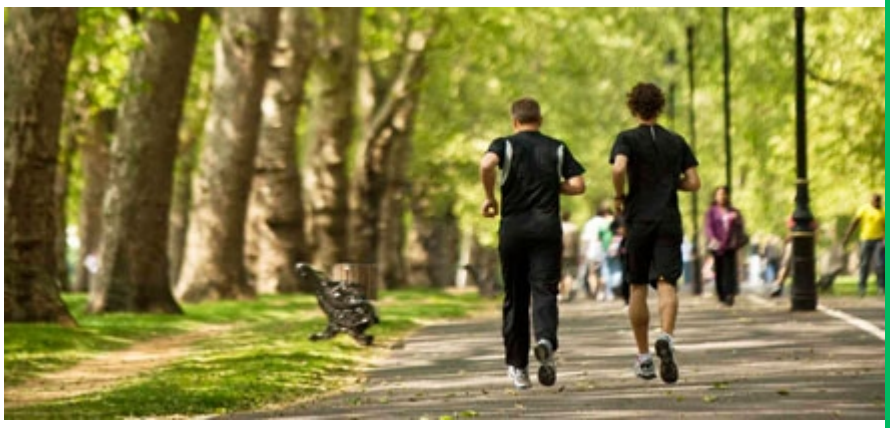
Green spaces for physical activity in Groningen – Do provision and needs correspond?



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PREFACE

This master thesis – 'Green spaces for physical activity in Groningen – Do provision and needs correspond?'- is the final part of my master Environmental and Infrastructure Planning at the faculty of Spatial Sciences at the University of Groningen. I chose this topic because I am interested in the influence of the built environment on people living in it. Since ever more people are living in cities nowadays it is important that we know how to design those cities to create optimal conditions for people to live in it. This is important for the way our infrastructure is planned, the way our buildings are designed and positioned, the way rainfall is being managed and it is also important for the way green spaces are integrated in the urban environment. I think it is interesting to examine to what extent green spaces influence people's physical activity and even more important how people's wishes and needs are met by the provision of green spaces by the policymakers. I experience it myself when I want to be physically active; I am always searching for the best green spot around. Some green spaces are more attractive and provide better conditions than others. According to this thesis I hope to give the reader understanding in the influence of green spaces on physical activity and insight in the way policymakers might be able to have positive influence on it.

In this preface I would also like to thank a number of people that have supported me with the completion of this thesis. First of all I want to thank my supervisor Yang Zhang for her time, useful comments and patient. Since I moved to Amsterdam for a traineeship and working experience my thesis process was on hold for a while. I am very glad and thankful that Yang Zhan took the time and effort, even though she was also finishing her own PhD, to provide me with some feedback to complete my thesis. I also want to thank all the respondents that provided me with the useful information.

Evelyn Dobbinga,
Amsterdam, June 2016

ABSTRACT

Being physically active has positive effects on the human's health status. Green spaces could stimulate people to be physically active. This research explores the relation between the physical activity of people in Groningen and the provision of green spaces by the municipality of Groningen. Different aspects of green spaces have effect on the physical activity of people in those green spaces. Those are the quality of a green space, the availability of a green space and the accessibility of a green space. The policy on green spaces can be influenced from three different planning levels; the strategic level, the tactical level and the operational level. To come to an answer to what extent green spaces and the green space policy in Groningen meet the needs of the citizens of Groningen regarding physical activity, a set of research questions are devised. The research questions are answered on the basis of a literature review, a policy document analysis, a case study and in-depth interview. This research points out that the provision of green spaces by the municipality does not completely meet the needs and wishes of the citizens of Groningen regarding green spaces for physical activity. At the short term interventions could be done to improve the accessibility with the use of smart routes and the subjective availability by creating awareness. On the long term the policy could be reconsidered for the different planning levels. To improve the influence of green spaces on the physical activity.

Key words: green spaces; physical activity; distance decay; planning theory; strategic level; tactical level; operational level; urban green space.

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1.INTRODUCTION

1.1 BACKGROUND

It is widely known that physical activity has positive effects on a human's health status. The World Health Organization defines physical activity as *"any bodily movement produced by skeletal muscles that requires energy expenditure"* (Who.int, 2014). The benefits for health are wide ranging. For example it can reduce the risk of cardiovascular diseases, diabetes, colon and breast cancer and depression (Who.int, 2014). Physical activity is therefore not only beneficial for the physical health but also for the mental health and well-being of a person.

Although it is widely known that being physically active is healthy, still lots of people are so called "inactive". Globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (Who.int, 2014). With the increased urbanization the level of physical activity might be discouraged according to the World Health Organization. Therefore it is important to stimulate physical activity and promote an active way of living in cities. New York City is a great example of a city that promotes "active living" with success. Active living includes physical activity as a part of daily life (Day et al., 2013). The role of cities can differ from supporting active transportation such as walking and bicycling, to supporting recreational activity with parks and outdoor sport facilities (Day et al., 2013).

Jan Gehl, a Danish architect, wrote a book about people in cities and the use of public space. In his book "Life Between Buildings" he included a useful model that shows the influence of the quality of the physical environment on the activities that are taking place in the city (figure 1). As shown in figure 1, the optional activities will be incredibly more in a physical environment with good quality as compared to a physical environment with poor quality (Gehl, 2011). Based on the classification physical activity can be defined as optional activities and is stimulated by a physical environment with good quality. It is important that the planning department of a city takes this in consideration and is aware of this. The planning theory and planning practice should match. So the green space policy should meet the needs and wishes of the citizens of a city.

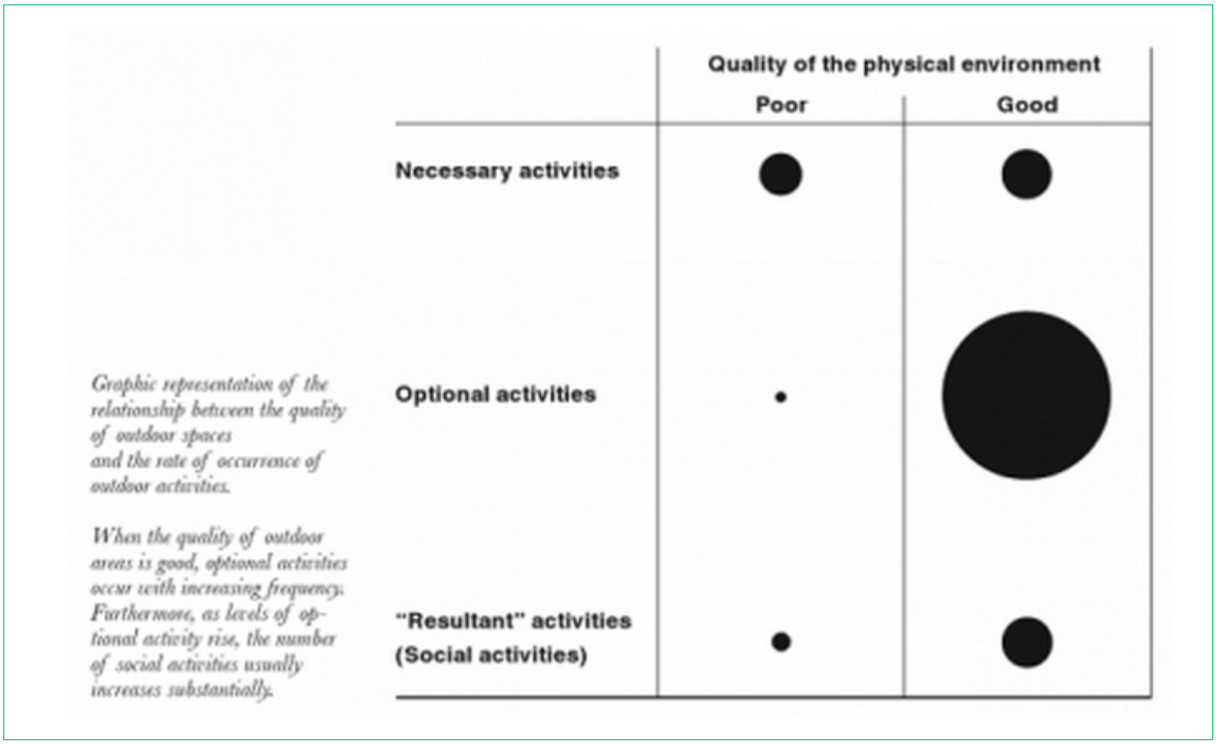

Figure 1. Model of Jan Gehl – 'Life Between Buildings'

Green space in living environments may support the physical activity of urban residents. Walking transport for example is positively related to the neighborhood density, resident proximity to nonresidential places, and land use mix (Saelens & Handy, 2008 in Fitzhugh, Bassett and Evans, 2010). The availability of urban green space is also a factor that has positive associations with increased levels of physical activity (Hillsdon et al., 2006). Furthermore the design of the built environment plays an important role as a determinant of physical activity. The built environment is a broad term that encompasses aspects of community and transportation system design where one can think of sidewalks, park access, interior building features etcetera (Trowbridge and Schmid, 2013). Accessibility of green space supports physical activity (Lee & Maheswaran, 2010). Lee and Maheswaran (2010) say that people with good access to green space are more likely to use it. Not only accessibility but also environmental determinants are of influence. Those are for example large and attractive green spaces, features, condition and safety (Lee & Maheswaran, 2010).

Physical activity is beneficial for people's health and has positive effects on it. Adversely, being physical inactive is unhealthy and has negative effects on people's health. The municipality of Groningen has a health policy in which their focus lays on "*a city in which our kids can grow up to be healthy adults, and in which every adult has equal chances regarding health and a healthy life course*" (Gemeente.groningen.nl, 2014). One of the three themes the municipality has compiled is the structural investment in a healthy city through stimulating its citizens to make healthy choices and to have a healthy and active lifestyle (Gemeente.groningen.nl, 2014). To reach the goal of a city in which the citizens are integrating a healthy and active lifestyle it is important to know what factors

are of influence. Therefore it is relevant to know the influence of green spaces on the physical activity of the citizens of Groningen and whether the current green spaces and green space policy meets the needs of the citizens. When this information is provided, the municipality could keep this in mind when planning and developing the city to improve the lifestyle of its citizens regarding physical activity.

The aim of this research is to gain insight in residents' needs (of specific neighborhoods) and how green spaces were designed and provided by the municipality of Groningen. Answers are given to what extent the planning theory of the municipality and the planning practice match the needs of the citizens. The findings of this research might be useful for the municipality of Groningen regarding potential possibilities and interventions to stimulate physical activity by the provision of green spaces.

1.2 RESEARCH PROBLEM

According to Edwards and Tsouros (2008) cities that devote in improving physical activity have numerous benefits: cities could save money on health care and transport services; have more productive citizens and workers; be more liveable and attractive to residents, employers and visitors; have less air and noise pollution and better access to green spaces; enhance neighbourhood revitalization, social cohesion and community identity; expand social networks.

