominate other people who would be relevant for the purposes of the research (Descombe, 2007). Finally, a Wikiloc-website screening (Wikiloc, 2016) helped to contact non-riparian users. The process extended to the analytical phase, during which a theoretical sampling provided the saturation of data.

Interview's guideline counted on fourteen open-ended questions and a socio-demographic data section of eight closed-ended questions, lasting between forty minutes and one hour for in-depth map-based interviews, and ninety minutes and five hours for in-depth go along interviews. Open-ended questions were adapted from the Active Living Research database's surveys to assess the physical and social environment of trails and greenways surveys (Robert Wood Johnson Foundation, 2001; SIP 4-99 Research Group, 2002; Brownson, 2006) and the theoretical background on health geographies (Völker, 2013; Thomas, 2015; Bell, 2015a, 2015b). The guideline was structured according to five main descriptors: Who, What, Where, When, and With whom; for each of which the motivations and the perceptions behind were deepened. Interviews were consensually recorded. In-depth map-based interviews were also complemented with three maps where the mentioned places and itineraries were marked: one of the entire stream at the scale of 1:50.000, a more detailed plan for each municipality at the scale of 1:15.000, and the tracking map for the area of the at a scale of 1:20.000 (Editorial Alpina SL, 2009). In case of in-depth go-along interviews, the interviewer marked the itinerary travelled.

2.4. Data analysis

Transcriptions of the Lay public interviews and the corresponding sketched itineraries' digitalization were managed and processed through qualitative content analysis using ATLAS.ti software, version 7 (Scientific Software Development, 2016). As described by Friese (2014), this information was analyzed according to a descriptive and a conceptual level of details.

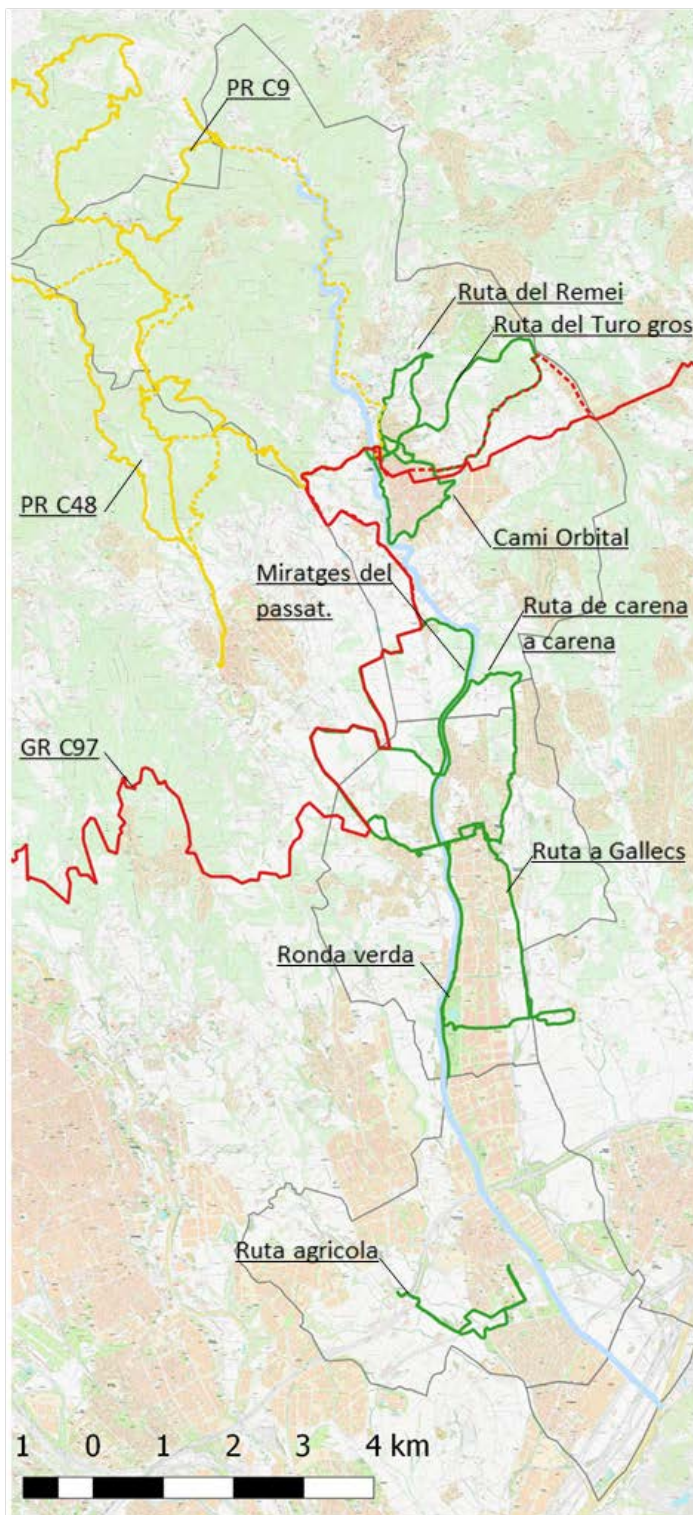
The descriptive level consisted of a recursive and refining process of reading, coding, and verifying. After an early reading of interviews' content, text was segmented in thematic units referred to the five main descriptors (who, what, where, when, and with whom), to which a preliminary coding stage associated the corresponding main categories. Alongside, comments of the segments introduced preliminary coding ideas. For each thematic unit, a second coding stage identified and collected the meaningful themes that emerge from their

line-by-line reading. Descriptive codes were initially searched as arising from the data itself. As the analysis developed, interpretative codes identified categories and subcategories of motivations, factors and perceptions. Codes' definition was both theoretical -driven by researcher's literature background-, and inductive -emerging from data without fitting in pre-existing coding system-. Code's comments defined every code, while Code's memo supported the process with codes-related ideas, thoughts, inclusion and exclusion criteria, and examples of real text.

The conceptual level consisted in seeking patterns and relations between data. First, interrelations between motivations allowed the definition of PEPs. Afterwards, interrelations between PEPs' perceptions of factors allowed assessing their role as barriers and facilitators of PA. Figure 1 summarized the whole process.



Figure 2: The Caldes Stream in the Metropolitan Region of Barcelona
Own elaboration from ICGC (Institut Cartogràfic i Geològic de Catalunya)



- Legend:
- GR Gran recorrido (Long distance path)
 - PR Pequeño recorrido (Short distance path)
 - SL Sendero local (Local path)
 - - - GR Variation
 - - - PR Variation

Figure 3: Existing itineraries

Own elaboration from ICGC (Institut Cartogràfic i Geològic de Catalunya). Sources: <https://www.feec.cat/>, <http://www.ccvoc.cat/>, <http://www.visitvalles.cat/>, <http://www.turismevallesoccidental.cat/ctvoc/portada/index.php>, <http://www.palauplegamans.net/>, <http://www.staperpetua.cat/>, <https://www.caldesdemontbui.cat/>, <http://amicsdelsender.entitatsdecaldes.cat/>, <http://www.naturallocal.net/>.



