Reclaiming Loose Space: Implications of Loose Space for Physical Activity

by

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ABSTRACT

RECLAIMING LOOSE SPACE: IMPLICATIONS OF LOOSE SPACE FOR PHYSICAL ACTIVITY

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University of Guelph, 2012

This thesis explores characteristics of loose space and their implications for physical activity. A space becomes loose when an individual is using it for something other than what it was intended. Individuals can pursue a range of physical activities not possible in other public spaces. To assess the compatibility between loose space and physical activity a survey of 27 users of loose space and key informant interviews from public health, municipal parks and landscape architecture disciplines were used. Interview findings suggest that unstructured forms of physical activity are more likely to be adopted and maintained while survey results show 70% of loose space users are achieving recommended physical activity levels. Multifunctional space that can accommodate appropriation and change may have design implications for improving health. Design recommendations and strategies were developed to inform the design and management of loose space for physical activity. This study suggests that the qualities and distribution of loose space could improve adoption and maintenance of physical activity.

Keywords: Unstructured physical activity, moderate-intensity exercise, urban green space provision, multifunctional space, alternative public open space
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Chapter 1: Introduction

Overview

Urban intensification has implications for green space usability and green space accessibility, both of which directly affect physical activity. One of the many health issues that physical activity can contribute to preventing is obesity (Dietz, 1994; Foster & Hillsdon, 2004; Pietilainen, 2008). 80% of Canada’s population lives in urban areas and the trend towards urbanization is growing. The effects of urbanization on the health of Canadians are evident as 63 % are not active enough to achieve health benefits (Statistics Canada, 2011). As the urban population increases, the need for innovative regeneration of space to incorporate more desirable and accessible physical activity opportunities for the public is critical to improving physical activity.

Changes in urban form, population make-up and consequently, physical activity needs must be supported by the environment rather than inhibited in order to remove barriers to physical activity. A focus on health promotion through environmental intervention has become the preferred strategy of public health organizations to achieve population wide improvements in health. This thesis purposes that conventional and structured forms of physical activity do not appeal to all segments of the population. Environments, such as loose space, that can encourage and facilitate alternative forms of physical activity are necessary.

Research shows that Canada’s most urban municipalities are facing a growing shortage of accessible open green space (Maas, Verheij, Groenewegen, de Vries and Spreeuwenbug, 2006; United Way, 2002). Growing populations are in most need of
access to open green space but are least able to obtain it because of the high cost of land and development pressure on the land.

Loose space collectively makes up a large portion of the urban fabric that has typically been neglected or under used. This study focuses on the capability of loose space to encourage physical activity. More specifically, the qualities and distribution of loose space are explored in relationship to environmental, psychological and municipal policy trends regarding physical activity. Loose space has the potential to be a practical application for addressing changing physical activity needs within the existing structure of a city.
Goals and Objectives

Research Goal

The goal of this research was to explore the uses, qualities and distribution of loose space and to examine their implications for physical activity. The following objectives were designed as steps in accomplishing this goal.

Research Objectives

1. To determine if loose space is a practical application for encouraging physical activity in urban areas in relationship to:
   - Environmental correlates of physical activity,
   - Theoretical models of exercise behaviour,
   - Municipal goals and trends concerning green space and physical activity,
   - Economic feasibility;

2. To explore how loose space is being used and its influence on physical activity;

3. To determine if the addition of loose space can alleviate green space deficiencies and achieve target green space allotment;

4. To determine whether unstructured loose space qualities that encourage physical activity can be retained and presented in a structured loose space;

5. To determine if public use of municipal loose space can be successfully incorporated into the planning and management of a city.
Chapter 2: Research Design

This research takes a qualitative approach as it encourages exploration in the little-understood phenomenon of loose space and its relationship to physical activity. It seeks to explore where and why policy and local knowledge and practice are at odds (Marshall, 1985). Methods including a review of the literature, questionnaire survey, and key informant interviews were used to investigate how loose space is being used and its capability to encourage physical activity. Methodological triangulation\(^1\) of the results from the literature, survey and interviews can provide greater certainty and precision regarding the findings concerning the ability of loose space to encourage physical activity (Deming & Swafield, 2011). From the analysis of the data, a set of design recommendations and strategies for reclaiming loose space for physical activity were developed. The recommendations were then evaluated by a series of design, planning and public health experts to provide a level of professional credibility and applicability. The recommendations were then revised according to the major themes emphasized by the evaluators.

\(^1\) Methodological triangulation involves using multiple sources to gather data that are mutually reinforcing (Deming & Swafield, 2011).
Research Methods and Limitations

Figure 1 shows the general procedure of methodology for this study. Each section will be discussed in detail explaining methodological relevance, procedures, and limitations for the study.

Fig. 1  Procedure of Methodology
**Literature Review**

The purpose of the literature review was to gain an understanding of the key underlying issues, major findings, controversies and gaps in the contextual body of scientific knowledge (Babbie, 2004). Figure 2 shows the specific categories of knowledge to be studied to lay the groundwork for showing how this particular research fits into the larger body of knowledge surrounding the built environment and physical activity.

![Literature Review Framework](image)

Fig. 2  Literature Review Framework
Questionnaire

The use of a self-administered questionnaire was most appropriate for collecting data from a population of users of loose space that would otherwise be too large to directly observe (Babbie, 2004). The purpose of the questionnaire was to explore how people are using loose space and if this use has an influence on physical activity.

Objectives

- To investigate who is using loose space and how they are using it
- To gain an understanding of the reasons why people choose loose space
- To determine whether loose space supports and encourages moderate-intensity physical activity
- To compare differences between different typologies of loose space in terms of physical activity

Sampling Strategy

A purposive non-probability sampling strategy was used to permit in-depth investigations of loose space users that would otherwise be difficult to find (Aday & Cornelius, 2006). The rationale for site selection for administration of the questionnaire was to explore a range of typologies of loose space as shown in Table 1. A venue-based approach permits convenient access to the target population of loose space users. Time, availability and resources also were considered in the selection of sites to be surveyed.
Table 1. Administration Sites for Questionnaire

<table>
<thead>
<tr>
<th>Name of Site</th>
<th>Location</th>
<th>Typology of Loose Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>McLennan Bike Park</td>
<td>Kitchener, Ontario</td>
<td>Structured currently in use</td>
</tr>
<tr>
<td>LaFarge Quarry</td>
<td>Guelph, Ontario</td>
<td>Structured brownfield</td>
</tr>
<tr>
<td>Burrard Garden</td>
<td>Vancouver, B.C.</td>
<td>Unstructured residual By-product of engineering</td>
</tr>
<tr>
<td>Lululemon Global Support Centre</td>
<td>Vancouver, B.C.</td>
<td>Unstructured residual figure/ground relationship</td>
</tr>
</tbody>
</table>

As no list exists to create a sampling frame for loose space users, sample units (participants) were selected based on their presence in the selected sites. Sample size is informed by the study objective of exploring how people are using loose space. The sample is designed to portray a relevant range of units in relation to the wider universe but not to represent it directly (Mason, 1996). A back up method of snowball sampling\(^2\) was also used to account for limited access to loose space users due to winter weather conditions.

\(^2\) Purposive chain sampling is useful when member of a population are extremely hard to identify otherwise.
Procedure and Analysis

The procedure process consisted of 3 separate one-hour visits to each site. Visits took place at different times of day and different days of the week to gain a greater cross-sectional understanding of how the site is being used. This method permits administration to a group of respondents gathered at the same place at the same time (Babbie, 2006). An ad hoc method for selection of participants was used. The researcher was stationed in one place. Every individual was asked to participate upon coming with in accessible distance to the researcher. Participants were included in the research based on their use of the site during the defined time the researcher was present, and their willingness and ability to answer the questionnaire. Category codes were applied to each of the participants’ responses. The sample size was conceptually driven and therefore the results are designed to make theoretical generalizations but not statistical generalizations (Mason, 1996).

Limitations of Questionnaire Method

- One researcher cannot access all of the users of the space with in the given time
- Must rely on the honesty and accuracy of the participants responses
Key Informant Semi-structured Interviews

Qualitative semi-structured interviews were chosen to explore the capability of loose space in supporting physical activity. The information gained by accessing the perspectives of professionals in the field was critical to making sense of the relationships between evidence and theoretical understandings that are not yet well understood (Deming & Swaffield, 2011). Descriptive social surveys give the respondents the chance to choose their own words therefore producing data rich with descriptive detail (Neuman & Robson, 2009).

Key Informant Selection Criteria

Respondents must be well informed on public health, physical activity, and/or design to increase the likelihood of gaining rich and relevant data (Deming & Swaffield, 2011). Two sets of key informants were interviewed.