Therefore it is important to know how the green spaces influence the physical activity of the citizens of Groningen while in that way it is possible to interfere and stimulate the physical activity. This contributes to the goal of Groningen: "a city in which our kids can grow up to be healthy adults, and in which every adult has equal chances regarding health and a healthy life course" (Gemeente.groningen.nl, 2014).

This raises the main question on which this research is based: *"To what extent do the green spaces and the green space policy in Groningen meet the needs of the citizens of Groningen regarding physical activity?"*

2. THEORETICAL FRAMEWORK

Green space is a broad term which can refer to a wide range of places. Green space is everywhere, in the countryside and in the city. As many different types of green space exist, it is important to define what green space in this thesis actually encloses. Green space in the city can be defined as urban green space (UGS). Green space in an urban environment includes natural areas that are publicly owned and accessible (Schipperijn et al., 2013). Therefore private green spaces like gardens of citizens for example are not included in this thesis. Urban green space can be seen as an integrated area consisting of natural, semi-natural, or artificial green land (Zhou and Parves Rana, 2012). The spaces are open and have a high degree of cover by vegetation which can have a more natural character or can have a more designed character (Schipperijn et al., 2013). Types of urban green spaces can be parks, woodlands, nature areas and other green spaces. Important is that the areas can be physically entered and used (Schipperijn et al., 2013).

2.1 PHYSICAL ACTIVITY

Physical activity is a broad term which can be used in different ways. For this paper, the definition of the World Health Organization is used to define physical activity: *"any bodily movement produced by skeletal muscles that requires energy expenditure".* Important to keep in mind is that physical activity should not be misguided with exercise. Exercise "*is a subcategory of physical activity that is planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one or more components of physical fitness is the objective"* (World Health Organization, 2014). Even though exercise is not parallel to physical activity, exercise is a part of physical activity and physical activity includes exercises but also other activities which involve bodily movement. These bodily movements are done as part of playing, working, active transportation, household tasks and recreational activities (World Health Organization, 2014). This research will focus on outdoor physical activity.

2.2 THE INFLUENCE OF PHYSICAL ACTIVITY ON HEALTH

As mentioned before, physical activity has positive effects on a human's health status. Those benefits for health are wide ranging (World Health Organization, 2014). When looking to human's history, physical activity was very important. Physical activity was required as a function of the environmental burdens that humans faced, and our body adapted to meet the metabolic demands necessary to support regularly physical activity (Hillman, 2014). Comparing the lifestyle of the past with human's lifestyle nowadays, we have become much more inactive. All tough our bodies have adopted to support a chronic active lifestyle (Hillman, 2014).

The influence of physical activity on our health does have a positive impact on our cognitive or mental health as well as on our physiological health (Miles, 2007). The positive effect of physical activity on our cognitive health touches upon multiple aspects of the brain function and cognition (Hillman, Erickson and Kramer, 2008). Zoeller (2007) found that the prevalence and incidence of depression and anxiety are lower in those who are regularly active and to reduce symptoms of depression and anxiety in those who already suffer from these disorders. Another study found that fluid intelligence is particularly vulnerable to the negative effects associated with low levels of physical activity (Singh-Manoux et al., 2005). Fluid intelligence is an important aspect of the cognitive function and is related to information processing and involves short-term memory, abstract thinking, creativity, ability to solve novel problems, and reaction time (Singh-Manoux et al., 2005). A comparison of physically active and inactive people showed that being physical active reduces the risk for cognitive impairment and Alzheimer's disease (Allmer, 2005). Physical activity has positive effects at all ages, but there is evidence that the effects of physical activity on cognitive functioning are stronger in older age groups than in others (Zoeller, 2007).

Besides the positive impacts of physical activity on the cognitive and mental health of humans, it also has positive physiological impacts (Miles, 2007). "Regular physical activity has been demonstrated to lower blood pressure and improve nitric oxide–mediated vascular function, increase heart rate variability and baroreflex sensitivity, increase fibrinolysis and possibly decrease platelet activity" (Zoeller, 2007, p. 178). The list of beneficial effects of physical activity has continued to grow in the past year. It has also become clear that people who are physically active are less likely to develop stroke, some forms of cancer, diabetes type 2, obesity, osteoporosis and sacropenia (Blair and Morris, 2009). Also proper functioning and autonomy in older ages is stimulated through physical activity, and thus physical activity is improving the quality of life (Blair and Morris, 2009). These positive effects are spread in the lifespan of the human, from childhood to older adulthood (Zoeller, 2007). Therefore it is important to stimulate physical activity for all age groups.

2.3 ACCESS OF GREEN SPACE

Different studies found positive correlations between access to green space and physical activity (Coombes et. al., 2010 & Storgaard et. al., 2013). Access to green space is not only and just about the real distance to the green space but includes more. Access to green space therefore can be divided in the objective and subjective accessibility, so into the geographical distance and physical proximity of green space and into the perception of people themselves on the access of the green space (Kessel et. al., 2009).

Objective accessibility

Objective accessibility is usually based on quantitative indicators and more about the physical distance to a green space. Objective accessibility can be measured in a lot of different ways. Some examples are the number of green spaces in an area, the distance to a green space, the travel cost and so on (Lofti and Koohsari, 2009). The distance to green space is related to the concept of distance decay, a central concept in Geopgraphy that is about the relationship between distance and human interaction (Elridge and Jones, 1991). Distance decay means that the human interaction with a location decreases when the distance to the location increases (Farhan and Murray, 2006). Zou and Parves Rana (2012) developed a usable theoretical framework based on Geurs and Wee (2004) and Liu and Zhu (2004) to measure accessibility of green spaces. Different measurements can be used to measure the objective accessibility.

First of all the qualitative measurement can be used. Qualitative measurements mostly are about the accessibility of green spaces in the sense of peoples intuitive accessibility (Zou and Parves Rana, 2012). So peoples accessibility of green spaces without being based on what one feels to be true and without conscious reasoning. Obstacles that block the people to get access to green spaces do also play an important role. On the one hand qualitative measurements are useful to reveal many different facets of accessibility. On the other hand it is difficult to provide a general standard to compare the results of accessibility (Li et. al., 2008).

Secondly, the opportunity-based measurement can be used. According to Breheny (1978) the opportunity-based model measures the number of interested objects, or destinations within a certain distance from its origin. To apply the opportunity-based model for green space accessibility analysis this means that the “origin” can be defined as residential blocks and the “destination” can be defined as a set comprising urban green space (parks, public gardens etc.) (Zou and Parves Rana, 2012). There are two ways how accessibility can be measured with the opportunity-based measurement; accessibility as the distance from the “origin” (residential blocks) to the nearest “destinations” (urban green spaces) and accessibility as the amount of “destinations” within a certain distance from the “origin” (Zou and Parves Rana, 2012).

Thirdly, the spatial separation measurement can be used. According to Ingram (1971) the spatial separation measurement measures accessibility as the cost to move from the “origin” to the “destination”. With the cost is meant the time duration, the transportation costs etcetera. When all these costs are summed they are categorized in the accessibility index. A low index means that there are fewer obstacles between the “origin” and the “destination” and a high index means the opposite.

So with this measurement one can conclude that one destination is better accessible than another (Zou and Parves Rana, 2012).

Subjective accessibility

Subjective accessibility of green spaces is about the perception of people. Are they aware of the green spaces that are available? Do they think the green spaces are easily accessible or are there existing barriers counteracting their perception of the accessibility of green spaces? As Kessel et. al. (2009) mention that the accessibility of green spaces can be quite different from direct line of sight; they mention different barriers that might reduce people's believe of the accessibility of green spaces. Busy roads, fences and other obstacles are used as examples of these barriers (Kessel et. al., 2009). Different measurements can be used to measure the subjective accessibility.

First of all the gravity-based measurement can be used. The gravity-based measurement is built on the concept that the intensity of spatial interaction is determined by the attractiveness and the travel hindrance among places. The attractiveness is positively linked to accessibility and distance is negatively linked to accessibility (Linneker and Spence, 1992). Because the gravity-based model includes the attractiveness of the green spaces, different kind of green places can be differentiated. It also includes the travel hindrance; the spatial interaction can be determined by the distance decay function. The distance decay function reflects the idea of the decreasing intensity of interaction with increasing distance (Zou and Parves Rana, 2012).

Secondly, the individual-based measurement measures accessibility of green spaces from an individual point of view. The individual-based measurement contains two different methods. The first method is the utility-based model; this model tries to find "the benefit or consumer surplus which is the maximum utility of a choice set received by each individual" (Liu and Zhu, 2004, p. 108 in Zou and Parves Rana, 2012). The second method is the space-time method and measures the potential area that each individual can reach within a certain time period (Zou and Parves Rana, 2012).

2.4 QUALITY OF GREEN SPACE

Not only the accessibility of green space determents whether people would go there to do physical activity, also the quality of the green space does have influence on the degree of physical activity. Wolch, Byrne and Newell (2014) say that "Geographic access alone may not fully capture the impact of parks on physical activity or obesity. Usage may depend on park characteristics and programs offered". Park characteristics might differ in size, the different kind of facilities, the available or organized recreation, and the degree of safety of the park and so on (Wolch, Byrne and Newell, 2014). So the quality of green space is actually about the features and characteristics of the green space. It is imaginable that the quality of green space is context dependent. Wolch, Byrne and Newell (2014) state that even with the existing heterogeneity of communities and their recreational needs, green spaces are mostly developed on the basis of national standards. Due to the use of national standards, urban residents might be negatively impacted by these standards because their individual and contextual dependents needs are ignored (Wolch, Byrne and Newell, 2014). This supports the idea of local and context specific interventions to green space.

The quality of green space and the suitability for physical activity also differs. According to Coombes, Jones and Hillsdon (2010) formal green spaces are in particular suitable physical activity due to their characteristics and features. The formal green spaces regularly have a good path network and because of that they provide a basis for different activities like walking, cycling and jogging (Kaczynski et. al., 2009). Not only do these good path networks provide a basis for physical activity, they also stimulate active forms of travel (Sugiyama et. al., 2010). So, good path networks are an important characteristic of green spaces to stimulate physical activity. Another characteristic of green space is its diverse nature. The diversity might stimulate physical activity because it suits different kind of needs and also different kind of people (Coombes, Jones and Hillsdon, 2010).

2.5 AVAILABILITY OF GREEN SPACE

Besides accessibility and quality of green space, several studies found correlations with availability of green space and the physical activity of people. Fisher et. al. (2004) found that the amount of parks, paths and trails per neighborhood acre have a significant relation with the walking activity in the neighborhood. Additionally, Li et. al. (2005) found a positive relation with the walking activity and the total amount of open green space in the neighborhood. Kaczynski et. al. (2009) found that in general each extra hectare of parkland within the same area increased the physical activity in parks. They found that the amount of parks and green spaces had bigger impact on the physical activity than the distance to the closest park.