PR C9



GR 97



Ronda Verda

3 RESULTS

3.1. Place-Experience Patterns (PEPs)

PEPs represent a means to explore commonalities in the way people from different socio-cultural backgrounds experience the place by practicing different kinds of PA. They arise by grouping lay public's insights under the umbrella of common users' inner motivations to be physically active in the Caldes Stream Area. Motivations aim to delve into the reasons associated to the five descriptors that structure every experience: (1) What, (2) With whom, (3) When, (4) Where, and (5) Who. As shown in the Figure 3 they offer an understanding of the interactions between: (1) the types of PA; (2) the influence of social relationships on its practice and vice versa; (3) its duration, frequency, as well as the preferred season, moment of the day, and weather conditions; (4) where specifically in stream area and where not, and the memories evoked in these places; and (5) the socio-demographic profile of the user. In the context of the Caldes Stream, six main PEPs were identified: the Athlete, the Nature lover, the Custodian, the Cholesterol route users, the Weekender, and the Gardener.

3.1.1. The Athletes

The Athletes use the stream area for intense trainings. It includes young adults, adults, and middle-aged mainly men, for whom competition is a central aspect. He/she is the long distance runner or the mountain runner who trains to reach personal achievements, measured in terms of speed and kilometers accumulated (See Table 1). Sport is a life-costume; and it occupies a privileged role in athletes' life. They define themselves as "sport-addicts" and spending few days without training can "change their mood". On one hand, PA is a powerful "anti-depressive" instrument to "relies the stress" and "positive thinking", as well as an important support for personal "decision making" processes. It affects private life and can generate controversies in family time-management. Moreover, sport has an important social meaning; it allows "meeting new people" and "making friends", with whom share weekends outdoor and it is a precious resource to "overcome hard times". Trainings usually happen with the members of the association they are part of, however the company of other individuals to train with is not essential. Trainings takes place on a daily basis, and have an approximate duration of one hour, regardless of the weather condition. They consist in specific intense exercise-circuits that are marked along the stream paths depending on the municipality of residence. For the Caldes de Montbui residents, these are combined with less intense running in the nearby mountains (See Figure 5). During weekends, the training distances increase, and so the duration, towards the nearby mountains, forestry and agroforestry areas.

3.1.2. The Nature lovers

For the Nature lovers the main motivation for practicing physical activity is the love for nature and its wildlife. Young adults, adults, middle aged and retired men and women stroll, hike, mountain-bike, and mountain-run around the stream area in searching of an intimate contact with nature (See Table 1). Being active in the natural environment means "*live the environment*"; a five-senses experience that results in a source of "*mental restoration*", "*energy recharging*", "*disconnection from everyday stress*" and "*connection*" with nature. It is a private and intimate moment during which "*thinking, remembering and planning*". Intimacy, most of the time, requires solitude or a close friend or a family member. They enjoy "*showing the place*" to who does not know it yet. Dogs are good companions. Weather does not influence the activity practice, but it rather represents an opportunity to "*observe nature changes*". The activity is practiced constantly and, usually, remote and unknown destinations are preferred. However, the stream area ensures an immediately close natural environment for a daily stroll (less than 1-2 hours) when time is lacking for longer hikes, and mountain biking and running (more than 2 hours). As shown on the map (See Figure 5), in the first case, they prefer the plain forestry itineraries and parts of the itineraries of the southern area that offer opportunities for wildlife observation. When time-constraints reduce, Nature lover prefer the mountain northern areas and transversal agroforestry itineraries. Particularly, mountain biking is a weekend activity for working-class people and the river represent an important connection with the city of Barcelona and its outskirts. These itineraries also offer the opportunity to visit heritage sites as hermitages, farmhouses, and archaeological remains. Therefore, the practice of PA is also an opportunity to get to know new places. The love for nature expresses through the development of a sense of responsibility towards these places, taking care of them by picking up trash along the paths and notifying to the municipal authorities about episodes of vandalism.

3.1.3. The Custodians

This sense of responsibility finds his higher expression with the Custodians. The Custodian is a Nature lover that specifically use the river for exploratory strolls and hikes to control its conditions in terms of path

accessibility, signalization, maintenance, and vegetation (See Table 1). These users are usually middle aged and older native riparians that engage with organizations in the protection and care-promotion of the stream. While organization's activities take place on an annual basis, they monthly or weekly have a walk along the stream's itineraries to "*check on her*" (See Figure 5).

3.1.4. The Cholesterol-route users

The term "cholesterol routes", it is a colloquial way of talking about where usually a middle-aged and older public, mainly women, practice PA to take care of their health. It corresponds to brisk walking and, to a lesser extent, jogging. It is usually associated with walking the dog or spending time with friends (See Table 1). Therefore, it normally happens accompanied for security reasons, and for the "*mutual support*" in motivating each other in being constant in the practice. The activity lasts approximately one hour, and constancy in the practice is variable. Retired users have a daily frequency while working users are more likely to practice the activity two or three times a week or during weekends. Owing a dog represent an important determinant for practicing it in a daily frequency and alone, and to meet with other dog owners on the place. Weather conditions are also important; particularly the rain and the summer heat are the main deterrents. The routes are usually steady, at short walking distance from the city center, quite plain, easy, and with the summer heat, possibly shaded and ventilated, and corresponds to the forestry and riverside itineraries along the stream (See Figure 5).

3.1.5. The weekenders

On Sunday and for holidays, the same itineraries become a setting for sharing activities: groups of friends, couples, relatives, or parents with children, make the most of their free time to use the river as a natural space to spend healthy-time together, while playing in the green environment (See Table 1). They usually have a stroll, or ride a bike, along the forestry itineraries, or heading to the Hostal del Fum Park to have a picnic. These itineraries offer a proximal and quite environment, far from the traffic, plane, easy to travel, and surrounded by nature, presenting opportunities for animal observation. These family pictures are reflected in shared memories of grown interviewed. Going south, the people's density decreases: the itineraries pass by the industries side, and require several crossing points unsafe for younger users (See Figure 5).

3.1.6. The gardeners

The Gardeners are mainly retired users, but also adult and middle-aged men and women who dedicate to horticulture. It has two main functions: mental, and social (See Table 1). Particularly, but not exclusively, for unemployed, marginalized, and retired people it reduces mental stress by taking the mind occupied through a variety of activities related to the care of the vegetable gardens. From a social point of view, it is a source of human relationships. Despite being a lonely activity, it offers the opportunity to meet people and to strengthen links among the others gardeners, friends and member of the family. For young fathers it is an opportunity to spend time with their children. From a physical health point of view, it allows users to have "*healthy food on the table*". The activity's frequency depends on the Gardener free time. Working users devote part of their weekends to the activity. For retirees and unemployed it is a daily activity. In general, it last at least 2 to 3 hours, and it becomes more intense during spring and summer. The activity is composed by punctual actions and do not requires to travel long distances. The (See Figure 5) shows the existent public orchards nearby the stream.