General Selection Criteria for Key Informants

- Participants must represent a wide range of professional experience in fields that can directly influence public health and physical activity.
- Informants must be presently working in a field that is able to influence policy, design, or interventions to increase levels of physical activity.
- Must be available to provide current perspectives on strategies to enable greater participation in physical activity.
Key Informants: Set 1

The goal of these interviews was to explore the capability of loose space to encourage physical activity from public health and municipal perspectives.

Selection Criteria for Public Health Informant

- Can report on policies, history, future plans and trends related to public health and PA
- Is employed by an organization that is considered influential in directly affecting public health
- Has enough experience in the field to give well informed expertise on PA

Selection Criteria for Municipal Parks and Recreation Representative

- Has knowledge of trends and policy surrounding parks and PA
- Can report on how municipal policies affect PA levels
- Is knowledgeable in the relationship between PA and parks and can provide perspectives on the city’s approach to parks and open space system

Key Informants: Set 2

The goal of these interviews was to investigate how unstructured loose space qualities can be presented in a structured loose space. A second goal was to determine if loose space uses involving varying levels of risk can be successfully incorporated into the planning and management of a city.
Selection Criteria for Design Professional

- Is currently practicing in an accredited design profession in Canada
- Has knowledge of a particular loose space site that has evolved from an unstructured loose space to a structured loose space
- Was involved in the process and is able to report on it
- Can illustrate an example of a loose space that accommodates a high-risk use to provide evidence for the spectrum of uses of loose space can facilitate

Selection Criteria for Facilitator of Programming Loose Space

- Is currently involved in a program that facilitates public use of loose space in conjunction with city owned property
- Was involved in the process and is able to report on it
- Can illustrate an example of a loose space that accommodates a low-risk use to provide evidence for the spectrum of uses loose space can facilitate
Interview Procedure and Analysis

1. A series of open-ended questions were constructed to capture the interviewee’s views on a variety of research objectives and to allow for new and unexpected phenomenon to be revealed through descriptions of specific situations (Kvale, 1996).

2. Interviews were recorded and later transcribed by the researcher. A denaturalized transcription approach was used as the meanings and perceptions of the data collected were more important to this research than the mechanics of the interview (Oliver, 2005). This selective transcription approach is appropriate when it is unnecessary to transcribe verbatim in order to answer the research questions.

3. Data analysis takes an interpretive approach in an attempt to develop explanations through examination of how processes work in to encourage physical activity in the context of loose space. This research does not seek to make statistical generalizations but rather to make analytic generalizations about plausible relationships and patterns between concepts related to loose space (Kvale, 1996).

4. Limitations of Key Informant Method

• Informants may not provide a representative sample of their profession

• Limited number of interviews based on time, resources, and availability
Site Analysis of Loose Space

A site analysis of loose space was conducted to explore the potential of loose space to encourage physical activity in relationship to green space accessibility and green space provision targets. A site in Vancouver, B.C. that captures parts of the Downtown, Strathcona and Mount Pleasant neighborhoods was selected. A 1-kilometer radius informed the selection of the circular site as to assess the walkability of loose space. A combination of Google Earth, street view, and direct observation was used for the analysis of loose space.

Objectives

• To determine the extent and distribution of loose space within a walkable area
• To compare and evaluate current provision levels of green space with municipal targets and to investigate the impact of the addition of loose space

Selection Criteria of Site

• The city is one of Canada’s most populous urban areas
• The city’s population growth is outpacing the creation of new parks
• The city’s provision of green space is ranked among the lowest for urban municipalities in Canada
Google Earth was used to provide remote views of terrain at relatively high resolution to develop a measure of loose space in the urban core of a Vancouver. This remote method can provide comparable quality assessments of public open space with a direct observation method (Bronwen, Fernando, Bauman, Williamson, Craig and Redman, 2011). One major limitation of this method is that Google Earth images may be up to 3 years old and will not account for development changes.

**Loose Space Measurement Criteria**

- Vacant lots
- Brownfield sites
- Residual open space resulting from by-product of engineering
- No defined scale because the use of the space is activity dependent

**Direct Observation Procedure**

- Ground truthing: Physically going to each loose space site identified on Google Earth and filling out an “Inventory of Potential Loose Space” sheet to document typology, uses, environmental quality, accessibility, and safety.

(See Appendix B).
Evaluation of Design Recommendations & Strategies: Reclaiming Loose Space for Physical Activity

The purpose of this evaluation is to add another layer of validity for the design recommendations and strategies for providing a practical application of loose space to encourage physical activity. This is a utilization-focused evaluation in which the evaluation of the guide is critiqued on its relevance and utility for improving physical activity (Patton, 1997).

Selection Criteria for Evaluators

Evaluations will be critiqued by a series of experts to provide a level of professional credibility to the proposed design recommendations. The evaluators were chosen based on their ability to influence public health through design and planning. Listed below are the specific selection criteria for each evaluator.

- Has professional designation and is currently practicing in an urban planning, public health or design-related field.
- Specializes in the relationship between urban design and physical activity.
- Has experience with the design of a loose space typology and is able to perform an informed critique of the design recommendations.
Evaluators

Trevor Hancock
Professor and Senior Scholar
School of Public Health and Social Policy
University of Victoria

Sheila Boudreau
Urban Designer, City Planning, Urban Design
City of Toronto

Chris Veres
Urban Designer
Fully Chartered Landscape Architect
London, UK
Chapter 3: Literature Review

Part 1: Loose Space

Defining Loose Space

Loose space (LS) is a by-product of urbanization. As development increases so does the creation of loose space. An increase in the variety of street types, land-uses and concentration of activities gives rise to the creation of loose space. These spaces are part of the common, ordinary landscape but are seen as voids that are excluded from the productive economic structure of the city. The terms “terrain vague” (Sola-Morales, 1995), “superfluous landscapes” (Nielsen, 2002), “lost space” (Trancik, 1986) and “third places” (Vikas, 2010) all express the concept of loose space described in this study. It is a relatively neglected area of the urban fabric because it falls outside of defined land-use classifications (Kamvasinou, 2006, Trancik, 1986). Activities pursued in loose space are defined as alternative because they are different than those taking place in primary public spaces. The value of loose space lies in its ability to encourage forms of physical activity not available or permitted elsewhere in the urban environment. A space is considered loose when the user of the space becomes an active creator. There must be a self-recognition of the possibilities inherent to the space to pursue a variety of activities not originally intended for that space (Franck & Stevens, 2007). Loose space differs from a park setting or other public open spaces because the user is able to interact with and make informal changes to the physical environment. A reduced sense of regulation allows individuals to take an active role in pursuing meaningful activities.
Typologies of Loose Space

Typologies of loose space can be categorized in terms of use. Franck et al., (2007) explains that use of loose space can exist along with primary intended uses, or where a fixed use is now detached, or never existed at all. Figure 3 outlines the various typologies of loose space and their characteristics. As shown in Figure 3 loose space can be considered either structured or unstructured from a land-use perspective. Structured loose space refers to space that currently or at one time had a designated land-use. Some examples of interim sites with a now detached function are brownfields\(^3\) and vacant and/or abandoned sites. Unstructured loose space refers to uncommitted space that is not formally organized. Unstructured LS is created in conjunction with urban built form. These residual landscapes can be associated with the space around a building envelope or as by-products of engineering. Space around and above a building is considered loose space. Loose space as a by-product engineering refers to the left over polygons of space from the layout of roads, bridges and other structures. Loose space has generally been disregarded for conventional public use because of its shape, size or visible lack of economic function. The following section will consider the physical characteristics, qualities and uses of loose space that could encourage physical activity (PA).

\(^3\) Brownfields are vacant or underused sites with potential for redevelopment. They may be contaminated, often due to former industrial or commercial use.
Loose Space

1. The space is outdoors
2. The space is being used in a way other than intended
3. Actions must be voluntary
4. The space possesses particular physical features that invite people to appropriate them for their own use
5. People have actively fashioned the space to suit their needs
6. Freedom of choice to pursue a variety of activities
7. Must be freely accessible to all
8. Regulation ranges from self-organized to officially regulated

**Structured Space**
- Developed from a land-use perspective
- Planned for particular assigned function at one time
- Varying degrees of regulation

**Unstructured Space**
- Undeveloped from a land-use perspective
- Not formally organized
- No intended use, uncommitted space
- Reduced level of regulation
- Lacking conventionally appealing features

**Interim Transition Sites**
- Previously assigned function now detached
- Publicly or privately owned
- Self-directed regulation
  A. Brownfields
  B. Vacant and/or Abandoned Sites

**Currently in Use**
- Publicly or privately owned
- Imposed formalized regulation

**Residual Space**
- Left-over unstructured landscape
- Self-directed regulation
- Adjacent to spaces with fixed delineated function
  A. Space around a building envelope
  B. By-Product of Engineering
Loose Space Characteristics

Loose space operates on a spectrum of conditions. Its use can be temporary or permanent, publically or privately owned, and ranges from unregulated to official regulation. Jorgensen (2012) explains that this degree of tension between attributes is what gives rise to creative possibilities. As shown in Figure 4, loose space characteristics can be broken down into physical attributes, qualities and uses.