Why is it that the availability of green space increases the physical activity? It is unclear what exactly the relationship between availability of green space and physical activity is. There could be several reasons for it. First of all, a characteristic of people is that people are heterogeneous in nature. The heterogeneity of people can vary for example from cultural values to beliefs and from health to physical activity preferences. On the one hand, the availability of green spaces might be responding to the different preferences of people regarding physical activity. On the other hand, Stigsdotter and Grahn (2011) state that green spaces are common community features. Secondly, the availability of green spaces might be responding to people's preference of quiet and peaceful green spaces (Stigsdotter and Grahn, 2011). This might also be the case for people when engaging in physical activity in green spaces.

There is a difference between the objective and subjective availability of green spaces. The objective availability of green spaces refers to the factual amount of green space that is available for physical activity. The subjective availability of green space refers to people's perception on the available green space for physical activity (Branstrom, 2004). The objective and subjective availability do not necessarily match.

2.6 FROM A PLANNING PERSPECTIVE

From a planning perspective it is useful to know whether the needs of the citizens regarding physical activity in greens spaces are met by provision of those green spaces by the municipality. Already for years there have been debates about theory and practice regarding urban and regional planning. Due to these debates a new specialization has emerged in the field of planning, so called planning theory (Krizek et. al., 2009). Planning has changed through time; from a technical rational way of planning with a factual world full of certainty and value free to a communicative way of planning with a world full of uncertainty, complexity and values (Roo et. al., 2012). The change to a communicative way of planning has made it more interesting and useful to know to what extent the needs of the citizens regarding physical activity in green spaces are met by provision of those green spaces by the municipality.

Besides the shift from a technical rational way of planning which is interesting, it is also interesting to distinguish different levels of planning. Loorbach (2010) developed a descriptive multi-level framework for transition management but this framework is also useful for planning in general (see table 1). The three different levels are the strategic level, the tactical level and the operational level. These will be further elaborated on below.

TABLE 1
Transition Management Types and Their Focus (Loorbach 2007)

Transition Management Types	Focus	Problem Scope	Time Scale	Level of Activities
Strategic	Culture	Abstract/societal system	Long term (30 years)	System
Tactical	Structures	Institutions/regime	Mid term (5–15 years)	Subsystem
Operational	Practices	Concrete/project	Short term (0–5 years)	Concrete

2.6.1 STRATEGIC LEVEL

As figure 1 shows, the strategic level has a long term focus, the problem scope is abstract and focused on the societal system, and the level of activities happen on the system level. At the strategic level the development of visions is happening and the processes that come along with it (Loorbach, 2010). For the planning of green spaces this means that at the strategic level the development of the visions on green spaces and the influence on physical activity is happening. During the development of these visions several things are happening; such as strategic discussions, long-term goal formulation, collective goal and norm setting and long-term anticipation (Loorbach, 2010). At the strategic level the fundamental foundation for further policymaking will be set and developed (Loorbach, 2010). The vision at the strategic level are tried to integrate into the fundamentally necessary element of policymaking (Loorbach, 2010).

2.6.2. TACTICAL LEVEL

The tactical level is presented in figure 1 as the level with the mid-term focus, with a problem scope focused on institutions and regimes and the level of activities that take place at the subsystem level. The activities at the tactical level are motivated by interest and relate to the leading regimes or structures of a subsystem (Loorbach, 2010). The tactical level is less abstract and is already a bit more tangible than the strategic level. The activities at the tactical level comprise all the well-known patterns and structures of the subsystem like rules and regulations, institutions, organizations,

networks, infrastructure and routines (Loorbach, 2010). The activities at the tactical level are related to the context and to the goals that have to be achieved in that context (Loorbach, 2010).

2.6.3 OPERATIONAL LEVEL

In figure 1 the operational level is presented as the level with a short-term focus where the focus is on the practices and the problem scope is concrete and project based where also the level of activities is at the concrete level, so where the events actually happen (Loorbach, 2010). The activities at the operational level comprise identified actions and experiments and typically have a short-term focus. The context in which these actions and experiments are often happening is the context of innovation projects and programs, in business and industry and in politics or in civil society (Loorbach, 2010). So an important aspect is that they are almost always mentioned as "innovation" (Loorbach, 2010). At this level the ambitions of individuals are important (Loorbach, 2010).

2.7 RESEARCH QUESTIONS

As stated in chapter 1.2 the main question of this research is "*How do the green spaces and the green space policy in Groningen influence the physical activity of citizens of Groningen?"*

To be able to answer this question properly five sub-questions are constructed, based on the literature, to support the main question:

1. What is the policy of Groningen regarding green space and physical activity when focusing on accessibility, quality and availability?
2. What kind of physical activities do the citizens of Groningen do?
3. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on accessibility?
4. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on quality?
5. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on availability?

2.8 CONCEPTUAL MODEL

The conceptual model presents an overview of the important aspects of this research. In the middle "Green Spaces" is presented. On the left side the citizens of Groningen are presented and are the ones who have certain and specific needs regarding the green space. On the right side the Municipality of Groningen is presented and is the one who provides the green spaces in Groningen. In doing so different levels can be distinguished and they are presented under the municipality. Green spaces is further classified into different categories. Again on the left hand the citizens have specific needs regarding those categories and on the right hand the municipality provides these green spaces and the categories from different levels. Physical activity and health are both an indirect result of the green spaces.

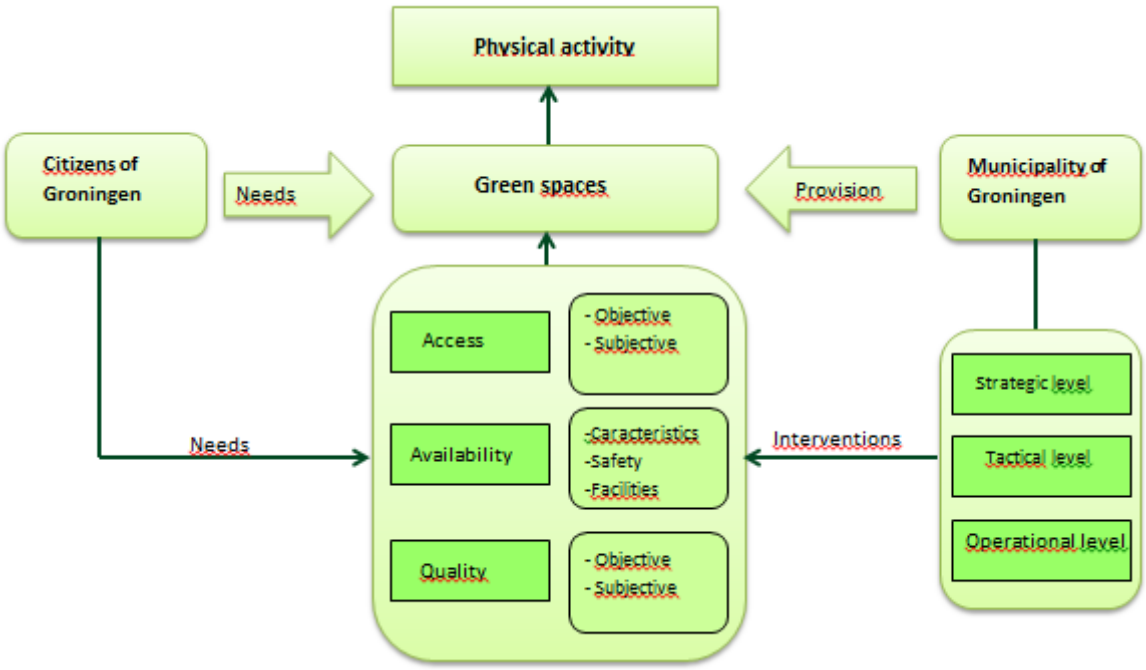

Figure 2. Conceptual model

3. METHODOLOGY

3.1 RESEARCH PERSPECTIVE

The research is conducted in the city of Groningen. Therefore it is important to keep in mind that the research is context specific and it is important to know with what world view the research is done, also known as ontology. For this research an interpretivism worldview is used. Interpretivism is about understanding the world (Raddon, 2010). It is a typical trend within the social sciences and it is has a subjective understanding of the world. It is about the individual meanings and actions of people and it states that the truth is out there but it is complex to understand (Raddon, 2010). This view is necessary for this research as it tries to gain insight in the motivations, interpretations and values of the citizens of Groningen regarding their physical activity in green spaces and it focusses on the structures and patterns in society that are about green spaces and physical activity (Raddon, 2010).

Relativism is an ontological position of interpretivism (Scotland, 2010). Relativism is therefore comparable to interpretivism and also states that reality is subjective and that reality is also different for every person which also means that there are as many realities as there are individuals (Scotland, 2010). So for this research this means that there are different realities for the citizens of Groningen regarding green space and physical activity and therefor the different participants that are taking part in this research also have different realities. For the municipality who is providing the green space it is useful to know which different realities are existing in Groningen and to see to what extent there provision of green spaces meets these realities and needs.

Besides the world view of the research it is important to understand how you can actually acquire knowledge about the world, also known as epistemology. So in this research this means how is knowledge acquired about the situation in Groningen? According to Grix (2004, p. 83) the interpretive epistemology is subjective and it is based on real world phenomena, which means that the world does not exist separately of our knowledge. A quote of Crotty (1998, p. 43) explains this well, "*We need to remind ourselves here that it is human beings who have constructed it as a tree, given it the name, and attributed to it the associations we make with trees*". So this would imply that green spaces in Groningen are constructed by humans as well, on the one hand by the citizens and on the other hand by the municipality. Those constructions attribute to the associations that are made with those green spaces. So knowledge that is acquired in this researched is context specific and socially constructed. This means that the statements that are given in this research are true in the specific context and true with respect to the collected data. So "true" statements can be found within certain boundaries.

3.2 RESEARCH METHODS

Literature review

To gain more insight in the subject scientific literature is being studied. The scientific literature is analyzed and used to explain and interpret the outcomes of the research.

Interviews

For the data collection of this research mainly in-depth interviews are used. Additionally a literature study on the policy document of the municipality of Groningen is implemented. The reason to use in-depth interviews is that they are useful for investigating complex behaviors, opinions and emotions for collecting a diversity of experience (Clifford et. al., 2010). To be able to answer the research question it is important to gain insight in the complex behaviors of the citizens of Groningen regarding their physical activity in green spaces and to gain insight into their opinions and emotions about the green space and their physical activity. In this way more clarity and insight has been conducted about the match or mismatch between the planning theory and planning practice of green spaces for physical activity.

There are different ways of doing in-depth interviews and for this research a semi-structured interview is used. Semi-structured interviews have a certain degree of predetermined questions for a basis structure while at the same time allowing participants to give open answers (Clifford et.al., 2010). By using predetermined questions it is easier to compare the results of the different interviews and it ensures that all subjects will be touched upon. For the participants that were interviewed about the planning theory and policy on green spaces, another interview guide is used then for the citizens of Groningen that participated.

The participants were informed beforehand what the interview was about. In this way they could prepare for the interview and they could think about the subject already. The approximate duration of the interview was discussed beforehand and the location and time were set to the preference of the participants.

Analysis of policy document

To support and supplement the information about the policy of the municipality of Groningen about green spaces an analysis of a policy document 'Groene Pepers' will be done. The interviewed policymakers suggested to use the policy document to gain more insight in the policy about green spaces in Groningen.