Descriptors

1 WHAT

- 1.1 TYPE OF ACTIVITIES (RIERA DE CALDES)
- Walking (Brisk walking, Strolling, Hiking)
 - Running (Jogging, Long distance running, Mountain running)
 - Playing
 - Riding a bike (Leisure biking, Road cycling, Mountain biking)
 - Gardening
- 1.2 OTHER ACTIVITIES
- Other activities (Never, Occasionally, Constantly)

2 WITH WHOM

- 2.1 PREFER
- Alone (always alone, sometimes accompanied)
 - In company (always in company, sometimes alone)
 - Indifferent
- 2.2 WITH
- Friends
 - Family members
 - Activity's partners
 - Organization's members
 - Local encounters
 - Dog

3 WHEN

- 3.1 WEATHER
- Meteorological (Sunny, Rainy, Windy)
 - Temperature (Hot, Cold)
- 3.2 SEASON
- 3.3 DURATION
- Time (Short, Medium, Long)
- 3.4 FREQUENCY
- Constancy (Constant, Inconstant)
 - Incidence (Daily, Weekly, Monthly, Annual)
- 3.5 TIME
- Variability (Fixed, Variable)
 - Incidence (Days of Week, Moment of the day)

4 WHERE

- 4.1 RIVERSIDE SPACES AND ITINERARIES TYPES:
- Mountain
 - Forestry
 - Agroforestry
 - Agricultural
 - Hybrid (+ Industrial side)
 - Hybrid (+ Urban side)
 - Peri-urban parks
- 4.2 FEATURES
- Length
 - Variability
 - Landmarks
 - Marking
 - Heritage
 - Surface
 - Facilities
 - Equipping
 - Natureness
 - Density
- 4.3 MEMORIES

5 WHO

- 5.1 SOCIO DEMOGRFIC CHARACTERISTICS
- Gender
 - Age
 - Residence
 - Year of residence
 - Social position
 - Children age
 - Working status
 - Educational level
- 5.2 ORGANIZATION'S MEMBER
- PA related
 - Environmental related
 - Other

Motivations

- Contact with nature
- Take care of nature
- Personal achievements
- Physical health
- Mental health
- Inherited habit
- Sharing experience

PEPs

ATHELETES

- Motivations**
- Personal achievements
 - Mental health
- WHAT**
- Long distance running
 - Mountain running
- WITH WHOM**
- Organization members
- WHEN**
- Short duration
 - Daily frequency
 - Constantly
- WHERE**
- Mountain circuits
 - Forestry circuits
 - Hybrid circuits
- WHO**
- Men > Women
 - Adults and middle aged

NATURE LOVERS

- Motivations**
- Contact with nature
 - Inherited habit
 - Mental health
- WHAT**
- Strolling
 - Hiking
 - Mountain running
 - Mountain biking
- WITH WHOM**
- Mainly alone
- WHEN**
- Short/Long duration
 - Daily/Weekly frequency
 - Constantly
- WHERE**
- Mountain itineraries
 - Forestry itineraries
 - Agroforestry itineraries
- WHO**
- Men > women
 - Adults, Middle aged, Retired

CUSTODIANS

- Motivations**
- Take care of Nature
 - Inherited habit
 - Mental health
- WHAT**
- Strolling
 - Hiking
 - Mountain biking
- WITH WHOM**
- Indifferent
- WHEN**
- Short duration
 - Weekly/Monthly frequency
 - Constantly
- WHERE**
- Mountain itineraries
 - Forestry itineraries
 - Hybrid itineraries
- WHO**
- Men > women
 - Middle aged, Retired

CHOLESTEROL-ROUTE USERS

- Motivations**
- Physical Health
 - Personal Achievements
 - Sharing experience
- WHAT**
- Brisk walking
 - Jogging
- WITH WHOM**
- Mainly in company
- WHEN**
- Short duration
 - Daily/Weekly frequency
 - Constantly/Inconstantly
- WHERE**
- Forestry itineraries
 - Hybrid itineraries
- WHO**
- Men < women
 - Middle aged, Retired

WEEKENDERS

- Motivations**
- Contact with nature
 - Sharing experience
- WHAT**
- Strolling
 - Leisure biking
- WITH WHOM**
- Mainly in company
- WHEN**
- Medium duration
 - Weekly frequency
 - Inconstantly
- WHERE**
- Forestry itineraries
 - Hybrid itineraries
- WHO**
- Men, Women
 - Children, Adult, Middle aged

GARDENERS

- Motivations**
- Mental health
 - Physical health
 - Sharing experience
- WHAT**
- Gardening
- WITH WHOM**
- Mainly alone
- WHEN**
- Medium duration
 - Constantly
- WHERE**
- Orchards
- WHO**
- Men, Women
 - Adult, Middle aged, Retired

Figure 4: PEPs identification
Own elaboration

PEPs	Example of extracts from interviews	Prevalent Motivations
Athletes	"... I used to train for marathons; I ran 140, 160 kilometers every week! (...) I was an amateur, but I had my level, my marks and time! (...) It really satisfies me. It gives me a lot. In terms of health in quotation marks, because a competitive sport is not really healthy. Yes, it helps to maintain the body active, and the mind too, but it gives you much more, especially the people you meet." (S., June 10, 2016).	Personal achievements Mental health Sharing experience
Nature lovers	"... I like nature, I like to be outside (...) I don't like the city. I come from the countryside, up to the 25 years I used to work in the fields (...). Along the river you can do a lot of things. You can listening to the birds singing, you can observe them flying. This morning I was signing with them! (...) When you walk here you forget about things, thoughts change you remember things, and plan your life. Your mind goes back and forth. And this is because I stay there, alone without music, anything." (J.H., June 2, 2016)	Contact with nature Inherited habit Mental health
Custodians	"...Well, right now, with the "Projecte Rius", I am part of it too. Wherever there is nature, I take part and wilfully! (...) I bike and hike. Then, I love nature observation, bird watching, botanic. Whatever it takes! And if it is cleaning the stream, well there I meddle in! (...) I believe it comes from my father. (...) since he really loves the mountain and used to bring me with him, I suppose it comes from that. I always liked it, not from a certain age, no. Always. Since I was a child. To me the forest (hesitates), if I have to load up batteries, I go to the forest." (E.P., June 10, 2016).	Take care of Nature Inherited habit Mental health
Cholesterol-route users	"We walk, a little, but we walk. To lose weight and for the blood pressure. I have high blood pressure and they say I should walk, and my husband too. (...) it is tiring, but when you go back home, take off your shoes and have a shower, it doesn't look like, but the body is relaxed and you feel better. Moreover, I have problems with blood flow, I have varicose vein, and during walking my legs feels heavy, and it is demanding. We always go together, then her sister come too and other friends, a neighbor, people we meet along the path. It's not walking. It is walking and chatting. Both." (J.V., June 3, 2016)	Physical Health Personal Achievements Sharing experience
Weekender	"I do it during weekends. (...) I do it because is healthy, if I go running, I go alone, but usually I go biking with my brother-in-law, or my wife, and now my child is learning how to ride a bike and this path it is good for him, it is easy" (D.G., October 26, 2016)	Physical Health Contact with nature Sharing experience
Gardeners	"I would say that is a mental activity rather than physical. Well, yes it is physical too, but of low intensity. You spend two or three hours standing, doing things, and before starting I always have a walk to tone up a bit, this is what everyone should do. Moreover, I go and see this thing, and the other thing. It is a hobby! It is a highly varied activity, and open-air! It is priceless! It is highly varied, every day you can do something different. And it bears its fruit, and you cut it and bring it home. What more do you want? I mean, it is wonderful as an occupational therapy!" (G.G., May 26, 2016)	Mental health Physical health Sharing experience Personal achievements