<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th>Qualities</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Typically more physically open</td>
<td>- Sense of freedom to choose what, where and when</td>
<td>- Activities are generally neither productive or reproductive but for enjoyment of the activity itself</td>
</tr>
<tr>
<td>- Unstructured environment with unprogrammed space</td>
<td>- Generally subject to less control</td>
<td>- Enables a range of informal uses not possible in most other urban areas</td>
</tr>
<tr>
<td>- Possesses physical elements that invite users to appropriate</td>
<td>- Communal: free of cost, free to be occupied spontaneously</td>
<td>- User becomes active creator by modifying the environment to meet own needs</td>
</tr>
<tr>
<td>- Many moveable, flexible, malleable elements</td>
<td>- Dynamic: permits movement, flux, change</td>
<td>- Opportunities for self-expression, the unexpected, spontaneity, risk</td>
</tr>
<tr>
<td>- Less intensely maintained: degree of decline and vegetation over growth</td>
<td>- Multifunctional</td>
<td>- Building, experimentation, destruction</td>
</tr>
<tr>
<td>- Lacking conventionally appealing features</td>
<td>- Expressive of local community</td>
<td></td>
</tr>
</tbody>
</table>


Fig. 4 Characteristics of Loose Space

Loose space is difficult to describe with conventional static definitions of place. Its use can range from self-directed regulation to imposed formal regulation. Use can be temporary or permanent. What sets loose space apart from other public open space is the freedom to personalize the space and make informal alterations to the environment. The next section investigates the compatibility between loose space and physical activity. Physical activity is a complex phenomenon that is influenced by multiple factors. In
order to provide a more accurate analysis of the capability of loose space to encourage physical activity, it is necessary to examine physical activity from multiple perspectives. This thesis will assess the ability of loose space to encourage physical activity in relationship to environmental, psychological, economic and municipal policy factors concerning physical activity.
Part 2: An Ecological Model Approach to Physical Activity Intervention

The word ecology refers to the biologic science of interrelations between organism and their environments. An ecological model then focuses on the nature of people’s interactions with their environments. Up until the mid 1990s behavior models of physical activity adoption and maintenance were dominated by psychological and social influences. Ecological models are now the most commonly applied strategy for PA research because while it recognizes psychological and social influences, it also incorporates the imperative role of environmental influences (Ball, 2006; Giles-Corti, Timperio, Bull and Pikora, 2006; Glanz, Rimer and Viswanath, 2008; Swinburn, 1999). As guided by research in the field, this review of the literature examines the relationship between physical activity and loose space through the lens of an ecological model. The scope of this study considers the role of the environmental, psychological, policy and economic related variables that affect physical activity. These variables are necessary to the evaluation of loose space for its capacity to facilitate physical activity.

Physical Activity: Trends and Design Implications

Health is best described as the capacity of people to adapt to, respond to, or control life’s challenges and changes (Public Health Agency of Canada, 2001). It is a capacity or resource rather than a state of being rather than simply an absence of disease or infirmity. Obesity is directly correlated to physical inactivity. A physically inactive lifestyle triggers weight gain and vice versa (Pietilainen, 2008). Physical activity is any bodily movement produced by skeletal muscles that results in energy expenditure. It can
be categorized by type, intensity\(^4\) and purpose. During the early 1980s and 1990s public health organizations took a traditional structured approach to PA that involved a “no pain, no gain” attitude. It was thought that vigorous intensity exercise was the only way to reap health benefits. The mid 1990s brought a watershed moment in PA research with the release of the *United States Department of Health and Human Services: A Report from the Surgeon General* (1996). This report was the first of its kind to recognize that moderate intensity PA contributes to health benefits. Moderate intensity PA involves working hard enough to noticeably raise your heart rate and requires a moderate amount of effort. Some examples of moderate physical activities are brisk walking, dancing, performing household chores, and gardening. Epidemiological studies reveal that moderate forms of PA can provide significant short and long term health benefits (Frank et al., 2003; CDC, 1996). This discovery permitted a greater range of people, especially those who were sedentary and/or do not enjoy vigorous intensity PA, the freedom to choose from a wider range of activities to obtain health benefits. The Canadian Physical Activity Guidelines for children, youth, adults and older adults is outlined in Figure 5. This thesis will explore the influence of loose space on recommended levels of physical activity.

\(^4\) Intensity is the rate at which work is being performed or the magnitude of effort required to perform the activity.
According to Frank, Engelke and Schmid (2003), PA can occur for either recreational or utilitarian purposes. The purpose of the PA affects behavioral processes differently and must be differentiated for research. Utilitarian PA is undertaken in order to accomplish another purpose (Frank et al., 2003). However this study considers recreational PA that involves participation in activities for leisure purposes.

As the urban population diversifies, so do their physical activity needs. The move towards personalized and diversification of leisure-time pursuits has been a growing trend (Jamet, 1998; Mota & Esculcas, 2002). Despite all the promotion and attention paid to structured sports and gym-based exercise, a great majority of the population has not succeeded. The body of scientific literature supports the notion that unstructured PA intervention programs will be more effective in encouraging a greater portion of the population to become and stay active (Foot, 1996; Frank et al., 2003; Dunn et al., 1998). Structured physical activities are characterized by formal team activities of vigorous intensity guided by a trainer or coach. Unstructured physical activities are characterized

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (5-11 years)</td>
<td>Accumulation of at least 60 minutes of moderate to vigorous intensity physical activity daily</td>
</tr>
<tr>
<td>Youth (12-17 years)</td>
<td>Accumulation of at least 60 minutes of moderate to vigorous intensity physical activity daily</td>
</tr>
<tr>
<td>Adults (18-64 years)</td>
<td>Accumulation of at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week</td>
</tr>
<tr>
<td>Older Adults (65+)</td>
<td>Accumulation of at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week in bouts of 10 minutes or more (CSEP, 2011).</td>
</tr>
</tbody>
</table>

Fig. 5 Canadian Physical Activity Guidelines Age Categories

25
by non-formal activities of low to moderate intensity that are individually oriented. Barriers related to age, time and financial cost can be more easily avoided through unstructured forms of physical activity. Mota and Esculcas (2002) reported that social and competitive motivation declines and recreation-oriented motivation increase with age. In Canada, the aging population plays a significant role in determining the most effective PA promotion strategies. As of 2009, Statistics Canada estimates the mean age of Canada’s population was 39.5 years (Statistics Canada, 2011). In consideration of the evidence supporting unstructured PA, this study proposes a careful examination of space that is capable of enabling unstructured PA. David Foot (1996) supports the view that

“…[there is] no excuse for a community to spend money on hockey rinks at the millennium that are likely to be empty in 2005, while neglecting to provide parks and walking trails that the aging population needs. (p. 148)

Frank et al., (2005) argues that unstructured physical activities are easier to get people to adopt and adhere to. This may be because unstructured activities can be shorter in duration (fitting into a daily schedule), require less specialized equipment and facilities, and generate less apprehension for beginners with respect to social embarrassment that may accompany a structured PA setting (Frank et al., 2003). Time constraints are another barrier to PA. For example, going for a walk (unstructured) does not require the same time commitment as finding a partner for tennis (structured) then arranging a time to play at a court. Glanz et al. (2008) reason that by reducing obstacles to change rather than trying to get people to change will have greater success in generating higher levels
of participation in regular PA. Finding innovative and alternative ways to make unstructured PA accessible to communities is an area that warrants greater attention. In a study on youth sport participation and adherence to sport participation in adulthood, Vanreusel (1997) found that participants with a recreational sport participation style appear to have better chances for continued sport involvement from youth to adulthood than participants with a competitive sports participation style.

Public health organizations promote a lifestyle approach to physical activity. The notion of self-selected activities for people who dislike the imposed conformity of gym-based exercise, offers greater flexibility in choice of activities. According to the United States Center for Disease Control (1996), individual interests and opportunities should determine the type of PA a person pursues for greater adoption and maintenance of physical activity.