3.3 DESCRIPTION OF THE CASE STUDY

For this research specific neighborhoods of Groningen are selected as case study. The neighborhoods that are selected are Zeeheldenbuurt, Center, Korrewegwijk and Rivierenbuurt. These neighborhoods are selected since they are close to two big green spaces in Groningen and therefore respondents are suspect to have a good reference of green spaces. Groningen is a city in the north of the Netherlands. Both the city as well as the province are named Groningen. A little more than 200.000 people are living in Groningen and due to the huge amount of students (around 50.000) it is the youngest city of the Netherlands with an average age of 36,4 year. Groningen is also known for the cycling and even won the award "Best Cycle City of the Netherlands" in 2002 (Er Gaat Niets Boven Groningen, 2015). Groningen is selected as case study because in 2009 the municipality has developed a structural vison for green spaces in the city, so called "Groene Pepers" (translated it says "Green Peppers"). The structural vison for green spaces makes statements about *"the quality, quantity and meaning if the green spaces in the city. It is about a value judgement regarding use, biodiversity, public health, perception and economy*" (Gemeenteraad van Groningen, 2009, p. 8). Therefore it is interesting as case study because this research focuses on the value judgement regarding use of the green spaces in the city. It focuses both on the perspective of the municipality of Groningen as the perspective of the citizens. For the data collection different smaller case studies are selected. This accounts for the participants that are taking part in the research that are citizens of Groningen. To have a comprehensive and wide ranging database the participants are selected from different neighborhoods in Groningen and from different parks and green spaces in the city.

3.4 BACKGROUND INFORMATION AND PARTICIPANTS

For the gathering of information different sources are used. First of all former studies about green spaces and physical activity are used to construct the theoretical framework for this research. Different studies on the same topic and different studies on different topics are used to get a broad set of information. It is useful to study existing literature on the topic beforehand, because is this way research gaps will become visible. It is also useful to study existing literature for the construction of the interviews. In this way the collected data can be better connected and linked with the theory that is already existing and stronger conclusions and statements can be drawn. Also documents of the municipality of Groningen about green spaces are studied because this is also an import part of the research. An important document is "Groene Pepers" in which the structural green vision is described. The documents are further supported and elaborated on by the interviews with policymakers. This combination of literature and interviews is again useful to draw stronger and

more complete conclusions about the municipality and the provision of green space for physical activity in Groningen.

For this research eight participants did engage in the research. The reason for the limited amount of respondents is the saturation of the information. After the last interview there was no new information gathered about the research topic. Due to the low average age of the citizens of Groningen this research focuses on the younger generation of the city of Groningen. The average age of the city of Groningen is around 36 years (Er Gaat Niets Boven Groningen, 2015). The participants for this research can be divided into two groups.

The first group is a group of people that are citizens of the city of Groningen. Because the research tries to gain insight in the physical activity of the citizens in green spaces there has been chosen to select the "active" part of the citizens in Groningen. It is assumed that people from 18 till 65 are physically active and therefore only participants who belong to this category are selected. This criterion is not really strict because the research does not focus on age but it has to be noticed that age differences might also have a different impact on the outcomes. The participants are found through a personal network and through randomly asking passers who were physically active in a green space. Selecting participants for interviews is important and mostly people are chosen on the basis of their experience relating to the topic (Cameron, 2005 in Clifford, French and Valentine, 2010). The participants have not been selected randomly as the aim of an interview is not to be representative but to understand how individual people experience and make sense of their own lives (Clifford et. al., 2010). All the participants in this research are physically active. This is important for this research because they have a good idea of what they find important to a green space and what would stimulate them more or less. In this way it is possible to compare the motives of the respondents with the policy on green space from the municipality of Groningen.

The second group of participants is a group of people who are working at the green space department of the municipality of Groningen. From this group less participants were interviewed because the responsibility is distributed among only a few people. During the search for the participants it happened to be that there was no one who was actually responsible for the green policy in general in Groningen. The participants who attended the interview mentioned that there are different departments responsible for different parts of the green spaces in Groningen. They mentioned that the document "Groene Pepers" is an important document regarding policy and that a lot of information can be used for questions regarding the green space policy of Groningen. Therefore less people of the municipality are eventually interviewed than was expected before, since

it was just not useful to interview more. The second group is found by email contact and through internal networks of the participants who work at the municipality.

3.5 DESCRIPTION OF DATA ANALYSIS

The collected data consists of interviews and literature about the green space policy. To analyze the interviews they have been transcribed. The audible data is represented into a written transcript and according to Bailey (2008) this is an interpretive process and therefore the first step in analyzing the data. Bailey (2008) also states that transcribing an interview is not only a technical procedure and that it is impossible to represent the total complexity of the human interaction. Because of that it is important to listen to the original recorded interview since it brings the gathered information alive. All interviews are transcribed and for all interviews the personal information of the participant (like name etc.) is replaced by fictive information to guarantee the privacy of the participant.

To analyze the transcripts that are derived from the interviews and the policy document, a codebook has been developed (see appendix 7.3). The codes that are used can be divided into deductive codes and inductive codes. The difference between these codes is that deductive codes are derived from topics in the theoretical framework and the interview guide and these codes are already developed before the interview is transcribed (Hennink et. al., 2011). Inductive codes are derived directly from the interview and are developed by the researcher reading the data, so that means that inductive codes arise during the process of transcribing the interview. These codes represent issues that are of importance to the participants themselves (Hennink et. al., 2011). All specific codes are categorized into different more general categories. The different categories have different colors and every answer of a participant which reflects a certain code is highlighted with the color that represents that code.

After all interviews are transcribed and both the interviews and policy document are analyzed with the codebook the analyzation process can be started. By comparing the answers that are labelled with a certain code conclusions can be drawn about the different categories. The theoretical framework supports the underlying theory of the answers of the participants and explains why certain codes match certain answers or not.

4. DATA

In this section the collected data will be presented. The data can be divided into two parts, namely the data that is collected from the citizens of Groningen and the data that is collected from the policymakers and the policy document. Every subsection reflects a topic that is touched upon in the interviews, both with the citizens and with the policymakers. All participants will be mentioned with their pseudonyms.

4.1 DESCRIPTIVE OF THE COLLECTED DATA WITH THE INTERVIEWS

In total eight interviews have been conducted from which two interviews took place with two policymakers from the municipality of Groningen and six interviews with citizens from the neighborhoods Zeeheldenbuurt, Center, Korrewegwijk and Rivierenbuurt in Groningen. In table 2 and 3 an overview of the respondents is presented. The policymakers are recruited through email communication with the municipality. Jan de Boer was the first respondent from the municipality and suggested that Gerda Postma would also be an interesting respondent for this research. They both did not know any other policymakers that are specifically accountable for the green space policy in Groningen so they suggested the policy document 'Groene Pepers' as a good source of information about the green space policy of Groningen. The citizens of Groningen are recruited through a personal network. They were all known as physically active in the green spaces in Groningen.

Name	Number of years of employment at the municipality	Function	Tasks and responsibilities
Gerda Postma	7	Landscape architect	Designing the public space, operational level, citizen participation important
Jan de Boer	5	Coordinator green participation	Supervising resident initiatives, in-between citizens and the municipality of Groningen, operational and tactical level

Table 2. Policymakers of the municipality of Groningen

Name	Year of birth	Postcal code	Number of years in Groningen	Kinds of physical activity
Klaas de vries	1993	9725EJ	2	Running, soccer
Ina de Jong	1963	9714 CN	6 months	Running, skating, tennis, mountain biking
Pieter Arends	1987	9724AC	2	Running, footvolley, race biking
Ineke Boersema	1994	9726JG	3	Bootcamp
Willem de Haan	1988	9715EZ	5	Running, tennis
Henk Visser	1993	9712ND	4	Running, soccer

Table 3. Citizens of the neighborhoods Zeeheldenbuurt, Center, Korrewegwijk and Rivierenbuurt

The citizens of Groningen that have participated are recruited from select neighborhoods in Groningen. They live in the neighborhoods Zeeheldenbuurt, Center, Korrwegwijk and Rivierenbuurt. This research is more focused on young generations. Figure 3 shows a map with the different postcal codes presented on it with red stars.

Figure 3. Map with the location of the postal codes of the respondents

4.2 POLICY OF GRONINGEN REGARDING GREEN SPACE AND PHYSICAL ACTIVITY

One of the sub-questions of this research is "What is the policy of Groningen regarding green space and physical activity when focusing on accessibility, quality and availability?" In this section the data that is collected by the interviews and the policy document to answer this sub-question will be presented. The data will be presented in three different categories; accessibility, quality and availability.

4.2.1 ACCESIBILITY OF GREEN SPACE

In this section the collected data on accessibility of green space is presented. Both the data of the two policymakers and the policy document is included in this section. Accessibility encompasses both the objective and the subjective distance to a green space, so the geographical distance and physical proximity of green space and the perception of people themselves on the access of the green space.

The question that was asked that reflects to the objective accessibility of green space is "how is distance to a green space included in the policy?". To this question Jan de Boer answers that the actual distance in meters of kilometers is actually not included in the policy. Gerda Postma also mentions that they do not take distance into account. She explains *"In terms of walking distance we don't look directly like so many people, so many inhabitants so there should be a green spot. And well you see, places basically are results of the urban basis that is already there and it is true that in new areas where you for example can design a complete new neighborhood like Meerstad for example, there you can think like ok we have water here and over there we make a park and over there we place a school with its own area, bicycle routes, and then of course you are way more concerned with your network. And then relationships are way easier made like ok there will be a very dense-built neighborhood and then of course there should be some kind of public space. It just depends what your case is."* In addition, the policy document does state something about distance but not in actual meters or kilometers. It states *"We strive for 'Green in front of the door'"* and *"Green in front of the door is accessible for all neighbors".* So indirectly distance is included in the policy program, but not the actual distance to a green space.

Two other subjects that relate to the objective accessibility of green spaces are the route to a green space and the modes of transport to a green space. Jan de Boer mentions that the route to a green space is district wise included in the green space policy of Groningen. As an example he mentions Beijum where there is "*a green belt right through the heart of the neighborhood, which connects everything and where all crossing roads come together, so if you are in Beijum you will end up there*". But he also thinks Beijum is the only neighborhood in Groningen that has something like that and

there is not something like that in the city. He does know another city that has a better green infrastructure; *"Well see, for example I know Oldenburg has a sort of horseshoe structure and there is a complete green belt that almost goes all the way to the city center"*. Gerda Postma says that the route to a green space is not specifically included in their policy. They do pay attention to where people enter a green space and how people move through a green space; "*well we always look to where people enter a green space and how they enter it, or how people move through a green space and if there is the presence of a continues bicycle lane. And we also look like how can people come by car because there should be a parking space in that case, like Stadspark well that is especially a park that mainly is being used by cyclists and pedestrians from the city so it is important that the bicycle and walking trails are good*". She also mentions that they are always looking for ways to improve the movements through a green space and that a green space should be easily accessible. In the policy document "Groene Pepers" nothing is mentioned about the route to a green space, it focusses more on "green in front of the door".