Table 1: PEPs definition through motivations' associations

Own elaboration from literal extracts from interviews

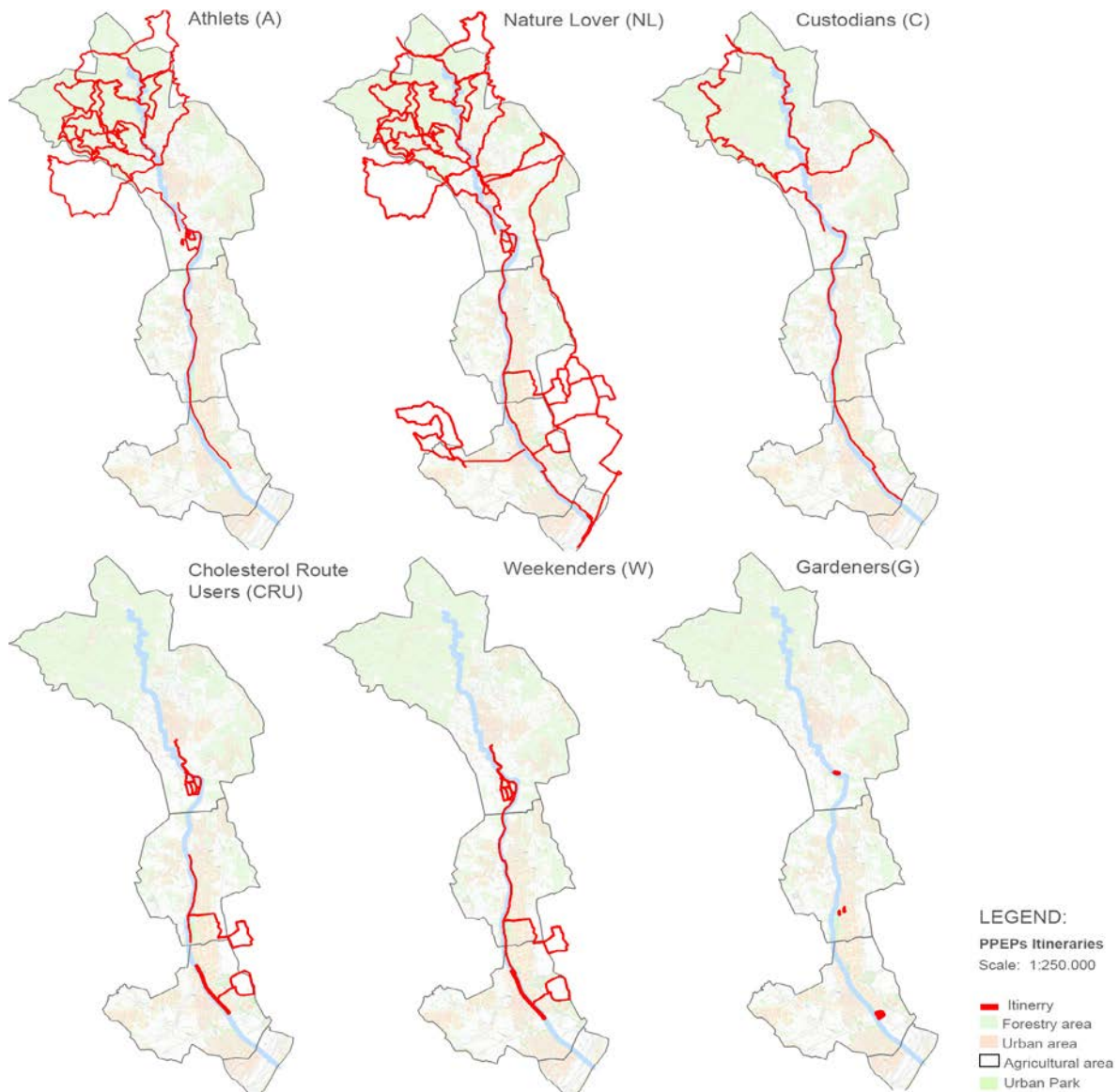


Figure 5: PEPs itineraries
Own elaboration from ICGC (Institut Cartogràfic i Geològic de Catalunya)

3.2. Factors

Factors related to the physical and the social environment that affect the practice of PA in the Caldes Stream area were identified. As the Figure 5 shows, depending on each PEP, these factors may be perceived as barriers or facilitators.

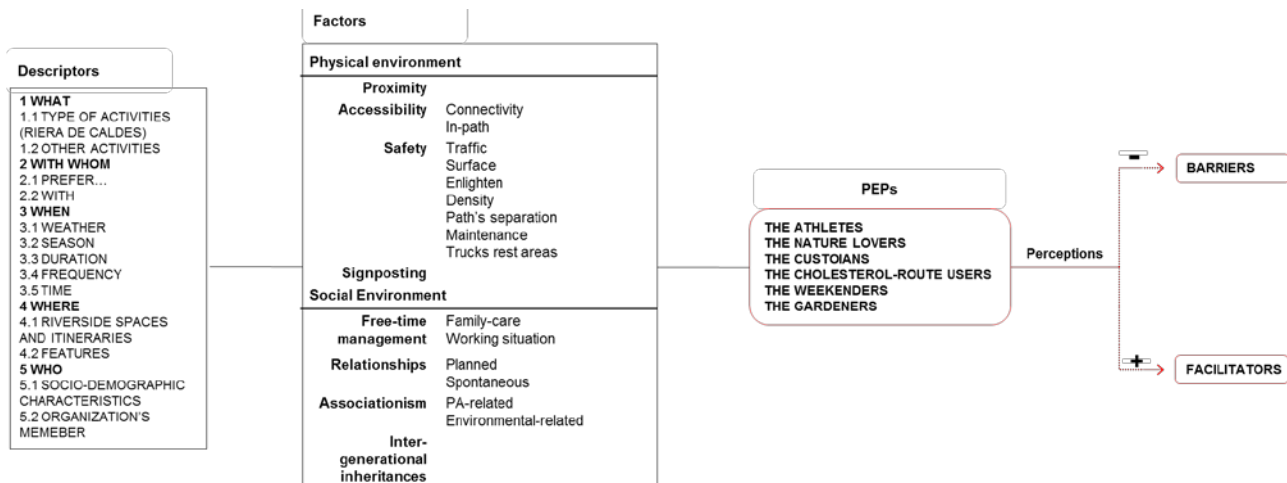


Figure 6: Factors interpretation
Own elaboration

3.2.1. Physical factors

Four factors related to the physical environment stand out: proximity, accessibility, safety, and marking. Users recognize the effect of living nearby the stream as one of the main incentives for PA. In fact, it represents an always present, free, and healthy option for active living. Particularly, women with young children and young nephew, indicates the proximity of the stream from children's schools as a determinant for PA constancy (See Table 2).

However, although proximity is proportionate for the four municipalities, the accessibility of the whole stream should be considered. On one hand, particularly for the southern municipalities, the presence of industrial parks, busy roads, and single-use zoning, do not facilitate the access to the stream area from the city centres. Some users feel forced to take the car, particularly to reach transversal itineraries, which connections are generally poor and traffic-congested. The municipality of La Llagosta is a prime example. Its inhabitants do not consider the stream as an everyday space. The reason is that an industrial park extends for the entire length of the portion of the stream within the municipality limits, which access from city center take place through non-walkable paths in between the industries. Longitudinally, the connection with the city of Barcelona through the Besós River is also poor. Differently, in the municipality of Caldes de Montbui the accessibility issue regards mainly the presence of fallen trunks that obstacle the access and the passage through several paths and is repeatedly mentioned by the inhabitants (See Table 2).