**Health and the Built Environment**

Our modern environment is one of efficiency and this is clearly reflected in rising obesity levels. Our daily living patterns require less physical effort than in the past. From escalators to automobiles, sedentary pastimes to reduction in occupational PA, there is less daily opportunity to be physically active. A recent phenomenon called the obesogenic environment suggests that the physical environment plays a crucial role in promoting or inhibiting physical activity. An obesogenic environment is the sum of influences, opportunities, or conditions of life have on promoting obesity in individuals or populations (Swinburn, 1999). To date, most approaches to battle rising obesity levels have been educational, behavioral, and pharmacological and have had limited success.
The research community calls for a more objective investigation of the physical environment as it related to PA. In Canada, the LaLonde Report (1974) and the Ottawa Charter for Health Promotion (1986) were the first policies to acknowledge the role of PA supportive environments to enable health. People cannot achieve their fullest health potential unless they have access to supportive environments that provide opportunities for making healthy choices. Research shows that outdoor settings are frequently found to have a positive and significant association with higher levels of PA compared to indoor settings (Canadian Fitness and Lifestyle Research, 2010; Kaczynski & Henderson, 2008; Maas et al., 2006).

Environmental interventions that enable PA can target a greater percentage of the population than individual interventions can (Frank et al., 2003; Giles-Corti, Broomhall, Knuiman, Collins, Douglas, and Donovan, 2005; Giles-Corti et al., 2006). The literature reveals 3 major themes regarding environmental correlates of PA. Accessibility, the perception of safety, and quality of urban open space are described as being the leading environmental correlates of PA (Bedimo-Rung, Mowen, and Cohen, 2005; Coombes, Jones, and Hillsdon, 2009; Giles-Corti et al., 2005).

Research measuring accessibility\(^5\) shows that proximity to green space in urban areas is associated with higher levels of PA (Bell, Wilson and Liu, 2008; Coombes, et al., 2009; Frank, et al., 2003; Maas, et al., 2006; Takano, Nakamura and Watanabe, 2002). In a study to assess the levels of physical activity in relation to accessibility, Frank (2005) found that people with multiple destinations near their homes with access to a direct pathway were more likely to engage in moderate intensity physical activity for more than

\(^5\) A measure of the spatial distribution of a particular type of space adjusted for the desire and ability of people to overcome distance to access a facility or activity.
30 minutes on a random day. On the other hand, Hoehner, Ramirez, Elliot, Handy, and Brownson (2005) argue that there is no relationship between living within walking distance from green space and meeting PA guidelines. An underlying assumption of research examining environmental correlates of PA is that exposure to a supportive physical environment will enhance PA behavior. The problem with this argument is that while use of the space may increase it doesn’t necessarily mean the use is active. In fact, two separate studies conducted to examine the significance of parks to PA found that majority of park users are more likely to engage in sedentary forms of leisure activity (Bedimo-Rung, et al., 2005; Mowen, Kaczynski, and Cohen, 2008). One exception to these findings involves gardening activity. Gardening is considered a moderate intensity activity and does appear to be correlated to proximity (Maas, 2005). Disagreement surrounding the correlation of accessibility and PA suggest that more research is needed surrounding activity levels in green space rather than use in general. This research acknowledges walkability but more specifically investigates the environmental qualities of loose space in relationship to physical activity.

A second emerging environmental correlate of PA is the perception of safety. People are less likely to use a space if they perceive it to be unsafe. The perception of safety is suggested as barrier to the use of green space (Bedimo-Rung et al., 2005; Giles-Corti et al., 2005; Frank et al, 2003; Jones, Hillsdon and Coombes, 2009). Jones et al. (2009) conducted a study investigating green space access and PA. The study compared green space access in affluent neighborhoods to access in neighborhoods of lower socioeconomic status. They found that even though there was greater access to green

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6 Walking distance from one’s home is considered to be 1 kilometer an equivalent of 10-15 minutes of brisk walking (Frank et al., 2005; Giles-Corti et al., 2005; Mass et al., 2006).
space in the lower S.E.S. neighborhoods, the residents of the lower S.E.S. neighborhood perceived green space to be more difficult to access, unsafe, and therefore visited the space less frequently.

A third emerging environmental correlate of PA is quality of the space. Some examples of environmental features that are thought to express quality are presence of features, number and placement of trees, presence and placement of walking paths, amount of shade along paths, slope, and irrigation (Giles-Corti et al., 2005). The body of literature describes quality as having to do with amenities and facilities. Kaczynski and Henderson (2008) believe that the most significant predictor of park use for PA is the number of features, such as paved trails, present. The principle of “demand goods” has been applied to the use of park space. Jacobs (1961) states that if a park is not located in a high traffic area, then the park must possess a “demand good” to attract people. This thesis differs as it questions the definition of quality in correlation with physical activity. Performance-driven features do not necessarily equate to a quality physical activity experience.

There are a number of weaknesses associated with the current methods of measuring environmental correlates of PA. Much of present-day research involves investigation of traditional types of PA such as walking, bicycling, and structured sports related activities. The “one size fits all” attitude to PA does not encompass the range of activities and bodily movements that can also accomplish the same health benefits. Barker’s Theory of Behavior Settings (1968) explains that PA consists of multiple patterns of behavior and that specific environments are encompassing to specific action patterns. Behavior settings are relevant to understanding and influencing PA because by
offering a range of PA settings people are more likely to engage in PA on a regular basis than if fewer PA settings exist (King, Stokols, Talen, Brassington and Killingsworth, 2002). The diversity of loose space typologies and evolving characteristics ensure opportunities for new movement experiences.

**Rethinking the Notion of Urban Outdoor Space**

Traditionally urban open space has been thought of as a generic term to describe natural non-built up green space with in a city. This research defines urban open space as publically accessible open spaces that can be either green or built up. Urban open space can be viewed as a matrix of space surrounding all built components of a city that links the city together. It can include street right of ways, street corners, steps to buildings, vacant undeveloped space, public squares and other non-park public realm spaces which people claim and use. Gehl (2010) challenges the belief that there is a need for special places to be physically active. He proposes a concept called “life between the buildings” that suggests activity can take place in common city spaces rather than dedicated special places. Much of the current information on environmental correlates of PA originates from studies exploring only park type environments. This research will look to assess the potential of loose space as an alternative urban open space to enable physical activity.

The influence of the physical environment on physical activity is just one piece of the puzzle in better understanding how to improve health. The next section will discuss the theoretical underpinnings of exercise behaviour and how these concepts can inform the design of physical activity encouraging environments.
The Application of Exercise Behaviour Theory to Inform Design

The psychology of exercise behavior has long been studied. However, few attempts have been made to unravel the relationships between psychological correlates of PA and how they can be realized through design. Research influencing psychological factors of exercise behavior is aimed at identifying predictors, processes, and interventions to modifying people’s exercise behavior. Strategies today tend to focus on making physical activity a positive and meaningful experience rather than simply trying to change peoples’ behavior. Self-Determination Theory (SDT) and Social Cognitive Theory (SCT) are the two most widely used models of health promotion (Bandura, 1998). For the purposes of this research, these two theories will be drawn from to explore the possible use of landscape elements to create physical activity opportunities that engage an individual’s perceptual and cognitive capacities.

Self-Determination Theory seeks to explain predictors of human motivation and behavior and the processes that underpin exercise behavior. Motivation is a critical variable in the adoption and maintenance of exercise (Buckworth, Lee, Regan, Schieder, and DiClemente, 2007; Deci & Ryan, 2002). Self-determined autonomous intrinsic regulation refers to focusing on the task itself, yields energizing emotions (interest, enjoyment, challenge), and involves personal importance and meaningfulness. The purpose of performing behavior is for pleasure and satisfaction of the activity itself. Non self-determined controlled external regulation refers to participation on the basis of contingencies and external demands. Research indicates that more autonomous self-determined forms of regulation predict continued participation in regular PA, have higher levels of positive affect, and increased perceptions of satisfaction and competence.
Self-determined intrinsic forms of regulation are initiated by the basic psychological needs for autonomy\(^7\), competence\(^8\), and relatedness\(^9\). People are more likely to engage in physical activity in settings that fulfill basic psychological needs. The needs of autonomy, competence, and relatedness promote choice, challenge through exploration and experimentation, and favorable social conditions that allow people to develop a sense of ownership and mastery.

Environments that facilitate activities that emphasize engagement in experience rather than external outcomes, are more likely to command feelings of enjoyment and thus more likely to be maintained. Types of PA can also influence motivation. Activities that are freely chosen tend to be more meaningful and thus more likely to be maintained. Studies have proven that adherence to PA is correlated to self-determined intrinsic motivation whereas extrinsic motivations tend not to last long, are associated with feelings of frustration and pressure, and less positive personality factors like low self-esteem (Deci & Ryan, 2002). Social motivation is also critical to PA behavior. Social contexts foster autonomous regulation. Social networks and social supports have been found to positively impact decision making regarding health behavior. In a study conducted by Mullen et al. (2011) examining participation and maintenance of PA among older adults, enjoyment was found to be both a predictor and outcome of PA participation where enjoyment was positively associated with social support. Social support is the aid and assistance exchanged through social relationships and interpersonal transactions. In a

\(^7\) Autonomy is fulfilled when a person perceives that they have real choices and are at the origin of their own decisions.
\(^8\) Competence involves an individual’s need to feel a sense of mastery and challenge.
\(^9\) Relatedness refers to having satisfying and supportive social relationships.
review of studies to explain how children and adults adopt, maintain or cease to participate in PA, found that both social support and enjoyment were identified as having the highest correlation with motivation to be PA (Allender et al, 2006; Katzmarzyk and Ardern, 2004). These studies indicated the role of environments that promote social capital\(^\text{10}\) is positively correlated with physical activity.