When comparing the influence of distance and the route to a green space, both policymakers think differently. Jan de Boer says he thinks that distance is more determent; "*Through the Wijert and Helpman there are all green and ecological hotspots and to think in your reasoning, those paths should be widely used and worn out but that is not the case".* He also thinks that only a few citizens would bother whether there is a green route and he says people will choose the shortest route anyway. Gerda Postma on the other hand thinks that the route to a green space is more determent; "*Well it is the distance when you already soon have to go by bike or first by car or public transport because you have to go to such a green space first. I can image that you prefer to close the door behind you and that you are already in that green space. But that will be different for different people".*

4.2.2 QUALITY OF GREEN SPACE

In this section the collected data from the policy regarding the quality of green space is presented. Both the data of the two policymakers and the policy document is included in this section. Quality refers to the different features and characteristics of a green space.

Considering the quality of green spaces and what is most determent for people to be physical active in a green space, Jan de Boer mostly mentions the ecological value of a green space. He thinks ecological values are the most important environmental factors. He also thinks that safety is an important quality aspect. "*around 2000, end of the 90's, everywhere in Groningen a lot of the forestry is cleared and replaced by low vegetation. And that was important, because everywhere signals of*

unsafety where heard." – "*and many places in the 90's and also the Noorderplantsoen have also been renovated and they have taken into account that there should be sight lines and well not that safety was on the first place but well that is taken into account*". To the question what he thinks of the quality of the green space in Groningen he also refers to ecological values in his answer. He thinks the quality of green spaces in Groningen is "*very moderate*" – "*since 3 or 4 years we have cut back tremendously. We have overgrown places. With those places we do nothing. So those places are less weeded. When maintaining green, you're talking about image quality, that amount of image quality at A,B,C and D level. The city council decides those levels and on the basis of that there are cutbacks. A is the highest level, so that is the city center. So that means as less as possible weed and graffiti. But the rest of the city is already C level, and at the moment, well I am a green man, but it is a drama. It doesn't look good at all."* When comparing the influence of quality and distance of green spaces on the physical activity of the citizens of Groningen, Jan de Boer says that the citizen doesn't really care.

Gerda Postma has a more differentiated focus on quality of the green spaces compared to Jan de Boer. They do both mention safety as an important feature and aspect of a green space. Gerda Postma mentions different kind of quality aspects of a green space that are important. "*Well it has to be easily accessible of course; it should be well veined with routes. Those could be paved paths and unpaved trails but at least they are well accessible and it is not closed off like it is the case in Stadspark where there is a large part that is not really used because it is not organized, and because of that an unsafe situation is created. Safety is important and that there are clear, good and organized routes through the green space and well it shouldn't be that organized and clear that it is boring and the excitement disappears".* She also says that size is important; "*When you think of cycling, running, walking you know, the real daily physical thing, then I think you have to have quite a good size of green space".* But she also says it should be attractive in the sense of plantation. When comparing the influence of quality and distance of green spaces on the physical activity of the citizens of Groningen Gerda Postma says that quality is more determent; "*if a green space is attractive people will come".* She also sticks to her point that she thinks it is important that when you close the door you're already in the "green space"; "*the tree in the street is one that contributes to the whole experience of being outdoor".*

In the policy document "Groene Pepers" a high quality of design and maintenance is mentioned as a necessary condition of a green space. Attractive green spaces in the environment are important conditions to be daily physically active. Risks like allergies, poisoning by plants, risks through falling trees and twigs are to prevent when the maintenance and design is sufficient and when at the same time the health will be improved. The policy document also states that there where it is possible the focus will be on multifunctional use and a theming of the city parks, because a diversity of parks

offers more leisure opportunities at the urban level. In the policy document it is stated that the quality of "Stadspark" is under pressure and it is a focus area. Also parts of "Kardinge" are labeled as focus areas due to parts of the forestation that are still not attractive enough.

4.2.3 AVAILABLITY OF GREEN SPACE

In this section the collected data from the policy regarding the availability of green space is presented. Both the data of the two policymakers and the policy document is included in this section. Availability can be divided into objective and subjective availability. Where the objective refers to the actual amount of green spaces that is available and the subjective to the perception of people what the amount of green spaces is that is available.

To the question how many public green spaces Groningen has Jan de Boer answers "*Well poeh, well around 20, and that includes a Stadspark, Groenestein, Noorderplantsoen, Groene Loon, the Green belt in Leweborg, Orionpark, well yes that will be around 20"* . He does not think they are all suitable for physical activity; *"Just what I am saying, or it is just recreation a la Noorderplantsoen or it is doing exercise with fitness kind of stuff, but we still have really little opportunities in Groningen".* Not only the opportunities are not really present, also the promotion of available green spaces could be improved and is still insufficient.

Gerda Postma does not really know how many green spaces in Groningen are available for physical activity. She knows that the municipality of Groningen owns a lot of public green space but they are not all suitable for physical activity; "*No not all of them. As I say, we also have green spaces that are not, or not yet, accessible like the area of the Sugar Union for example, that is actually a really big place in the city but well there isn't a plan how to use it yet. First there must be investigated what can be actually done with a place like that in a city like Groningen*". Regarding the promotion of green spaces in Groningen she says that the 'crown-jewels', Stadspark and Noorderplantsoen, are promoted, but the other green spaces in the different neighborhoods for example are not promoted; "*No that is more to the citizens themselves to discover and mostly, the most citizens are within their own space, within the neighborhood mostly, and make use of the green space in their direct environment. And well like a Stadspark, you will cross it or you go there on purpose to go running with your friends, then you really encounter it*". In general she thinks that there are enough opportunities and green spaces available for physical activity.

The policy document states that especially the amount of green is important, "*The more the better!*". It also states that more green in the neighborhoods creates opportunities for more physical activity

and less obesity. Improve green spaces in the immediate surroundings, because for a good health the presence of green is of special importance.

4.2.4 POLICY ASPECTS

In this section the data that reflects to the policy aspects regarding physical activity in green spaces will be presented. Policy aspects can refer to the strategic level, the tactical level and the operational level. First the role of the two policymakers and their policy in relation to the strategic, tactical and operational level will be reflected upon. Secondly the policy document will be analyzed in relation to these three levels.

First of all, both participants have different roles within the municipality. The role of Jan de Boer should be taken very literally as a coordinator and he is active at the operational level. He mentions that citizen participation is really important and he coordinates citizen initiatives. There is not a long-term and short- term vision developed regarding green space. Gerda Postma works at the department city design and within that department there are different disciplines like traffic planning, urban planning and landscape architects. The different disciplines work both at strategic level and operational level; "*One is more active at the strategic level and the other is more active at the operational level"- "Together you try to develop an idea. But at the strategic level there will be more hitch on all kinds of different disciplines*".

Regarding citizen participation, Gerda Postma mentions that it has always been the case that citizens are involved somehow, but *"nowadays it is noticeable that the focus from the politics is more on the initiative of the citizens, so the demand of the citizens is more used. That is something that you notice, and that is stimulated because of the bigger urban projects, due to the crisis they are put on hold and are replaced by smaller projects. So there is a change in that way".* Jan de Boer also mentions the important and strongly present citizen participation, *"you can't open the newspapers without seeing citizen participation largely written in it"*.

Besides the fact that the needs and wishes of the citizens are important, it is also important that the maintenance of the green space is in balance as Gerda Postma says; "*Citizens are important because in fact you make it for them. So the wishes from the neighborhood are important. But we also have to take the maintenance into account, so you also have the urban management who do the cleaning, and it should be sustainable products. You can't just use materials that are not used in other parts of the city, because when something is damaged or broken then for example you have to go all the way to china for example to get the materials to use it here. So there is alignment between our design and*

whether it is maintainable". She says that they are not accountable to other departments and that it is mainly the urban management where there should be good communication with.

Another aspect of the policy that Gerda Postma mentions several times is the budget; *"And budget of course, that is an important one. I mean we can provide really nice designs but if it is not affordable then there will be said we won't do it like that". –* "*And well there is often a bottleneck like that, from the politics often there is no money right, I mean there is a policy but there is no budget that says like ok lets fix that barrier*." – "*Yes money is very important. In fact the case with public green space is that there is always very little money available. So you always have to hitch on other projects that are running in the same area and in that way you can still try to make it happen."* Not only Gerda mentions the importance of combining designs and ideas with other projects, also Jan de Boer touches upon this aspect; *"Me myself, I have very little budget, but I have several colleagues around me who all have different interests for different reasons and they ask me like "well how does it look like if….". Like ok tell us and we pay it then."*

Whether they take physical activity into account when designing green spaces Gerda Postma mentions that it is mostly important that a green space is accessible for everyone. "*Especially when designing a park, you know that there will be cyclists, runners and skaters, so you won't put loos tiles for example. But you also have a look at the paths. You want to use them for cycling, skating, walking or whatever. But you don't want different paths for every different group, because there will be segregated paths in that way. For example in Noorderplantsoen we have a kind of concretion which can be used for cycling and walking and that gives the park a beautiful appearance."*

In terms of future goals, Gerda Postma mentions cycling as focus for the future. *"At the moment we are trying to make the city more a cycling city, so also the focus on health and to try to get people move through the city without cars. Cycling also gains popularity and the Zernike route is already one of those smart routes where you see that we already try to get people out of the car. That is not only important for the accessibility of the city and that it is better for the people who walk around, go shopping or that live here, but also for the health of the citizens themselves. People become more aware of that and for my job it creates more space to design green spaces. But more green also costs more money."* Jan de Boer says the future goal is mainly citizen participation and citizen initiatives. "*Those initiatives, I never want to let down initiators*".

The policy document contains elements that refer to different levels of planning. At the strategic level the municipality developed a structural green vision for the city. It states that *"The task is to keep cities compact; to develop real cities, real landscape and real nature. The compact cities should be that attractive to keep people, in which they are happy to live and work there. This can only be*

achieved when people in the city have access to a rich spectrum of green and nature, in and around the city. A hard task, almost a paradox. But we have to try." It is a goal for the long term. The document also states that "*For the basis green structure the common interest is more important than the interest of the dwellers. Still the citizens are involved but within certain predefined boundaries*." Within the long term policy and on the abstract problem scope the goal of the municipality is to include the weight of health effects for all relevant policy fields. This activity takes place at the strategic level, within the system of the municipality. The relevant policy fields that are mentioned are environment, spatial planning, housing and traffic policy, but also social policy and education. At the tactical level the policy document focuses on *"the attractive connection of different elements of green, the green spaces at neighborhood level and the regional level, the public spaces in the city and the rural area. The recreational user has the opportunity to change the busy environment of the city easily into the more peaceful natural environment*." Where it is possible the focus will be on multifunctional use. "*Green spaces are present for citizens to use them in different ways. A high quality of design and maintenance is a necessary condition*." In general at the tactical level the policy document focuses on providing more green spaces, "*the more the better!"* The policy document contains a few elements that refer to the operational level. They refer to the theming of city parks, sport fields in the neighborhood, attractive green spaces for physiological health (like community gardens, green zone next to bicycle lanes and play fields). In its totality the policy document mainly focuses on the strategic and, even more, on the tactical level.