On the other hand, accessibility's perception is linked with the important issue of safety. The meaning of safety has strong psychological and social components. It involves the perception of being in danger, and the physical infrastructure has the power to reduce or amplify it through its characteristics. Users are mainly scared of injuries depending on traffic, path's surface, their enlightenment, density, and maintenance. Dangerous crossings characterized the entire length of the itineraries along the stream, impeding their physical continuity and consequently the continuous flow of the activities. In this sense, the perception of danger affect mainly those users that walk accompanied with their dogs or children. In terms of paths' surface, a dusty and bumpy surface for example can provoke incidents as falls and sprains, particularly among older users, while paved surfaces can stress joggers and runners' articulations. The sense of unsafeness is increased by the absence of enlightenment, which reduces paths' visibility and therefore their use during particular hours of the day and the winter season. In that regard, a dense use of the paths is mentioned as a means to feel safer. However, busy and not-separated bike and footpaths, mainly during weekends, can generate recreation conflicts between the several users and increase the risk of accidents. Finally, the maintenance of the area affects the sense of safety and the election of one itinerary rather than another. It includes the cleanings of the paths from grass and invasive plant species, the maintenance of the installations and of the heritage sites, punctual acts of vandalisms as the presence of graffiti, and the use of the stream as dump. Neglected areas can be found along the entire stream, but they are more common in the southern and more urbanized areas. Furthermore, women give greater weight to these safety issues, showing a more intense mistrust toward unknown persons, if they exercise alone, in an empty and, even worst, dark space. For example, in the stream sections nearby the industrial parks women feel scared by the truck drivers parked next to it. In the forestry and agroforestry areas, this feeling does not have an actual personification, but it remains linked with the fear of "you never know what might happen" (See Table 2).

Lastly, itineraries signposting has an important role in orienting the users along the paths. It aims at informing, especially not expert users, about the several existing routes and opportunities, but also at formalizing itineraries and training circuits (See Table 2).

Physical Factors		Example of extracts from interviews
Proximity		<i>"Every day I leave my son at school, that is right there, and come here to walk and maintain active"</i> (E.M., November 20, 2016)
Accessibility	Connections	<i>"Sometimes on Sunday we go running to the Serrallada de Marina (from Santa Perpetua de Mogoda). If the streaming was habitate, it would be possible to reach it, but I don't know the way, so we have to go to La Llagosta by car, park there, then cross down the highway bridge, that is awful, then yes it is easy. But from here to there, there is no way."</i> (S.M., November 14, 2016)
	In-path	<i>"... you have to pass by narrow places, where you have to bend down because the trees joined or the branches, in the Torre Marimon there are accesses that I wouldn't recommend! (...) because we had a storm and lot of trees fell down, and there are a lot of them that still have to be removed, there were trees in the middle of the paths that you had to jump to pass."</i> (R.L., June 3, 2016)
Safety	Traffic	<i>"No, no, I never go further than the bridge, because then you have to cross the street and I am with my son"</i> (D.G., October 26, 2016)
	Surface	<i>"The path is half dust half paved, I always try to step on the minimum asphalt, because it is not good"</i> (S.M., November 14, 2016)
	Enlighten	<i>"When the days are long, we always go to Palau, but during winter we can't, because there is no light, and we run inside the city (...), because there is no light in the dust path, you can go with the headlamp, but you can't see where you are putting your feet, you going to get hurt"</i> (S.M., November 14, 2016)
	Density	<i>"It happened to a friend of mine, she fell down. This is what I meant; you can twist your feet or something. Yes, you have your phone, but if you are with other persons, you feel safer."</i> (R.L., June 3, 2016)
	Path's separation	<i>"Watch out! See the bikes? They don't use the bells and you realize they are here when you already got it on you!"</i> (R., go-along interview, June 3, 2016)
	Maintenance	<i>"I didn't know this path. It is seedy, even dangerous. It is like a Chinese neighbour of a city. This is the impression that gives to me. (...) They through things away, trash, and there are graffiti, that is another contemporary obscenity."</i> (M.S., May 19, 2016)
	Truck rest areas	<i>"There are a lot of truckers parked on the side of the river, where the industrial parks are. A lot of strangers too. It never happened something, but when you pass by they look at you, and comment on you, whistle. And they are right there. They are not going to do anything maybe, but I am still afraid. Once I left the stream and took the street, and leg it"</i> (R.M., November 14, 2016)
Signposting		<i>"I would improve the signposting of the paths, because often I don't explore new places because I don't know where they bring to. You know? I have the feeling that, even if they are marked, there are no plans of the itineraries that connect the municipalities and the areas around. Or maybe it exists but I don't know it."</i> (D.G., October 26, 2016)

Table 2: Physical factors definition

Own elaboration from literal extracts from interviews

3.2.2. Social factors

Four factors related to the social environment emerge: free-time management, social relationships, associationism, and inheritances (See Table 2). Free time management involves the personal spheres of family-care and working situation. Regarding the care of family, mainly women mention it as a determinant factor. Women believe house-tasks as cooking, cleaning, taking care of children, grandchildren and husbands, are demanding tasks they must fulfill. This gendered-role of wife, mothers, and grandmothers gives them the perception of not having enough time left to dedicate to leisure activities for personal wellbeing. PA is perceived as an act of appropriation of time from those daily tasks. In this sense, children's participation in extra-school activity contributes to facilitate its practice. On the contrary, men affirmed that they prefer to use their free time for activities outside of the home environment. For both genders, the matter of time-use is linked closely with people's working situation. Work is perceived as a big impediment to PA, and specifically towards its maintenance. In fact, retired people show higher regularity in the use of the stream and in the practice of the physical activity in general, while working people are generally more likely to take advantage of weekends (See Table 2).

The influence of social relationships on physical activity is well documented. The choice of practicing the activity accompanied can be planned or spontaneous. In the first case, the presence of friends, a partner, a member of the family, or a colleague, can offer important support towards PA practice, particularly among people who are less motivated. The decision of practicing the activity accompanied can depend on the daily mood, or, as above mentioned, can be related to the sense of safety. Besides, among the users that prefer to exercise alone, spontaneous local encounters are appreciated. They include habitual meetings with users with a shared activity-interest, with whom have a little talk; as well as sporadic encounters with shepherds or farmers that share they local knowledge. Some solitary-users accompany their activities listening music. Rhythms and physical shape incompatibility, is one of the main reason of preferring to practice the activity in solitude, as well as the need of disconnection to everyday problems (See Table 2).

Local associations play a key role in promoting PA. On one hand, PA-related organizations, as athletics, bikers' and excursionists' are crucial in encouraging the use of the stream side for already-active users, by giving socio-economic support, and allowing encounters based on a shared interest. On the other hand, environmental-related organizations are equally important. In fact, they organize annual walks, runs, bike

races, and campaigns, to give impulse to the knowledge and the respect of the stream through PAs, drawing the attention of hundreds of people, not necessarily from a physically active public, from the near municipalities, as well as from other cities of the metropolitan area (See Table 2).

Finally, inter-generational inheritances are mentioned as important variables toward the everyday practice of PA. Natural and unconscious attitudes toward the practice of PA pass down from parents to child. They evoke happy memories of family moment while practicing leisure activities. For example, young and old lay public from Caldes de Montbui, define the mountain routes as “*all-life place*”, commonly remembered for a hike, a picnic or a bath with the family in the natural pools. Differently, reminiscences of the younger users from the southern municipalities, date back from the industrial exploitation times, when the stream used to be highly polluted, and was considered a dump site. Elders’, instead, date back the industrialization period, when the stream channel was a space for children to play around, and agriculture was the most important economy. Nowadays, several examples of *inter-generationality* are present. During weekends, it is common to observe family scenes: parents teaching children how to ride bike, parents exercising while their children skating, grandparents walking with their nephews, and much more (See Table 2).