Buckworth and colleagues (2007) performed 2 studies to evaluate the reliability and predictive validity of measures of intrinsic and extrinsic motivation for exercise. The results show that effort-competence, interest-enjoyment, and perceived choice were rated the highest for sustained participation in regular PA. Additionally, a study done to examine the motivational difference between individual sport activity and fitness-oriented activity found that individual sport participants possessed a higher interest/enjoyment and competence motivation than the fitness group participants (Frederick & Ryan, 1993). These findings highlight the importance of using landscape elements to engage a sense of interest, enjoyment and competence in order to develop meaningful PA experiences.

A feeling of competence is achievable through the processes of mastery and challenge (Deci & Ryan, 2002). Risk is one way to create challenge. In a culture that is so concerned with risk avoidance and safety, the idea of “good risks” seems to be forgotten. There is a tendency to design public spaces so that risk is completely minimized resulting in landscapes of complete certainty and safety (Landry & Borden, 2005). Often this approach results in a reduction of activity and movement possibilities. Rather than restricting innovation, loose space provides an environment that promotes exploration and discovery. A wide variety of movement experiences are self-tailored to

\(^{10}\)Social capital refers to certain resources and norms that arise from social networks.
personal ability levels and are accomplished through appropriation and modification of the environment. Fuller (2004) explains the acceptability of risk is dependent on the perceptions of the individual participants. In response to the perceived danger often associated with loose space, the concept of risk homeostasis states that individuals have an innate level of risk they wish to be exposed to. No matter how safe an environment is made, people will find ways to experience their desired level of risk (Fuller, 2004). Cooper (1974) believes that children will use seemingly safe equipment in dangerous ways if their abilities are not being challenged (Cooper, 1974). Environments that provide a range of activities to challenge different skill levels could prove to have a positive effect on physical activity.

A similar outdoor space that shares many qualities with loose space is the adventure playground. Adventure playgrounds are recreational spaces where children are permitted and encouraged to build their own play environments. Cooper (1974) describes the chief merit of an adventure playground as its ability to provide a wide variety of possible activities that can absorb the interests of more children per unit of site area than regular playgrounds. Endless choice in activity allows every child to excel at something. This is relevant for physical activity because activities that foster self-confidence tend to be sustained (Franck & Stevens, 2007). Adventure playgrounds are not based around manufactured exercise oriented equipment but rather loose materials to be freely manipulated (Eriksen, 1985). Materials such as discarded lumber, tires or bricks enable children to test their boundaries and develop physical and mental agility (Christ, 2011). A further parallel between adventure playgrounds and loose space is the ability to support social interaction, a fundamental correlate of physical activity. Because
these spaces are freely accessible, they serve families with little or no access to private outdoor space. The original purpose of adventure playgrounds was to give urban children exposure to activity experiences that were characteristic of rural settings that were not found in the planned, tidy and ordered urban environment. Similarly, a major attraction of loose space today is the ability to engage in alternative forms of activity not permitted in other planned and controlled urban spaces. The deeply rooted culture of risk avoidance has limited the acceptance of adventure playgrounds in North America.

However, there have been examples of widely successful adventure playgrounds such as “Freetown” in Stockholm and “The Yard” in Minneapolis, among others. According to Cooper (1974), the lower rate of accidents in these spaces compared to conventional playgrounds with fixed equipment can be attributed to an increased level of engagement in activity.

Another theory relevant to this study is Social Cognitive Theory (SCT). SCT is based around the concept of reciprocal determinism, which explains that while the environment shapes behavior, people alter and construct the environment to suit their own purposes. The key concepts said to regulate human motivation and action are self-efficacy\(^11\), outcome expectations\(^12\), and social conditions (Bandura, 2004). Bandura (1998) argues that self-efficacy is the single most important characteristic that determines a person’s behavior change because expected outcomes are filtered through a person’s expectations of being able to perform the behavior in the first place. Self-efficacy is developed through mastery of experiences. The stronger the sense of self-efficacy the

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\(^{11}\) Self-efficacy refers to the beliefs about personal capacity to perform a given behavior when faced with a variety of challenges.

\(^{12}\) Outcome expectations are beliefs about the likelihood and value of the consequences of behavioral choices.
more likely people are to enlist and sustain the effort needed to adopt and maintain a health promoting behavior (Bandura, 1998). Therefore, an environment that enables opportunities for development of self-efficacy may result in greater adoption and maintenance of regular PA.

A second key concept of SCT is outcome expectations of a behavior. Health behavior is influenced by the outcomes people expect their actions to produce and is directly related to self-efficacy. If a person’s self-efficacy is low towards a particular activity, they will also tend to expect a poor outcome and leading to less likelihood of participation (Bandura, 2004; Fridlund & Vaughn, 2008). High efficacy expectations are believed to motivate greater initial engagement and promote repeated experiences with that activity (Deci & Ryan, 2002). Users of loose space choose activities that are appropriate to their own ability level. Self-selection of challenge can foster the development of high self-efficacy and thus positive outcome expectations.

A third key concept of SCT is social conditions. Self-efficacy can also be developed through observational modeling. Observational modeling is a widely adopted construct that involves human capacity to learn from observing the behaviors of others and enacting them (Glanz et al., 2008). Modeling provides a social standard against which to judge one’s own capabilities. It is thought that by seeing people similar to one’s self succeed by sustained effort, it will raise the observer’s beliefs that they too have the capability to master comparable activities (Bandura, 2004; Glanz et al., 2008). Because the physical characteristics of loose space enable different kinds of activities not traditional to a park setting, modeling of alternative physical activities may appeal to a
subset of the population that don’t view traditional exercise as motivating. Greater exposure could lead to more opportunities for different types of modeling experiences.

**The Spectrum Matrix: A Cognitive Approach to Landscape Experience**

The Spectrum Matrix is a design tool developed by Clements and Dorminey (2011) that integrates cognitive theoretical knowledge with landscape design. Like this study, it questions how landscape elements can be used to access the cognitive factors of choice and challenge. These two factors have been described by self-determination theory as central to the adoption and maintenance of physical activity (Deci & Ryan, 2002). The Spectrum Matrix draws on the Theory of Flow and the Theory of Multiple Intelligences.

Csiksentmihalyi’s Theory of Flow (1990) explains that the experiential quality of a landscape is related to the appropriate levels of challenge. If the challenge is too easy, boredom can occur. If the challenge is too hard, anxiety can occur. Both situations can lead to a decrease in PA. An environment that can accommodate a range of challenges appropriate for varying ability levels can increase the likelihood that individuals will achieve a state of flow.\(^{13}\)

Gardner’s Theory of Multiple Intelligences (1983) suggests that intelligence is made up of a unique combination of varying levels within each of the 8 intelligences. Each person has a different intelligence profile. Not all people have the same interests and abilities, and not all learn in the same way. This applies directly to PA ability and interests. Designers can use this information pertaining to the specific traits of each

\(^{13}\) Flow, or psychology of optimal experience, is a state of intrinsic motivation, or total mental and physical involvement described by many as “being in the zone” (Csikszentmihalyi, 1990).
intelligence domain to create more meaningful and engaging physical activity experiences. Landscape design that supports a range of activities at a variety of levels of challenge are more likely to appeal to a wider population of users (Clements & Dorminey, 2011). This research is guided by the principles put forth in the Spectrum Matrix. Similarly, it seeks to understand the influence of landscape elements on the cognitive capacity of challenge.

**The Theory of Loose Parts**

Another theory associated with physically engaging environments is the theory of loose parts. The theory of loose parts states “in any environment, both the degree of inventiveness, creativity and possibility of discovery are directly proportional to the number and kind of variables in it” (Nicholson, 1972). Moveable, flexible and malleable elements can be found in loose space. These spaces and materials to be appropriated can expand the potential scope of physical actions (Lynch, 1990).
Policy and Physical Activity

Population-wide levels of PA are directly affected by policy at the national, provincial, and local scale. Policy has the power for changing the practices that impair health rather than only changing the habits of individuals. Many of the methods, practices and presumptions of the 1990s have been recognized to be out of step with today’s physical activity needs. The following section investigates the effectiveness of municipal policy regarding green space and physical activity.