4.3 GREEN SPACES AND PHYSICAL ACTIVITY

In this section the data will be presented that reflects the following sub-questions:

1. What kind of physical activities do the citizens of Groningen do?
2. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on accessibility?
3. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on quality?
4. What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on availability?

4.3.1 PHYSICAL ACTIVIY OF THE RESPONDENTS

The first sub-question that has to be answered with the interviews is: "What kind of physical activities do the citizens of Groningen do?" In this section the collected data will be presented. The respondents mention different kind of physical activities. Running is the most popular physical activity that is done.

Pieter Arends goes running, cycling and plays footvolley. Where he does this activities he responds with "*That is mainly in Stadspark, Hoornsemeer, well and also sometimes a running route to the direction of Haren*. *That is mainly when I go running and Hoornsemeer when I'm going to play footvolley and when I go biking I mostly take a route to Assen and back to Groningen."*

Ineke Boersema says she just does bootcamp. "*Eh bootcamp. Besides that I am not really being physically active outdoor. It is just bootcamp mainly. And bootcamp we do in Stadspark, which is very close by."*

Ina de Jong says she is mostly physically active outdoor. *"Well I mainly do the outdoor sports like running, skating, tennis, mountain biking, those are the things that I love to do".* She just moved to Groningen so she says she is still tempted to go to Zuidlaren, but she also discovered that the Hoornsemeer is very nice. "*I found out that to Hoornsemeer that way, it is beautiful to go running there. So I first bike to Hoornsemeer and from there I go running. And from there you also have very nice options and different directions where you can go biking, so I am very focused on that area now."*

Klaas de Vries plays soccer, tennis and goes running. *"Well first of all as a hobby, that is not in Groningen but in Zuidlaren, I play soccer. And tennis and next to that I also do other physical activities in Groningen. And that differs from person to person, but I go running 2 to 3 times a week, at least. And often also once in the 2 or 3 weeks with some friends. Then we search for a soccer place and go*

play soccer there." He plays soccer in so called "Johan Cruijf" cages somewhere in the city, but he says they are hard to find and often far away from where he lives. For running he uses different routes. "*Well I live at the Parkweg and as I said before, I use different routes. One route where I run through Stadspark. And then you have water over there where I run around, next to the horse track. So that is one of the routes and the other one is when you go more in the direction of the center and then at the Noorderplantsoen. There I go in and then I make a round there."*

Willem de Haan mainly goes running and plays tennis. He mostly goes to Noorderplantsoen but he also used to go to Stadspark often. "*No but mainly I go to Noorderplantsoen, that is also closer to my home."* – "*Noorderplantsoen is that close to my home that I first jog a little bit and then well that differs. First I jogged a short way to the Noorderplantsoen, then I did some stretching and then well like a warming up or something, and then I run some rounds in the Noorderplantsoen and then jogging to home again."* Willem de Haan also played tennis a lot on the outdoor courts that are provided by the municipality and are free for use. "*Well at the end of the Korreweg there are two courts but that is from iron, the net is from iron and that shouldn't be a big problem but the net is also too high actually. Well and if you are not member of a tennis club and can't play tennis anywhere than it provides a good opportunity to do sports."*

Henk Visser used to cycle for a while but he does not do that anymore. Now he mainly goes running – "*Well I used to cycle for a while, but I stopped doing that. And running, just straight from home I run a little round. And also soccer but that is at a sports club. Running I do for myself outdoor."*

4.3.2 ACCESIBILITY OF GREEN SPACE

The second sub-question that has to be answered with the interviews is: "What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on accessibility?" In this section the collected data will be presented. Accessibility can be divided into objective and subjective accessibility. The objective accessibility refers to the actual geographical distance to a green space and the subjective accessibility to the perception of people themselves on the access of the green space. First the data on the objective accessibility is presented and after the data on the subjective accessibility.

The objective accessibility is best measured with distance. The respondents mostly mention the same distance to what they think is the maximum distance they would travel to a green space for physical activity. In general the maximum distance to a green space is five kilometers or less, at least not more (see table 4).

Willem de Haan	Klaas de Vries	Ina de Jong	Ineke Boersema	Pieter Arends	Henk Visser
± 4 km	3 km	5 km	5 km	5 km	1 km

Table 4. The maximum distance respondents want to travel to a green space

More subjective is the importance of a route to a green space. Some respondents do find the route to a green space important, others do not mind the route that much. The route becomes important when the distance becomes bigger; when it takes more time to get to the green space. Not only is the attractiveness of the route mentioned but also the obstacles that would bother the respondents.

> *"When the distance is not that big than I don't really mind what the route is. When it would take 15 minutes before you enter a green space I wouldn't like to run on asphalt only and to cross traffic lights all the time. Most important, especially when you go running, is that you won't be hindered during your route and that you just can continue all the time. And when the route is beautiful as well it would even be better."* – Klaas de Vries

> *"Well it has to be easily accessible. It isn't attractive when you have to stop for every traffic light before you get there."* - Ineke Boersema

> *"It should be accessible with different possibilities. It should not be the case that you should cross water or bridges, like Amsterdam for example, those bridges, when you first have to walk to reach a bridge, no I don't like that. It should be accessible through different ways, that makes it public I think".* - Pieter Arends

The subjective accessibility relates closely to the obstacles that are in the way. Like traffic lights, busy roads and bridges for example. The respondents were also asked to make a comparison between the route to a green space and the distance to a green space. They were asked to think about which would be more determent. Overall the distance would be more determent than the route to a green space.

> *"Well I think distance is more important for me, when the distance becomes to big then that's already kind of barrier. So when it will really be more than five kilometers I will search for something closer to home I guess."*- Willem de Haan

> *"I think distance is more important than the route itself*." – Henk Visser

It seems that the green space is a destination for the respondents. When they enter the green space their physical activity starts.

4.3.3 QUALITY OF GREEN SPACE

The third sub-question that has to be answered with the interviews is: "What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on quality?" In this section the collected data will be presented. The quality of green space is determined by the features and characteristics of the green space.

Different aspects of green spaces are mentioned when respondents are asked to describe a green space that they find of good quality. Aspects like the possibility to do different kind of activities like basketball and football, nice and clean tracks, safety, maintenance and elevation are mentioned by the respondents (see table 5).

Willem de Haan	Klaas de Vries	Ina de Jong	Ineke Boersema	Pieter Arends	Henk Visser
- Well maintained - Spacious - Winding paths - Stairs (different hights - Mix of hard and soft paths - Fitness bars - Nature	- Alternation - Small trails - Variety of scenery - Well maintained tracks	- Variation - Viewing holes - Elevation - Safety - Accessible and clean tracks - Playground	- Fields for different sport activities - Normal fields for own interpretation of usage - Neat tracks - Benches	- Elevation - Water - Vegetation - Open spaces combined with woods and water	- Running tracks of at least 2 kilometer - Spacious - Exercise facilities - Bars

Table 5. Quality aspects of green spaces mentioned by the respondents

Quality of green space is important to stimulate the physical activity of people. The way a green space is designed and the quality of a green space can stimulate certain activities. The usage may depend on the characteristics of a green space. The respondents where therefore asked what kind of characteristics and qualities of a green space would stimulate them to be physically active. The characteristics that were mentioned are in the same line as they mentioned when they had to describe a green space of good quality. Despite some common characteristics also new features of green spaces are mentioned.

> *That there are different kind of fields that provoke specific activities like basketball and football. But also normal fields where you can decide yourself what kind of activity you want to do, where everything is possible. But also neat paths are important."* – Ineke Boersema

I also like it if there are some facilities like bars where you can hang at and stairs for example." – Henk Visser

"A mixture of hard and soft paths, some bars where you can do some fitness." - Willem de Haan

It seems that the amount of physical activity can be influenced by the quality of a green space by the way it is designed, by the different facilities that are offered, by the shape and the infrastructure in the green space.

The respondents were asked about their opinion about the quality of green spaces in Groningen. The quality in general seems to be good. The main reasons for their opinion are the maintenance and the clean characters of the parks. One of the respondents mentioned that the quality is good but that the amount of green spaces is a little less for the amount of residents that live in Groningen. This would not only imply that not only the focus should be on the influence existing green spaces but also on new possibilities for green spaces.

"*Stadspark and Noorderplantsoen are of good quality, but it is just little for the amount of residents that Groningen has*."- Henk Visser

The respondents were also asked to make a comparison between the importance of distance to a green space and the importance of the quality of a green space. They had to compare which is more determent for them to go to a green space or not. Four respondents find quality more important, the other two think the distance is more important. The quality wins over distance when the respondents want to do certain activities in the green space.

"*I find quality more important, because you can decide whatever you want to do, in a park with good quality. Then you don't mind the distance."* – Ineke Boersema

"*The quality. I think it is more important to have a green space of good quality then the distance you have totravel to get there. I think the distance would not matter that much if I know that there is a nice green space where I can do my stuff."* – Pieter Arends

The distance probably becomes more important when the motivation of respondents to be physically active in a green space is lower.

"I think distance, because otherwise the threshold to go is to high. When it is too far away you won't go I think, so distance is the most important I think." – Henk Visser

The comparison between distance and quality can only be made on a certain scale; within the boundaries of the city. When a green space of good quality is outside the maximum distance range of a person the quality does not compete with distance anymore.

> "*Well I think the quality is more important. Even if the park with a better quality is a bit further away then I would still go there. But to what extend I would make that choice is hard to say. But everything that is within the range of the city I would travel a bit further for a better quality*." – Willem de Haan

4.3.4 AVAILABILITY OF GREEN SPACE

The fourth sub-question that has to be answered with the interviews is: "What are the needs of the citizens of Groningen regarding green space and physical activity when focusing on availability?" In this section the collected data will be presented. The availability of green space can be divided in objective and subjective availability. The objective availability of green spaces refers to the factual amount of green spaces that that is available for physical activity. The subjective availability refers to people's perception on the available green spaces for physical activity.

The objective availability cannot be measured by people's personal ideas about the green spaces. Therefore the interviews gained insight in the subjective availability of green spaces. The respondents were asked whether they think they are aware of all available green spaces in Groningen. Surprisingly all respondents answered that they think they are not aware of all the available green spaces in Groningen. They do now the popular green spaces like Noorderplantsoen and Stadspark.

> "*No I don't think so, I only know Stadspark and Noorderplantsoen. I don't believe there are only two green spaces in Groningen*." - Ineke Boersema

> "*No I don't think so. There is no information about it actually, I just know there are two places, Noorderplantsoen and Stadspark, where you can go running or something*." – Klaas de Vries

Based on their opinion about the subjective availability of green spaces the respondents think there are not enough green spaces in Groningen. The main reason that comes up is the fact that more green spaces provide more variation and more options to be physically active.