Physical Factors		Example of extracts from interviews
Free-time management	Family-care	“... and if we don't have anything to do. Because, you know, once you finish working, we have children we have to prepare food, and the dinner, and see? You have to know that if you take this hour, you take it and stop!” (R.L., June 3, 2016)
	Working situation	“ Look, I am 70 now, well 71. Since I am retired, since six years I do it constantly, everyday. Before I used to walk too, but just during weekends, but was not constant. Now yes, it is something constant” (J.H., June 1, 2016)
Relationships	Planned	“ We never go alone, always more than two. Two or more, we don't go alone. (...) I am not afraid but I have never been alone, if I am alone my husband come with me. He says let's go! And we motivate each other. I see a lot of people going alone, included elders, and they shouldn't” because if something happens...” (J.V., June 3, 2016)
	Spontaneous	“ Usually I do it alone, sometimes my wife or a son come with me, but really few times. Normally alone, I prefer like that, so I can go with my rhythm and at the time I want. (...) I meet people there, and we talk, we talk about the weather or something else” (J.H., June 1, 2016)
Associationism	PA-related	“We build up training groups in this area, according to the time, so coincide with the working schedules. We come between four and five pm, but there are people that prefer later and this is a group of 25-30 athletes.” (E.P., June 10, 2016).
	Environmental-related	“I am part of the association Los amics del Sender. Every year we organise a walk in the area of El Farell. A lot of people take part”, and the harder are the itineraries, the more they like it! One year we used a rope to hold on and go up, and the following year everyone was asking “There is no rope this year? What a pity! (...) last year we were six hundred, and we don't want more!” (E.P., June 10, 2016).
Inter-generational inheritances		“Sometimes I came with my daughters strolling. Once by nights, with the headlamp. You know? By night with the moon, to create a situation!” (J., July , 2016).

Table 3: Social factors definition

Own elaboration from literal extracts from interviews

4 DISCUSSION

The ecological-experiential approach allowed delving into the perception of the factors that influence PA. The users, mediated by PEP's specific motivations and characteristics, perceive physical and environmental factors as barriers or facilitators with different nuances and weights, resulting in a complex picture. Accordingly, Table 4 shows the coincidences and divergences on PEPs perception.

	Athletes	Nature lover	Custodian	Cholesterol route user	Weekender	Gardeners
Motivations	Personal achievements Mental health	Contact with nature Inherited habit Mental health	Take care of nature Contact with nature Inherited habit Mental health	Physical health Personal achievements Sharing experiences	Contact with nature Sharing experience	Mental health Physical health Sharing experience
Descriptors						
	WHAT Long distance running Mountain running	Strolling Hiking Mountain running Mountain biking	Strolling Hiking Mountain biking	Brisk walking Jogging	Strolling Leisure biking	Gardening
	WITH WHOM Organization's members	Mainly alone	Indifferent	Mainly in company	Mainly in company	Mainly alone
	WHERE Mountain circuits Forestry circuits Hybrid circuits	Mountain itineraries Forestry itineraries Agroforestry itineraries	Mountain itineraries Forestry itineraries Hybrid itineraries	Forestry itineraries Hybrid itineraries	Forestry itineraries Hybrid itineraries	Orchards
	WHEN Short duration Daily frequency Constantly	Short/Long duration Daily/Weekly frequency Constantly	Short duration Weekly/Monthly frequency Constantly	Short duration Daily/Weekly frequency Constantly/Inconstantly	Medium duration Weekly frequency Inconstantly	Medium duration
	WHO Men > Women Adults and middle aged	Men > women Adults, Middle aged, Retired	Men > women Middle aged, Retired	Men < women Middle aged, Retired	Men, Women Children, Adult, Middle aged	Men, Women Adult, Middle aged, Retired
Factors: Physical environment						
	Proximity	+	+	+	+	+
	Accessibility Connectivity	+	+	+	+	+
	In-path	+	+	+	+	+
	Safety Traffic	-	-	-	- (**)	-
	Surface (Paved)	-	-	+	+	0
	Enlighten	+(***)	-	+	+	0
	Density	- (***)	-	-	+	-
	Path's separation	+	+	+	+	0
	Maintenance	+	+	+	+	+
	Trucks rest areas (Adjacent) (***)	-	-	-	-	-
	Signposting	+	-	-	+	0
Factors: Social Environment						
	Free-time management Family-care (***)	-	-	-	-	-
	Working situation	-	-	-	-	-
	Relationships Planned	+	-	-	+(***)	+
	Spontaneous	+	+	+	+	+
	Associationism PA-related	+	+	+	+	0
	Environmental-related	+	+	+	+	+
	Inter-generational inheritances	+	+	+	0	+
	+ Facilitator (*) Elders ■ Potencial conflicts - Barrier (**) Families with young children +/- Intensity (***) Women					

Table 4: Summary table. Coincidences and divergences between barriers and facilitators
Own elaboration

Coincident perceptions among PEPs were found on proximity and accessibility (physical factors) and on associationism and inter-generational inheritances (social factors). Regarding physical factors, the availability of an accessible, traffic-free, and well-maintained stream near home is an important facilitator of PA among all users as noted in existing research (Reynolds, 2007; Gascon, 2016). Athletes use the stream as an everyday open-air gym, and Nature lovers as an immediate natural environment where to seek mental relief when they lack of time to reach wilder surroundings. Both Custodians and Cholesterol route users take advantage of the stream proximity, the first for frequent monitoring walks, and the second as an alternative to the city's busy itineraries. Likewise, for Weekend users, the stream represents a back courtyard where to share time with family and friends, while for Gardeners their home garden.

Regarding the social factors, to belong to an association is a communal facilitator to PA practice. Particularly among Athletes PA-related associations, facilitate PA by enabling encounters with individuals with shared interests, indeed they are mentioned as a primary source to make friends with whom train and compete. Moreover, significant contributions to PA promotion derive from associations involved in environmental enhancement and conservation activities. As highlighted by Husk (2013) they may foster health and well-being through a series of interlinked mechanisms, including contact with local nature and social cohesion. As an example, in the Caldes Stream, local associations of Custodians promote activities as volunteer litter picking and groups walk, with positive implications on new stream users. Besides, they enhance local pride and place identity and attachment, which have been found to be significant factors of recreation settings' use (Moore, 1994).

As regards inter-generational inheritances, Nature lover, Custodians, and Gardeners perceive being physically active in the stream area as a natural attitude coming from family habits. As well, Athletes consider their attitude

toward sport as hand-down too, and therefore present in their life since childhood. As a matter of fact, several studies demonstrated the role of childhood experiences in shaping leisure preferences (Godbey, 2005): contact with nature and PA during early years helps in developing positive relationships with natural environments, which may be carried through adulthood (Ward Thompson, 2008; Tammelin, 2014).

On the other hand, controversial perceptions among PEPs were found on safety and signposting (physical factors) and on gender and social relationships (social factors). Regarding safety, Nature lover and Custodians may perceive the safety requirements of Athletes, Cholesterol-route users, and Weekenders, as deterrents toward the stream use, as well as possible disturbing elements for biodiversity conservation. In fact, a high degree of naturalness and vegetation, as well as the absence of people, is the most attractive factor for the former in order to satisfy their need of seeking mental and stress relief through nature contact. However the latter, on one hand, associate it with a perceived scenic quality of the stream environment (Schroeder, 1984), but on the other correlate it to a negative perception of safety both for the risk of injuries and for crime perception (Gobster, 2004), suggesting dense-use, enlighten, and paved surface as facilitators or barriers depending on the PEP motivations.

Public from Cholesterol-route users, Weekenders, and women from Athletes agree in the beneficial effect that an increased use of the river would have towards its usage, particularly during winter and the dark hours of the day. For Weekenders and Cholesterol-routes users, who approach the stream for sharing time with family members and friends, a dense use is associated with a safe and positive experience, also linked with the opportunities for social contacts and interactions (Ashbullby, 2013). Despite safety, for Athletes density perception is linked also with crowding. Athletes, who approach the river for intense training and expect to reach specific personal achievements, might perceive the presence of too many people along their circuits as a negative phenomenon, particularly for the interference in different users' behaviors (Jacob, 1980; Ditton, 2009).