Municipal Policy and Trends Associated with Green Space

This investigation is guided by the literature regarding parkland\textsuperscript{14} and open green space\textsuperscript{15} as it most closely resembles loose space. To establish context for this study it is important to first define the term urban. Urbanization is an ecological and social phenomenon. For the purposes of this thesis, the level of urbanization will be defined in terms of population density. Matier (2011) defines an urban area as having a population concentration of at least 1000 people and a population density of no fewer than 400 persons per square kilometer. This study specifically refers to Canadian cities with an urban population of 500,000 persons and over in reference to PA and urban environments (Statistics Canada, 2008). In 2006, more than 80% of Canadians were living in urban areas. Almost 90% of the total population growth in Canada since 2001 has occurred in the country’s 33 census metropolitan areas.\textsuperscript{16} In Canada’s most metropolitan cities

\textsuperscript{14} Land set aside by a municipality that is part of an established public park, whether for active or passive recreation (Lindsay, 2004).

\textsuperscript{15} Any municipally owned natural open space including ravines, nature reserves, hazard lands (Lindsay, 2004).

\textsuperscript{16} A census metropolitan area has a population of at least 100,000 including an urban core with a population of 50,000.
(Toronto, Vancouver, Montreal), urbanization brings intensification challenges that influence PA levels. According to Statistics Canada, residents of Canada’s largest cities, those with a population of 2 million plus, generally reported lower levels of physical activity than those in smaller cities and less populated areas (Statistics Canada, 2007). Population growth in combination with diversifying physical activity needs indicates the need for innovation to secure appropriate green space. Looking to alternative spaces and finding ways to use existing space more efficiently is needed.

Municipalities acknowledge the value of outdoor PA settings to and have developed policies aimed to protect green space. Evaluation of trends and policies influencing PA must be an ongoing process. Lynch corroborates the view that the “city [is] an object which is perceived by millions of people of widely diverse class and character…it is ever changing in detail…there is no final result, only a continuous succession of phases.” (Lynch, 1960, p.2)

**Development Intensification Policy**

Intensification is a key challenge in large urban centres that is addressed through a variety of growth management policies. The rapid pace of development and population growth is contributing to the growing shortage of urban green space. Urban municipalities use various land-use planning tools to ensure open green space is provided. Parkland dedication policy and incentive zoning by-laws are employed to acquire new parkland. Parkland Dedication rates vary across the country. British Columbia, Ontario and Nova Scotia have the lowest dedication with a rate of 5% dedication of lands (Lindsay, 2004; Wright, 2010). There are 2 major weaknesses with
this policy. Parkland dedication has little value in cities that are intensifying rather than expanding and does not address parkland deficits in existing neighborhoods. Another weakness of this policy is that more often than not, instead of dedicating 5% of the development to parkland, developers opt for the alternative Cash In-Lieu\(^{17}\) option. This is money to be put towards parkland in an off-site location accessible to the original site or towards a community facility in which the value of the off-site dedication is equal to the value of the on-site dedication (City of Kitchener, 2010; Wright, 2010). In 2010, the City of Vancouver spent $3,877,000 on recreational facilities and $1,000,000 on park areas (Metro Vancouver, 2011). Value is measured in monetary terms without regard for health. This policy does not address the research evidence indicating the greater adoption and maintenance rates of unstructured self-regulated physical activities rather than structured activities characteristic of facilities. Instead, policy should reflect the quality and type of PA this funding can provide rather than a blanket definition of PA. For example, if a majority of funding is going towards facilities, it does not provide for those who cannot afford facility activities or appeal to those who do not like traditional activities. While cash in-lieu is an attempt to acquire parkland is does not effectively translate into the creation of more healthful environments.

An additional policy to obtain new parkland is through incentive zoning. Incentive zoning by-laws as outlined in Section 37 of Toronto’s Official Plan (2010) and similarly Development Cost Levies (DCLs) in Vancouver’s Financing Growth Policy (2003) allow a municipality to pass a by-law that permits increased height and density allowances of a development in exchange for additional parkland dedication or recreation.

\(^{17}\) Most provincial legislation permits cash payments in lieu of land dedication in cases where dedication is deemed unnecessary or undesirable (Lindsay, 2004).
facilities. In a study conducted by Evergreen\textsuperscript{18} describing Canadian municipal provisions of green space, Lindsay (2004) found that Canada’s most populous urban areas (Toronto, Montreal, Vancouver) were among the lowest provision rates due to land availability and high real estate value. These results indicate that the current approach to green space planning may need revision to keep pace with intensification.

**Green Space Usability Policy**

Population growth is outpacing the creation of new parks (Lindsay, 2004). It presents a catch 22: cities facing high population and development pressure are in most need of provision of green space at the neighborhood level and the least able to secure the necessary land. It is not that the space doesn’t exist rather traditional park space is less available. As a whole, loose space represents a major untapped resource in the urban environment.

Changing social patterns reveal new trends in the types of physical activities people are interested in. Simply providing space for engaging in PA is quite different than delivery of a space that supports quality and meaningful PA experiences. Green space accessibility refers to per capita allotment of green space. The standard ratio of 4.05 hectares (10 acres) per 1000 people as proposed by the U.S. National Recreation and Parks Association in the early 20\textsuperscript{th} century is now antiquated. The City of Vancouver uses a ratio of 1.1 Ha/1000 people as a target for dedicated green space provision within the urban containment boundary\textsuperscript{19} (Metro Vancouver, 2011). Lindsay (2004) found that 2.4 Ha/ 1000 persons was the average provision of green space for Canada. Urban

\textsuperscript{18} Evergreen is a not-for-profit organization committed to making Canadian cities more livable. They are a national funder and facilitator of local, sustainable greening projects across Canada.

\textsuperscript{19} A boundary intended to establish a stable long-term regionally defined area for urban development.
municipalities across Canada acknowledge that a decline in the quality of access to physical activity opportunities is directly related to the declining levels of physical activity and health (City of Kitchener, 2010). For many municipalities the principal of “access for all” is foremost. It is identified that equitable access to a network of publically accessible green space is paramount (City of Kitchener, 2010; Toronto Community and Neighborhood Services, 2001; United Way of Greater Toronto, 2002, Wright, 2010).

Green space usability responds to how a space addresses a communities PA needs. To improve levels of PA, municipalities must go beyond simple dedications per capita because it does not fully capture the green space needs that are affected by culture, age, income, gender, religion or social background. Social composition is evolving as the population ages, ethno cultural diversity increases, and income disparities grow. Listed below are common urban municipal objectives for green space usability.

1. To foster learning, personal development, and creativity through a wide range of outdoor activities.

2. To support spontaneous informal, self-directed recreation along with scheduled programing and formal uses.

3. To enables opportunities for social interaction.

4. To create of park designs and settings encompassing the abilities of all for accessible participation.

5. To address evolving community needs.

(City of Kitchener, 2010; Metro Vancouver, 2011; Wright, 2010).
There seems to be a gap between the principles themselves and how these principles are achieved. This thesis research strives to bridge this gap by purposing an alternative typology of space that encompasses the very principles defined by the municipalities. In the future the focus could shift to finding innovative solutions to acquire non-traditional space for outdoor physical activity.
Economics and Physical Activity

Public expenditure aimed at improving human health can be offset by interventions aimed at altering the physical environment in ways that encourage PA. In Canada in 2001, the economic burden of physical inactivity was $5.3 billion ($1.6 billion in direct costs and $3.7 billion in indirect costs) while the cost associated with obesity was $4.3 billion (Katzmarzyk, 2004). Bandura (1998) contends that medical care cannot substitute for healthful habits and environmental conditions supporting PA. According to the Statistics Canada, in 2008 the low-income population represented 14.9% of Vancouverites and 23.9% were low-income families (Statistics Canada, 2011). Increasing national poverty rates highlight the need for free and accessible spaces to pursue PA outdoors rather than more facilities that fewer people can afford. Economically speaking, finding solutions to providing more space for quality and meaningful outdoor PA is a positive step in reducing far larger health-related economic costs in the future.

An additional economic factor that affects PA levels is related to a shortage of green space in the urban environment. High land values, built-up surrounding areas, and geographical limits to the city’s growth make new parkland acquisition difficult. In response to this problem Toronto’s Social Development Strategy (2001) calls for the city to commit itself to increasing the availability of community space by making city-owned space available for public use on reasonable terms. The notion of public/private partnerships for increased access to outdoor environments that can enable PA could create new opportunities for green space acquisition. Toronto’s Official Plan (2010) outlines policies for maintaining and increasing public access to privately owned lands.
where appropriate. Seeking partnerships with commercial property owners can assist in alignment of community and business objectives. This “open for business” approach may alleviate some economic stress places on municipalities and contribute to reaching green space provision targets.