> *"Well within the maximum distance there are two big parks to go to. But it would be nice when you have more variation, more smaller parks for example.*" – Ineke Boersema

"Relatively there are enough green space, anyway there is a place where I can go to but if they will expand the routes with more variation to more places I can go to then it will be more motivating to go running and play soccer." - Klaas de Vries

"Well I think there could be more green spaces. And I know that it is difficult to just make a park somewhere but just some little outdoor workout stations for example." – Henk Visser

Most respondents think that they would be more stimulated when there are more green spaces available. It would help to support the heterogeneous needs of the respondents. Not only do the respondents have different needs when it comes to compare them but also when it comes to their own needs. Different green spaces can support different needs, but they can also stimulate a certain activity just by the variation of environment.

"*Yes I think so, because I won't go running just for running, I want to have some differentiation in environment."* – Henk Visser

5. DISCUSSION & CONCLUSION

In this final chapter concluding remarks are described. In section 5.1 answers are given to the sub-questions and eventually the main research question. In section 5.2 the conclusions have been further discussed and elaborated. In section 5.3 the reflection of this study is discussed.

5.1 CONCLUSION

Physical activity is stimulated by the presence of green spaces. The citizens of Groningen have different but also the same needs when it comes to green spaces. These needs correlate to the subthemes access, availability and quality. The access of green spaces can be experienced both in a subjective as in an objective way. This accounts also for the availability of green spaces. The quality of green spaces depends on the different characteristics and facilities that are present. Green spaces, or at least public green spaces, are owned and maintained by the municipality. The municipality can do interventions in the different aspects of green spaces as described before. These interventions can be done at different planning levels; the strategic level, the tactical level and the operational level. How do these theories apply in reality? In this case: in the city of Groningen? The aim of this research is to gain insight in whether the green space policy and the provision of green spaces by the municipality of Groningen meet the needs and wishes of the citizens of Groningen regarding physical activity in green spaces. To answer the main question a number of sub-question are devised.

First the policy of the municipality of Groningen regarding green space is discussed. According to the literature planning has changed through time, from a technical rational way of planning with a factual world full of certainty and value free, to a communicative way of planning with a world full of uncertainty, complexity and values. According to the policy document, 'Groene Pepers', the municipality of Groningen has to try to provide a city in which people have access to a rich spectrum of green and nature, in and around the city. The ambition is focused on the attractive connection of different elements of green, the green space at neighborhood level and the regional level, the public spaces in the city and the rural area. It focusses on multifunctional use, a diversity of parks, sports fields, and an overall presence of green spaces in the neighborhoods. On the basis of in-depth interviews with two people from the municipality it is further investigated what the policy of the municipality of Groningen is regarding green spaces and physical activity, based on the categories accessibility, availability and quality of green spaces. Accessibility in actual distance to a green space is not included in the green space policy. This can be explained by the limitations that exist due to the original structure of the city. The route to a green space is in general not included in the policy of the municipality. Regarding the availability of green spaces the municipality does not promote them; it is

to the citizens themselves to discover them. Regarding the quality of the green spaces ecological values, safety, routes, easily accessible, size and plantation are mentioned as important quality features of a green space. In general the green space policy focuses mainly on the tactical level.

Secondly, the concept of accessibility of green spaces and physical activity is discussed. According to the literature accessibility can be divided in the objective and the subjective accessibility. Regarding objective accessibility the concept of distance decay is the most influencing, which means that the human interaction with a location decreases when the distance to the location increases. Regarding subjective accessibility different barriers that might reduce peoples believe of the accessibility of green spaces are mention, like busy roads, fences and other obstacles. On the basis of in-depth interviews with 6 citizens from the city of Groningen it is further investigated whether accessibility of green spaces influences their physical activity. It can be said that distance is an important factor for them to be physically active in green spaces. The route to a green space is less important for the citizens. But some mention that they do not like to come across barriers like traffic lights or big roads. Distance to a green space is more important than the route to the green space.

Thirdly, the concept of quality of green spaces and physical activity is discussed. According to the literature the quality of a green space does influence the physical activity of people. Quality is about the features and characteristics of the green space. Especially good path networks and diversity of nature are mentioned as important. On the basis of in-depth interviews with 6 citizens from the city of Groningen it is further investigated whether quality of green spaces influences their physical activity. Features and characteristics that are mentioned by the respondents are possibilities to do different kind of sports, nice and clean tracks and paths, safety, maintenance, elevation, variation and fitness attributes. They think the quality in Groningen overall is good. Some think quality is more important for them to be physically active, others think distance is more determent.

Finally, the concept of availability of green spaces and physical activity is discussed. According to the literature the amount of available green spaces has influence on the physical activity of people. It also states that the amount of parks and green spaces had bigger impact on the physical activity than the distance to the closest park. Anyway it is unclear what the exact relationship between green space and physical activity is. On the basis of in-depth interviews with 6 citizens from the city of Groningen it is further investigated whether availability of green spaces influences their physical activity. Overall they think there are few green spaces available. But they also mention they do not think they are aware of all the green spaces that are available within their living environment. In addition they would even think they would be more physically active if there would be more green spaces available.

On the basis of the answers given to the sub-questions, it can be concluded that the provision of green spaces by the municipality does not completely meet the needs and wishes of the citizens of Groningen regarding green spaces for physical activity. The policy of the municipality seems to neglect certain aspects of green spaces that are important to stimulate physical activity. The citizens indicate that there could be some improvements that would stimulate them to be physically active in the green spaces. For the long term this would imply another way of looking at the different planning levels for green space; the strategic, the tactical and operational level. With better substantiated choices for the policy makers specifically for the improvement of physical activity in green spaces. For the short term interventions could be done at the operational level. Such as smart routes to green spaces which trespass busy roads and traffic lights and to create awareness of the available green spaces.

5.2 DISCUSSION

In this section I will further develop the conclusion and elaborate on the research. Explanations for the outcomes are given and causes and consequences of the results are discussed. Also the theories that are used for this research are reflected on.

In general the theories that are used for this research appear to be valid and useful. Anyhow there are some adjustments that need to be made to improve the theories for further research. First of all the theory of distance decay does not take into account the quality of a green space. Distance decay means that the interaction between a person and a place decreases as the distance between them increases. In this research some respondents mention that the quality of a green space is more important than the distance, the quality overrules the distance. This means that the theory of distance decay needs adjustment in the sense that it should take into account other variables as well and especially quality. Secondly the theory about the quality of green space does not specifically mention all attributes in and characteristics of green spaces that would stimulate physical activity. In this research different attributes are mentioned when the respondents described a green space of good quality. In the literature good path networks and diverse nature are mentioned as important characteristics. This is correct, but it does not comprise all important characteristics. Therefore this theory needs further elaboration.

When comparing the policy of the municipality of Groningen and the needs and wishes of the citizens of Groningen it can be said that the municipality does not completely meet these needs and wishes. Several reasons can be the underlying cause. First of all it could be that the municipality is not aware of the needs and wishes of the citizens of Groningen and is not aware of the different theories

supporting the importance of quality, availability and accessibility of green spaces for physical activity. It could also be the case that the citizens think that interventions in the green spaces would stimulate them but that in fact it might not make a difference if the citizens are not motivated enough themselves in the first place. Another reason might be the lack of money and funds to provide green spaces that meet the needs and wishes of the citizens. The information that has been given by the municipality about their policy on green spaces might not be sufficient and comprehensive to be able to really reflect on it. The two policymakers mentioned that there was not someone from the municipality responsible specifically for the green space policy in relation to physical activity.

The outcomes of the research provide sufficient information and evidence for the municipality to do some interventions in the green spaces to meet the needs and whishes of the citizens of Groningen regarding physical activity in green spaces. If the municipality does so, it will help stimulate people to be physically active. This means that the municipality will improve their focus on "*a city in which our kids can grow up to be healthy adults, and in which every adult has equal chances regarding health and a healthy life course"* , as they state as one of their goals.

5.3 LIMITATIONS

In this section I will reflect on the limitations of the research.

First of all the age of the respondents does not cover the whole society of city of Groningen. The age of the respondents differ from twenty-three years old to fifty-three years old. The 'active generation' is included in this case. The younger people and the older adults are not included in the research. Those generations are also physically active, but probably in a different way. Older adults for example have different demands than young and healthy people. The biggest part of the citizens of the municipality of Groningen is between 20 and 65 years old and therefore this age group is chosen. The limitation means that the results cannot be generalized for all the citizens of Groningen.

Another limitation is the fact that only physically active people are interviewed for this research. The outcomes therefore reflect the wishes and needs of people that already are physically active and they might have different needs than people that are not physically active. It would be interesting to also investigate the wishes and needs of people that are not physically active and to find out how they can be stimulated. It would be interesting to find out what withholds them, other than time or bodily restrictions.

As mentioned before the limited information about the green space policy of the municipality might influence the outcomes of the research. It could be that the municipality has certain goals regarding green space and does already aim for interventions that are mentioned by the respondents. With the limited, and maybe not complete information, about the policy of the municipality it is hard to draw conclusions and the comparison between the policy and the needs and wishes of the citizens of Groningen is not completely valid.

5.4 REFLECTION

This section describes the reflection of the research. The reflection consists of three parts; a reflection on the literature review, a reflection on the research methods and a reflection on the research results.

The different theories and literature about green spaces and physical activity appeared to be useful for this research. The literature provided a good basis for the research. The interview could be easily based on the theory and also the results could be reflected and tested upon with the theories from the literature review. Especially the theories about distance decay, the objective and subjective access and availability of green space and seemed to be useful. The literature about the planning perspective seemed to be less useful and supportive for this research. The policy document from the municipality of Groningen about their green space policy was very helpful since it provided different and complementary information than the information that was given by the policymakers of the municipality.

For this research in-depth interviews are chosen as the research method. This method is useful for investigating complex behaviors, opinions and emotions for collecting a diversity of experience. For this research it was important to gain insight in the complex behaviors of the citizens of Groningen regarding their physical activity in green spaces and to gain insight into their opinions and emotions about the green space and their physical activity. The subject was very suitable for in-depth interviews because respondents easily talk about it and are not afraid to answer the questions and tell their story. It must be mentioned that the research would be more complete and the outcomes more convincing if a questionnaire would be included in this research. Questions about certain environmental aspects for example could be included in this questionnaire. In that way a big database could be created and the significance of certain aspects could be tested. This might be important for the municipality when they would consider to do interventions.

In general the outcomes of the research met the expectations of the researcher. Some outcomes of the research are more convincing than others. First of all the outcome that green spaces do have a

great influence on the physical activity of people is convincing. In all different aspects of green space – access, availability and quality – it appears that it is important for the stimulation of physical activity. It seems less convincing that people do not have strict requirements regarding green spaces for physical activity.

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7. APPENDIXES

7.1 INTERVIEWGUIDE – POLICY MAKERS

Explanation research

Good morning/afternoon/evening, my name is Evelyn Dobbinga and I am a master student at the University of Groningen. The master I am currently following is Environmental and Infrastructure Planning. At the moment I am finishing the master with writing my master thesis and therefore I am doing research. My thesis is about whether there is a match or a mismatch between planning theory and planning practice regarding green space and its influence on physical activity in Groningen. Therefore I need to conduct some interviews with people from the planning department of Groningen.