The lack of enlightening deters the stream use for the three profiles, but it has a stronger influence among the Cholesterol-route users and the Weekenders. Athletes-men mentioned that to overcome working-schedules constraints they run along the stream by night with headlamps and that the major risks faced are linked with bumpy path's visibility to avoid injuries. This is not common among Athletes-women, who feel forced to train in asphalted urban itineraries, compromising their articulations' health to avoid the sense of danger that comes from training in the dark.

Indeed, the type of surface is associated with paths' use and safety. Paved surfaces have been found to have a higher level of use in several studies (Brownson, et al., 2000; Lindsey, et al., 2008). Similarly, older and less expert users of the Cholesterol- routes and the Weekenders with young children might feel safer and more stable along paved routes. Contrarily, runners from all profiles would agree in the need of dirt paths to protect their articulations. The presence of informal dirt itineraries alongside the stream is an important witness of this issue.

In relation to signposting, the need of directional and informational signs involves controversies between Nature lover and Custodians on one side, and Cholesterol-route users, Weekenders and Athletes on the other. The latter, believe signposting a means to facilitate orientation, discover new places, and training (Andereck, 2001), while the former criticized it for the risks they entail for nature conservation and respect.

In this picture, according to existing literature, women are generally less physically active than men (Miller & Brown, 2005). Furthermore, as highlighted by Richardson (2010) differences exist between genders in perceptions of safety in urban streams. Safety issues associated with crime perceptions are stronger among women than men, who were more worried about injuries risks. Thus, women from all PEPs are less likely than men to undertake PAs in the stream area on their own. Moreover, women motivated by physical health outcomes are more concerned about safety than the others (Godbey, 2005).

Differences between genders concern also the perception of lack of free time to dedicate to PA. Only women mention family obligations fulfillment as a significant barrier (Miller, 2005). Between them, this perception is greater in health-motivated women, as from the Cholesterol-route user, in comparison with women who undertake PA as inherently part of pleasurable leisure experience, as Nature Lover, Custodians, and Athletes. Indeed, women from these PEPs believe that time dedicated to PA as part of family obligations, since it contributes to maintaining positive family and work dynamics (Thomas, 2015).

Finally, the issue of social relationships plays an important but controversial role in supporting PA among all PEPs as well (Giles-Corti, 2002). For Cholesterol-route users and Weekenders, the presence of social support i.e companions to share the activity with (a friend, a partner, or a member of the family) facilitate a regular practice of PA. Nature lover, Custodians, and Athletes do not mind to train in solitude, but other types of relationships are appreciated (Gobster, 2005). Nature Lover and Custodians particularly enjoy encounters with locals or other nature lovers. Moreover, the presence of others is perceived as a limit in personal decisions of time and place, and an obstacle to personal objectives through different physical shapes, rhythms, and interests. For Athletes support from association's colleagues has the highest importance.

The diverse perception of the environmental and social factors discussed above can lead to conflicts when the itineraries related to different experiential patterns coincide. Figure 6 shows possible conflictive segments along the Caldes Stream. Motivational interferences concentrate in the southern itineraries where the stream pass by residential areas and industrial estates in the municipalities of Santa Perpetua de Mogoda and Palau Solità I Plegamans, as well as in the path adjacent to the stream in the forestry area of the Torre Marimon in the municipality of Caldes de Montbui. Depending on conflicts, itineraries should be separated and properly equipped according to the requirements of each type of activity practiced (strolling or hiking, long distance running, jogging, mountain running, biking, road cycling, mountain biking, exercising and gardening), as well as guiding the user in matching the motivations that have brought him/her there. Furthermore, safe, walkable and clear longitudinal and transversal connections are needed to guarantee the interaction between the stream and the city centers, the stream and the surrounding areas, and between the different municipalities through



the stream itself.

Figure 7: PEPs' itineraries overlapping

Own elaboration from ICGC (Institut Cartogràfic i Geològic de Catalunya)

Despite they generate less interferences, social interventions are essential and complementary to the physical. They have a strong political component: administrations have the power of encourage the healthy use of urban rivers by supporting associationism and initiatives addressed to physical activity, as well as river knowledge and respect. Particular attention should be paid to the groups at major risk of inactivity, especially women, providing social support and dedicated actions.

5 CONCLUSIONS

This work shows that the environmental and social factors related to PA practice are perceived as barriers or facilitators with diverse intensity depending on place-experience patterns. Therefore, the motivations and needs related to these patterns should be at the forefront of the public policies for promoting PA in urban streams. On the other hand, the diverse perception of factors can derive on conflict when the itineraries of users with different experiential patterns coincide. In this regard, the design of inclusive and specialized itineraries is paramount.

BIBLIOGRAPHY

- ANDERECK, K. L. et al. (2001). Differences Between Motorized and Nonmotorized Trail Users. *Journal of Park & Recreation Administration*, 19 (3), 62-77.
- ANDREWS, G. J. et al. (2012). Moving beyond walkability: On the potential of health geography. *Social Science & Medicine*, 75(11), 1925-1932.
- ASHBULLBY, K. J. et al.. (2013). The beach as a setting for families' health promotion: A qualitative study with parents and children living in coastal regions in Southwest England. *Health & place*(23), 138-147.
- BAUMAN, A. E. et al. (2012). Correlates of physical activity: why are some people physically active and others not? *The Lancet*, 380 (9838), 258-271.
- BELL, S. L. et al. (2015) a. Seeking everyday wellbeing: the coast as a therapeutic landscape. *Social Science & Medicine*, 142, 56-67.
- BELL, S. L. et al. (2015) b. Using GPS and geo-narratives: a methodological approach for understanding and situating everyday green space encounters. *Area*, 47(1), 88-96.
- BENAGES-ALBERT, M. et al. (2015). Revisiting the appropriation of space in metropolitan river corridors. *Journal of Environmental Psychology*, 42, 1-15.
- BROWNSON , R., & EYLER, A. (2006). Saint Louis Environment and Physical Activity Instrument. Retrieved March 2016, from <http://activelivingresearch.org/saint-louis-environment-and-physical-activity-instrument>
- BROWNSON, R. C., HOUSEMANN, R. A., & BROWN, D. R. (2000). Promoting physical activity in rural communities: walking trail, access, use, and effect. *American Journal of Preventive Medicine*, 18(3), 235-241.
- BUTTNER, A., & SEAMON, D. (2015). *The human experience of space and place*. Routledge.
- CARPIANO, R. M. (2009). Come take a walk with me: The "Go-Along" interview as a novel method for studying the implications of place for health and well-being. *Health & Place*, 15(1), 263-272.
- CONRADSON, D. (2005). Landscape, care and the relational self: therapeutic encounters in rural England. *Health & Place*, 11(4), 337-348.
- DESCOMBE, M. (2007). *The good research guide: for small-scale social research projects* (3th ed.). McGraw-Hill Education (UK).
- DIPUTACIÓ DE BARCELONA. (2015). *Estudi per a la identificacions de camins esportius de la demarcació de Barcelona*. Barcelona: ACNA, SL.
- DITTON, R. B., FEDLER, A. J., & GRAEFE, A. R. (2009). Factors contributing to perceptions of recreational crowding. *Leisure Sciences*, 5(Issue 4), 273-288.
- EDITORIAL ALPINA, SL. (2009). *El Farell i el seu entorn*. Granollers, Barcelona: Editorial Alpina.
- FINLAY , J. et al. (2015). Therapeutic landscapes and wellbeing in later life: Impacts of blue and green spaces for older adults. *Health & Place*, 34, 97-106.
- FOLEY , R., & KISTEMANN, T. (2015). Blue space geographies: Enabling health in place. *Health & Place*, 35, 157-165.
- FRIESE, S. (2014). *Qualitative data analysis with ATLAS.ti*. Sage.
- GASCON, M. et al. (2016). Residential green spaces and mortality: A systematic review. *Environment international*, 86, 60-67.
- GILES-CORTI, B., & DONOVAN, R. J. (2002). The relative influence of individual, social and physical environment determinants of physical activity. *Social science & medicine*, 54(12), 1793-1812.
- GLANZ, K., RIMER, B. K., & VISWANATH, K. (2008). *Health behavior and health education: theory, research, and practice* (4th ed.). John Wiley & Sons.
- GOBSTER, P. H. (2005). Recreation and Leisure Research from an Active Living Perspective: Taking a second look at urban trail use data. *Leisure Sciences*, 27, 367-383.
- GOBSTER, P. H., & WESTPHAL, L. M. (2004). The human dimensions of urban greenways: planning for recreation and related experiences. *Landscape and Urban Planning*, 68(2), 147-165.
- GODBAY, G. C. et al.(2005). Contributions of leisure studies and recreation and park management research to the active living agenda. *American journal of preventive medicine*, 28(2), 150-158.
- GODBAY, G., PAYNE, L., & ORSEGA-SMITH, E. (2001). Increasing physical activity among older adults. *Testimony to a US Congressional Briefing sponsored by the National Coalition for the Promotion of Physical Activity*, Washington DC.
- HAMMERSELY, M., & ATKINSON, P. (1994). *Etnografía: métodos de investigación*. Barcelona: Paidós.
- HITCHINGS, R. (2013). Studying the preoccupations that prevent people from going into green space. *Landscape and Urban Planning*, 118, 98-102.
- HULL, R. B., STEWART, W. P., & YOUNG , K. Y. (1992). Experience patterns: Capturing the dynamic nature of a recreation experience. *Journal of Leisure Research*, 24(3), 240.