The New York City Privately Owned Public Space Project (2001) is an example of a public/private partnership created to provide more public space in an already dense urban environment. In 1961 an incentive zoning by-law awarded height and density bonuses to developers who agreed to create public space around their buildings (Bressi, 2001). The result was a total of 82 acres of the world’s most expensive public space in Manhattan, NY. Bressi (2001) found that presently only 16% of the spaces had become significant neighborhood amenities. Bressi (2001) suggests that with well-conceived drafted law accompanied by enforcement, these spaces have the potential to be quite successful. What is important to learn from this project is that it is possible to find space capable of supporting PA in a dense urban environment that doesn’t necessarily have to look like a traditional park.

This section has outlined the ways in which physical activity can be perceived from an ecological model approach. Activities that are not permitted in other urban areas, such as digging, building, climbing, creation, destruction, manipulation, are all forms of moderate intensity physical activity that are permitted to take place in loose space. The unstructured nature of loose space facilitates the possibility of intrinsically motivated movement experiences that can help to build self-confidence an thus the likelihood of continued participation. From a municipal policy perspective, current policy regarding provision of green space has been found to be ineffective in meeting per
capita allotment of green space targets. Looking to alternative spaces that at one time may not have been considered is now a focus. From an economic perspective, the potential suitability of loose space to encourage physical activity may offer some support by assisting in lowering health care costs. Part 3 more specifically describes the implications of loose space, based on its physical and spatial qualities, to improve accessibility and usability of an existing urban environment.
Part 3: Implications of Loose Space for Physical Activity

In most urban cities there are major gaps of loose space that disrupt the overall continuity of the city form. LS can become a resource to reconnect outdoor spaces in the urban core. Urban design principles promote a network of connected open space. If strategically reconsidered beyond an individual scale and approached with a consistent intent [loose space] could potentially impact the greater urban fabric (Corbin, 2003; Kamvasinou, 2006).

Loose space can bring associations of marginalized populations, criminal activity and other negative connotations. In many cases, just the opposite has been found. The concepts of self-regulation and self-sustained behavior are highly characteristic of loose space (Kamivasinou, 2006). In fact, a major attraction to LS is the freedom to self-regulate behavior rather than operating under the constraints of extensive rules and surveillance. The “eyes on the street” concept to increase public safety coined by Jacobs (1961) argues that the streets are safer when more people are on them. LS is an expression of a community’s physical activity needs and desires. Use and management of LS may can instill a sense of ownership and in turn, more frequent use. The City of Kitchener believes that an increase in user safety can result from the creation of social self-governance (City of Kitchener, 2010; Hiss, 1991). A consistent public presence helps to facilitate “eyes on the street” surveillance.

A final environmental correlate of physical activity described in the literature is the quality of the physical environment. As guided by exercise behavioral research, quality in this study is defined by the engagement and meaning resulting from a physical activity experience. Looseness is produced and experienced through action. New spatial
experiences are possible in LS because users actively fashion the physical landscape to meet their needs (Franck & Stevens, 2007). Moveable elements that are flexible and malleable to be appropriated assist in active bodily exploration of new actions. LS is not a venue for prepackaged activities and experiences where behavior is constrained by what is thought to be appropriate. Physical elements are appropriated in inventive ways that are in contrast to the “functional” urban space and its sedate patterns of use (Franck & Stevens, 2007).

In most major American cities there is hundreds of acres of vacant and unused land in its downtown core (Trancik, 1986). While loose space has the potential to be a practical application for addressing PA needs within the existing structure of a city, there can be negative connotations preventing greater public use. The following section highlights some of the major barriers to use of loose space.
Part 4: Barriers to Use of Loose Space

Cultural Perceptions

Cultural perception of loose space is a relevant concept to landscape change because it illustrates how heavily the value of landscapes is dominated by visible characteristics. This thesis suggests that the value of loose space for physical activity lies in its non-visible characteristics of time, flux and movement. Cultural ideas about vacant and abandoned typologies of loose space affect how it is perceived, valued and therefore used. Nassauer (2005) confirms the notion that the appearance of a landscape communicates cultural values and that evidence of neglect implies those responsible for the land are irresponsible, are associated with crime or even increase the perception of danger. In a culture that values newness and growth, loose space is in contrast to reflecting the way the landscape “should” look. Many perceive loose space as derelict and decaying and therefore void of visible function. The literature suggests just the opposite is true. Vacant and/or abandoned typologies of loose space in many situations are necessary for urban growth. Such spaces can convey availability, opportunity and informality (Corbin, 2003). This research purposes that these qualities facilitate a kind of freedom not available in other urban public spaces. This freedom of choice, or autonomy, is valuable in encouraging physical activity.
Contemporary Planning Classification Systems

Land-use is a reflection of social, political, and economic values. Many perceive LS as lacking visible or understandable function because its value lies in the less tangible aspects such as freedom of choice, change and local expression. The American Planning Association Research Department Land-Based Classification Standards (2011) does not recognize the presence of vacant land. Land-use is classified based on assignment of function in which LS’s are discounted. Recognition of loose space as a land-use classification with evolving qualities could initiate greater permanent or temporary use of these spaces for alternative physical activity opportunities. The constant evolution of changing location of vacant LS is natural to urbanization. Loose space is considered an alternative public space in contrast to other public spaces that are defined by permanence, stability, linearity and control (Oswalt, 2007). Oswalt (2007) explains that an approach to planning that can accommodate changing uses over time and spontaneous appropriation has tremendous potential for urban regeneration. In response, loose space if reconsidered as a spatial typology ranging from temporary to permanent use could potentially open the door to greater public access to alternative and activity opportunities.

The review of the literature has investigated the capability of loose space to encourage physical activity. An exploration of environmental correlates of PA and exercise behaviour theory shows that loose space could be a viable candidate for contributing to the health of urban communities. Municipal policy related challenges indicate that making better and perhaps different uses of existing space is a strategy necessary for providing adequate green space for the growing population. The economic burden of obesity-related health problems provides incentive for environment-based
interventions. The problem of inactivity is not only an accessibility problem. For many people traditional or conventional structured physical activities are not appealing. The following chapters explore the effects of loose space on PA and draw out municipal, design-related and theoretical behavioural principles to build evidence for the capability of loose space to encourage physical activity.
Chapter 4: Survey of Loose Space

A questionnaire method was used to sample a population of loose space users to learn about how they are using the particular space, their reasons for doing so and if the use had an influence on physical activity.

A total of 27 questionnaires were collected from 4 sites. Findings will be discussed first by individual site followed by a cross-case analysis of the findings. Individual site results were analyzed to determine whether certain loose space typologies influenced physical activity differently. The response rate for the questionnaire was 93%. The overall response rate is representative of the sample respondents. The higher a response rate the less chance of significant response bias (Babbie, 2004).
Site 1: LaFarge Quarry, Silvercreek Parkway South, Guelph, Ontario

**Loose Space Typology:** Structured-interim transition-brownfield

**Location:** Approximately 2 kilometers west of downtown Guelph. The triangular site is bordered by the Hanlon Parkway, the CN rail line Active and the CN rail line Spur

**Scale:** 22 hectares

**Previous Land-Use:** Industrial operation of aggregate extraction ceased in 1994

**Current Use:** The land is privately owned by LaFarge which is an industrial company specializing in construction supplies. The local community has been using the site primarily for off-leash dog walking.

**Landscape Character:** The site is vacant and grown over with immature woodland, a stream, railway burms, mature trees and vegetation. Undulating topography is created through the presence of large piles of gravel, cement blocks, and mounds of grass-covered soil. Local kids have built their own dirt jumps for BMX. There are a variety of trail systems, narrow footpaths and gravel paths to support construction vehicles. As shown in Figure 6 the site consists of both open meadow and woodland areas.
Observations:

On each of the 3 visits I observed a relatively equal amount of people with an average of 13 adults and 3 children accompanied by an average of 14 dogs. There seemed to be a slightly higher proportion of women to men. The busiest visit was on a weekday evening between 4:30-5:30pm. An explanation for this could be associated with the routine of an after work dog walk. Scattered throughout the site was the presence of some litter, derelict materials, and graffiti. The most common activity seemed to be off-leash dog walking. Other activities I witnessed were walking, running, climbing trees, construction of tepees and biking. Over the course of 3 visits to the site I observed some of the same people and dogs. Users of the space casually met at entrance points and
walked together. A sense of community through human socializing and dog socializing was evident. A sense of ownership emerged as people were self-maintaining the site by picking up litter.