The interview will maximum take one hour, dependent from the information you want to share with me. I would like to use an audio recorder to record the interview. In this way I can focus on the interview and I can listen back to it afterwards.

I want to make clear that this conversation will be strictly confidential and the information will be processed anonymous. I will change your name and other information that might lead back to you to fictive names and information. The information you are giving to me will be used in my thesis, but the results will not be traceable to you or this conversation. The recorded interview will only be available to me. If you would like a break during the interview, please let me know. Also if you want to stop the interview u are free to let me know because participation is completely voluntary.

- Is everything clear for you or do you have any questions before we start with the interview?
- Do you give me permission to record the interview?

**Switch on audio recorder*

**Record again oral permission to record the interview.*

Opening questions

First I would like to know some general information about you. Could you tell me something about yourself?

- What is your name?
- What is your year of birth?
- What is your profession?
- Where are you born?

Key questions

- What is your role or the role of your organization/department for planning green spaces?

- What is your goal or the goal of your organization of the provision of green space?

- Through which way will this goal be achieved?

- Can you identify crucial factors or actors in the provision of green space?

- Do you cooperate with the local community? And how?

- What kind of policies/programs/plans do you apply in the interventions?

Now that I know more about you I and your organization I would like to ask some more specific questions about the green space policy in Groningen.

- What is the main purpose of the urban green space in Groningen?

- On which guidelines are the green spaces based?
  - general guidelines
  - local guidelines

- What is the role of green space in relation to physical activity of citizens in Groningen?

- How are the needs and wishes of citizens regarding physical activity involved in the planning process of green spaces?

- Which environmental variables are considered as important in the green space policy?
  - vegetation
  - parks
  - trails
  - walking routes
  - recreation facilities
  - etc.

Now I know more about the green space policy in general I would like to ask some questions related to accessibility of green spaces.

- How is the distance (in terms of meters/kilometers) to green space involved in the policy?
  - maximum
  - minimum
  - equality in the city

- What travel modes are supported to make citizens go to green spaces?
  - walking
  - biking
  - car
  - public transport

- How is the route to a green space involved in the green space policy?
  -green infrastructure
  -connection between green spaces
  -safety
  -optimal route

- What do you consider as more determinative for citizens to be physically active in green spaces; the distance to a green space or the design of the route?

Next I would like to ask some questions about the availability of green spaces.

- How many urban green spaces does Groningen have (approximately)?
  -suitable for physical activity?
  -open for everyone?

- How are these green spaces promoted to citizens?
  -creating awareness

- Do you think there is enough green space available for different kind of physical activity?
  -variation

At last I would like to ask some questions about the quality of green spaces.

- What kind of quality do green spaces need to have?
  -features
  -characteristics
  -facilities

- How do you find the quality of the green spaces in Groningen?
  -difference in quality?
  -maintenance
  -future plans?

- What do you consider as more important or what does get higher priority; the distance to green spaces for citizens, the availability of green spaces for citizens or the quality of green spaces?
  -why?

Closing questions

- What is your future goal?
- Do you have a strategy document?
- Do you have anything to add to this interview?
- What did you think of the interview?
- Would you like to receive the results of the interview?

** Turn off audio-recorder!*

** Thank the respondent for his/her willingness to participate and give small gift.*

7.2 INTERVIEWGUIDE – CITIZENS

Explanation research

Good morning/afternoon/evening, my name is Evelyn Dobbinga and I am a master student at the University of Groningen. The master I am currently following is Environmental and Infrastructure Planning. At the moment I am finishing the master with writing my master thesis and therefore I am doing research. My thesis is about whether there is a match or a mismatch between planning theory and planning practice regarding green space and its influence on physical activity in Groningen. Therefore I need to conduct some interviews with people that are living in Groningen and that are physically active in green spaces in Groningen.

The interview will maximum take one hour, dependent from the information you want to share with me. I would like to use an audio recorder to record the interview. In this way I can focus on the interview and I can listen back to it afterwards.

I want to make clear that this conversation will be strictly confidential and the information will be processed anonymous. I will change your name and other information that might lead back to you to fictive names and information. The information you are giving to me will be used in my thesis, but the results will not be traceable to you or this conversation. The recorded interview will only be available to me. If you would like a break during the interview, please let me know. Also if you want to stop the interview u are free to let me know because participation is completely voluntary.

- Is everything clear for you or do you have any questions before we start with the interview?
- Do you give me permission to record the interview?

**Switch on audio recorder*

**Record again oral permission to record the interview.*

Opening questions

- What is your name?
- What is your year of birth?
- Where are you born?
- What is your postal code?

Key questions

Now that I know more about you I would like to ask some questions about your outdoor physical activity.

- How would you define outdoor physical activity?

- What kind of physical activities do you do?
  -indoor
  -outdoor → green space

- Where do you go to when you want to be physically active outdoor? And how do you use the green space?

- Which environmental variables do you find stimulating for your physical activity?
  -vegetation
  -parks
  -trails
  -walking routes
  -recreation facilities
  -etc.

Now that I know a bit more about your idea of physical activity and your own physical activity I would like to ask some questions related to accessibility of green spaces in the city.

- What is the distance (in meters/kilometers) to the green space where you are physically active?

- What would be the maximum distance you would travel to a green space for physical activity?

- What travel mode do you use to go to a green space to be physically active?
  -always the same?
  -depends on the green space where you go to?
  -depends with whom you are going?
  -depends on the weather?
  -what do you prefer?

- How important is the route to the green space?

- What would your ideal route to a green space look like?
  -connections between green spaces?
  -safety?

- Is the route to a green space part of your physical activity?

- What is more determinant for you to be physically active; the distance to a green space or the route (design of the route) to a green space?

Next I would like to ask some questions about the availability of green spaces in Groningen.

- What do you consider as green space that is “available” for physical activity?

- How many different green spaces do you know where you could be physically active?
  -are you using them all?
  -which one do you prefer?

- Do you think the amount of green spaces is enough?

- Do you think you are aware of all available green spaces in Groningen?
  -how do you know them?
  -is there promotion by the municipality? If so, would it stimulate you?

- How do you think the amount of green space influences your physical activity?

Next I would like to ask some question about the quality of green spaces in Groningen?

- What do you consider as a green space with good quality for physical activity?
  -features/characteristics

- How important is the quality of a green space for you to be physically active?

- What do you think of the quality of the green spaces in Groningen?
  -for all green spaces the same?

- What do you find more important; the distance to a green space or the quality of a green space?
  -why?
  - dependent on your physical activity?

Closing questions

- Would you want to participate in the green space policy? Do you have any experience?
- Do you have anything to add to this interview?
- What did you think of the interview?
- Would you like to receive the results of the interview?

** Turn off audio-recorder!*

** Thank the respondent for his/her willingness to participate and give small gift.*

7.3 CODEBOOKS

Categories & corresponding color:

- Personal attributes

- Policy

- Physical activity

- Quality of green spaces

- Accessibility of green spaces

- Availability of green spaces

- Other

7.3.1 CODEBOOK CITIZENS

Code	Type	Description
Name	Deductive	What is the name of the respondent?
Year of birth	Deductive	In which year is the respondent born?
Gender	Deductive	What is the gender of the respondent?
Postal code	Deductive	What is the postal code of the respondent?
Types of physical activity	Deductive	What types of physical activity does the respondent take part in?
Place of physical activity	Deductive	In what green space is the respondent physical active?
Stimulating environmental variables	Deductive	What kind of environmental variables does the respondent find stimulating for physical activity?
Distance to a green space	Deductive	What is the distance the respondent has to overcome to be physical active in a green space?
Maximum distance	Deductive	What is the maximum distance the respondent wants to overcome to be physical active in a green space?
Travel mode	Deductive	What travel mode does the respondent use to go to a green space?
Route	Deductive	How important is the route to a green space for the respondent?
Ideal route	Deductive	What would the ideal route look like to a green space according to the respondent?
Route as part of physical activity	Deductive	Is the route to a green space important for the respondent?
Distance or route	Deductive	What does the respondent find more determinative, the route or the distance to a green

		space?
Amount of green spaces	Deductive	What does the respondent think of the amount of green spaces that is available for physical activity?
Awareness	Deductive	Does the respondent think he/she is aware of all the green spaces that are available for physical activity?
Quality of a good green space	Deductive	How does the respondent describe a green space that has good quality?
Importance of quality	Deductive	How important is the quality for the respondent to be there physically active?
Opinion of quality in Groningen	Deductive	What does the respondent think about the quality of the green spaces in Groningen?
Distance or quality	Deductive	What does the respondent find more determinative, the distance to a green space or the quality?
Participation experience	Deductive	Does the respondent have experience in participating in the green space policy?
Future participation	Deductive	Does the respondent want to participate in the green space policy?

7.3.1 CODEBOOK POLICYMAKERS

Code	Type	Description
Name	Deductive	What is the name of the respondent?
Profession	Deductive	What is the profession of the respondent?
Duration of profession	Deductive	How long does the respondent do his/her profession?
Role of the organization	Deductive	What is the role of the respondent or his/her organization?
Goal of organization	Deductive	What is the goal of the organization or the respondent regarding providing green spaces
Achievement of goal	Deductive	To what extent is the goal of the organization achieved?

Important actors & factors	Deductive	What does the respondent mention as important actors and factors regarding the provision and planning of green spaces?
Participation with citizens	Deductive	Does the respondent cooperate with the citizens and how?
Policy programs	Deductive	Which policy programs and plans does the respondent use to do interventions in green spaces?
Cooperation	Deductive	Does the respondent cooperate with other department and organizations?
Accountability	Deductive	Does the respondent has accountability towards other policy departments and policy levels?
Main goal of green spaces	Deductive	What does the respondent mention as the main goal of the green spaces in Groningen
Guidelines	Deductive	Which guidelines does the respondent use for the green spaces in Groningen?
Role of green spaces	Deductive	What does the respondent mention regarding the role of green spaces for physical activity?
Environmental variables	Deductive	What does the respondent think are important environmental variables?
Distance of green spaces	Deductive	How is distance included in the green space policy?
Travel modes	Deductive	Which travel modes to green spaces does the respondent mention that are supported?
Route to a green space	Deductive	In what way is the route to a green space included in the green space policy?
Distance or route	Deductive	What does the respondent think is more determinant for citizens, the route or the distance to a green space?
Amount of green spaces	Deductive	How many green spaces does the respondent think Groningen has?
Promotion of green spaces	Deductive	Does the respondent mention ways of promoting green spaces and creating awareness?

Enough green spaces	Deductive	Does the respondent think there are enough green spaces available for physical activity?
Quality criteria	Deductive	What kind of quality criteria do the green spaces have to meet regarding the respondent?
Quality of green spaces in Groningen	Deductive	What does the respondent think of the quality of the green spaces in Groningen?
Distance or quality	Deductive	What does the respondent think is more determinative for green spaces, distance or quality?
Future goal	Deductive	What is the future goal of the respondent regarding green spaces for physical activity?