- HUSK, K. et al. (2013). Participation in environmental enhancement and conservation activities for health and well-being in adults. *The Cochrane Database of Systematic Reviews, Issue 2*(CD010351).
- JACOB, G. R., & SCHREYER, R. (1980). Conflict in outdoor recreation: A theoretical perspective. *Journal of leisure research, 12*(4), 368-380.
- KORPELA, K. A. (2014). Analysing the mediators between nature-based outdoor recreation and emotional well-being. *Journal of Environmental Psychology, 37*, 1-7.
- KORPELA, K. A. (2015). From restorative environments to restoration in work. *Intelligent Buildings International, 7*(4), 215-223.
- LINDSEY, G. et al. (2008). Urban greenways, trail characteristics and trail use: implications for design. *Journal of Urban Design, 13*(1), 53-79.
- MILLER, Y. D., & BROWN, W. J. (2005). Determinants of active leisure for women with young children - an "ethic of care" prevails. *Leisure sciences, 27*(5), 405-420.
- MOORE, R. L., & GRAEFE, A. R. (1994). Attachments to recreation settings: The case of rail-trail users. *Leisure sciences, 16*(1), 17-31.
- MOORE, R. L., & SHAFER, C. S. (2001). Introduction to special issue trails and greenways: Opportunities for planners, managers, and scholars. *Journal of park and recreation administration, 19*(3), 1-16.
- NIEUWENHUIJSEN, M. J.-G. (2014). Positive health effects of the natural outdoor environment in typical populations in different regions in Europe (PHENOTYPE): a study programme protocol. *BMJ open, 4*(4), e004951.
- OAKES, J. M., FORSYTH, A., & SCHMITZ, K. H. (n.d.). Twin Cities Walking Survey.
- REYNOLDS, K. D. et al. (2007). Trail Characteristics as Correlates of Urban Trail Use. *American Journal of Health Promotion, 21*(4), 335-345.
- RICHARDSON, E. A., & MITCHELL, R. (2010). Gender differences in relationships between urban green space and health in the United Kingdom. *Social Science & Medicine, 71*(3), 568-575.
- SALLIS, J. F. et al. (2006). An ecological approach to creating active living communities. *Annual Review Public Health, 27*, 297-322.
- SALLIS, J. F., NEVILLE, O., & FISHER, E. B. (2008). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath, *Health behavior and health education. Theory, research and practice* (4th ed., pp. 464-485). San Francisco: Jossey-Bass.
- SCHIPPERIJN, J. A. (2010). Influences on the use of urban green space--A case study in Odense, Denmark. *Urban Forestry & Urban Greening, 9*(1), 25-32.
- SCHROEDER, H. W., & ANDERSON, L. M. (1984). Perception of personal safety in urban recreation sites. *Journal of Leisure Research, 16*(2), 178-194.
- SCIENTIFIC SOFTWARE DEVELOPMENT. (2016). ATLAS.ti Version 7. Windows10. Berlin: Scientific Software Development GmbH.
- SIP 4-99 Research Group. (2002, October). Environmental Supports for Physical Activity Questionnaire. University of South Carolina: Prevention Research Center, Norman J. Arnold School of Public Health. Retrieved March 2016, from World Wide Web: http://prevention.sph.sc.edu/tools/Env_Supports_for_PA.pdf
- STARNES, H. A. et al. (2011). Trails and physical activity: a review. *Journal of Physical Activity and Health, 8*(8), 1160-1174.
- STOKOLS, D. (1992). Establishing and maintaining healthy environments: toward a social ecology of health. *American Psychologist (47)*, 6-22.
- TAMMELIN, T., VIKARI, J. S., & RAITAKARI, O. T. (2014). Tracking of physical activity from early childhood through youth into adulthood. *Medicine & Science in sports & Exercise, 46*(5), 955-62.
- THOMAS, F. (2015). The role of natural environments within women's everyday health and wellbeing in Copenhagen, Denmark. *Health & place, 35*, 187-195.
- VÖLKER, S., & KISTEMANN, T. (2013). "I'm always entirely happy when I'm here!" Urban blue enhancing human health and well-being in Cologne and Düsseldorf, Germany. *Social Science & Medicine, 78*, 113-124.
- WARD THOMPSON, C., ASPINALL, P., & MONTARZINO, A. (2008). The Childhood Factor: Adult Visits to Green Places and the Significance of Childhood Experience. *Environment & Behavior, 40*(1), 111-143.
- WORLD HEALTH ORGANIZATION. (2009). *Global health risks: mortality and burden of disease attributable to selected major risks*. Geneva: World Health Organization. Retrieved September 2016, from http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf
- WORLD HEALTH ORGANIZATION. (2013). *Global Action Plan for the prevention and control of non communicable diseases 2013-2020*. Geneva, Switzerland: World Health Organization. Retrieved September 25, 2015, from http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf

Electronic Sources

- ROBERT WOOD JOHNSON FOUNDATION. (2001). *Active Living Research. Promoting activity-friendly community*. (University of California, San Diego) Retrieved from Active Living Research: <http://activelivingresearch.org/> (accessed 10/09/2016)
- WIKILOC. (2016). *Wikiloc. Rutes del Món*. Retrieved from <https://ca.wikiloc.com/> (accessed 01/05/2016)