Questionnaire Findings

There were a total of 11 respondents from this site. The results from the questionnaire showed that all of the respondents fell within the adult age category of 18-64 years old. Respondents consisted of slightly more women than men. 81% of respondents stated that they are physically active at a moderate-intensity most days of the week. 91% of respondents used the site more than 4 times per week. 82% said that they live within walking distance of the site (5-10 minutes). The responses concerning demographics, level of physical activity, frequency of site use and accessibility are illustrated in Figure 7.
Fig. 7  Respondent Characteristics from the LaFarge Quarry Site
The primary use of the space was for dog walking. Walking, biking and socializing were listed as the second most popular use of the space. Other uses included running, photography and exploring nature. What is interesting is that majority of the preference of activities given all involve some form of physical activity. According to the respondents, experiencing nature was the most liked aspect of using the site. Experiencing nature encompassed the presence of natural elements and a quiet refuge. The second most liked aspect was that it is an unstructured environment. Unstructured refers here to unregulated, self-imposed rules, wild unmaintained vegetation and an unprogrammed open space. The third aspect most valued from the site is that it provides a healthy dog-oriented environment. The leash-free area allows dogs to be dogs and learn socialization skills. Accessibility was the fourth valued aspect of the site. Proximity to residence and ability to move easily through the site was considered important. When asked which items were most important when using the space, there was a tie for first between opportunities to appropriate physical elements and the ability to self-regulate behavior rather than operating under prescriptive rules. Respondents ranked the perception of safety as second in importance and accessibility as third in importance to the use of the space. There was no clear fourth choice but the presence of facilities and conventional amenities was unanimously ranked as least important. In regards to physical activity preference, strongly agreed that unstructured forms of PA were more preferred than structured PA. Respondents agreed that personal health was influential for PA motivation. Social interaction was agreed upon to playing a role in determining PA levels. The ability to choose from a variety of types of PA’s was strongly agreed upon as influential. Self-efficacy, however, was not indicated as a factor
for engaging in an activity. Figure 8 was created using a reverse rank order method for scaling ordinal variables. This method of analysis assigns a reverse order ranking system to the variables as they are rated in terms of preference (Rajamanickam, 2002).

Fig. 8  LaFarge Quarry Environmental Variable Respondent Preferences for Site Use
<table>
<thead>
<tr>
<th></th>
<th>Health as Motivation for Physical Activity (PA) %</th>
<th>Importance in Choice in PA Types %</th>
<th>Role of Self-Efficacy in PA Participation %</th>
<th>Preference for Structured PA %</th>
<th>Preference for Unstructured PA %</th>
<th>Importance of Social Aspects of PA %</th>
<th>Preference for Structured Traditional PA %</th>
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Site 2: McLennan Park, 901 Ottawa Street S., Kitchener, Ontario

Loose Space Typology: Structured—currently in use

Location: Laurentian Hills neighborhood of Kitchener contains a mix of single-family, semi-detached, apartments and commercial areas. The park is bounded by residential and commercial land-uses and an elementary school.

Scale: 39 hectares

Previous Land-Use: The site was originally a landfill open from the 1950s until it closed in 1976. Because of the extreme change in elevation created by its former use, the park is referred to as “Mount Trashmore.”

Current Use: BMX Bike Park

Landscape Character: The change in elevation in this site is 35 meters. The bike park design consists of 4 dedicated courses: a 4X track, a pump track, a free-ride course and dirt jump park. The site includes walking paths, open turf areas, meadow areas, and wooded areas. Mounds of soil are used to create dirt jumps, rollers and banked corners. Other bike elements include skinnies, teeter-totters, drop progressions, table tops, wall rides and boulder gardens. As shown in Figure 9 below, the landscape character of McLennan Bike Park is a mix of large swaths of meadow, open turf areas, interspersed deciduous trees, large rocks and logs.
Observations

The early and late afternoon weekend visits were the peak hours of attendance. On these days, I observed an average of 24 adults, 8 youth, and 7 children. The site was mostly inactive during the early morning weekday visit with the exception of a few adults walking. The inactivity at this time was probably due to work and school schedules. The gender of park users was fairly balanced except for the riders of the designated bike tracks seemed to be mostly male. The primary use of this space is BMX biking. The second most popular activity for this site seemed to be walking perhaps because of the steep and varying topography. Other activities I observed were dog walking, remote
control car driving, running, kids playing on bike course elements, youths hanging out and socializing.

Findings

Respondents consisted of a mix of adults and youth. Majority of respondents were male which may indicate that BMX is a male dominated activity. 70% of adult respondents indicated that they are physically active at a moderate-intensity most days of the week. Based on the data it is difficult to know if the 2 youth respondents were meeting the prescribed physical activity guidelines. Respondent 1 was engaged in moderate to vigorous intensity PA 7 days a week thus meeting the guidelines however the duration of whether 60 minutes was accumulated each day is unknown. Respondent 2 was meeting the guideline of participating in vigorous intensity PA at least 3 days per week based on the frequency of the site use. 40% of park users stated that they used the park at least once per week while 30% said they used it more than 4 times per week. This indicates that majority of park users are coming to the site quite frequently. Surprisingly, 80% of users said that the park was not within walking distance from their home. A possible explanation for this could be that since the park is a unique amenity people are willing to travel further to use it. The responses concerning demographics, level of physical activity, frequency of site use and accessibility are illustrated in Figure 10.
Fig. 10  Respondent Characteristics from McLennan Bike Park Site
The primary use of the park is biking activity. Walking was specified as the second most well liked activity to pursue in the park. Other activities listed include running, socializing and racing remote control cars. Respondents were asked what they liked most about the park. The number one aspect has to do with the physical features of the site. Because there are a variety of features tailored to different levels of challenge and steep grade changes, there are many opportunities to try different things. The multifunctional nature of the space was given as the second most like aspect of the site. The variety of uses provides opportunities to engage in various types of PA. Also, areas of unprogrammed space contribute to the flexibility of the space. Thirdly, respondents indicated that free access and the inclusive nature of the park was enjoyed. The view was also mentioned as being valued. Respondents were asked to rank in order of importance various items that might influence their use of the park. As shown in Figure 11, the ability to appropriate physical elements for their own use was ranked as highest. Ranked second was the feeling of decreased official regulation. Accessibility placed third in importance of motivation to use the park. The presence of facilities and amenities was ranked fourth while safety was ranked last. The indicated non-importance of safety at this particular site may reflect the motivation behind participating in action sports. BMX is a high-risk sport where risk is part of the allure.
The last set of questions was meant to address the respondents’ physical activity preferences. Table 3 shows that respondents agreed that participating in PA was important to personal health. Respondents strongly agreed that having a choice in activities to pursue was valuable. The role of self-efficacy was not perceived as important to engaging in PA. There was an overall consensus of strong agreement toward a preference for unstructured PA over structured PA. The results also showed that social interaction was an important component to participation in PA.
<table>
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<tr>
<th></th>
<th>Health as Motivation for Physical Activity (PA) %</th>
<th>Importance in Choice in PA Types %</th>
<th>Role of Self-Efficacy in PA Participation %</th>
<th>Preference for Structured PA %</th>
<th>Preference for Unstructured PA %</th>
<th>Importance of Social Aspects of PA %</th>
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<td>0</td>
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<td>10</td>
</tr>
</tbody>
</table>
Site 3: Guerilla garden, Beach Avenue, under the Burrard Bridge, Vancouver, B.C.

**Loose Space Typology:** Unstructured residual space, by-product engineering

**Location:** The site is directly beneath a five-lane bridge steel truss bridge constructed in 1932. The 5 part bridge on four piers spans False Creek, connecting downtown Vancouver with Kitsilano. The site is in the West End district that is one of the most densely populated neighborhoods in Canada.

**Scale:** 0.146 hectares

**Previous Land-Use:** residual space by-product of bridge construction and road layout

**Current Use:** Local resident guerilla gardening

**Landscape Character:** Multiple garden beds arranged in organic shapes and sizes framed with bricks, brick retaining wall, wood chip paths, highly decorated artistic creations made of found materials. There is a mix of perennials, shrubs, and a few coniferous trees. Two donated wooden tables and chairs as well as a sunken pit to leave tools are provided for people to use. All the soil to create the garden was brought in by neighborhood volunteers and some is donated by the City of Vancouver. Figure 12 shows the organic feeling of the garden.
Fig. 12 Site Images of Burrard Bridge Guerilla Garden

Observations

A different methodological approach was taken with this site. A snowball method of data collection was used as the site had limited use during the winter months. Due to winter weather conditions, I observed no activity on my initial visit to the site. I left my contact information at the site and was contacted by the originator of the garden. Upon initial contact with the resident volunteer, distribution of the questionnaire was executed via the volunteer’s contact to other resident volunteers.
Questionnaire Findings

There were a total of 6 respondents from this site. The users of this were a mix of mostly adults and some older adults with an equal proportion of men and women. There seems to be some inconsistency in the results as the respondents reported that only 33% were moderately-intensively physically active on most days of the week but 66% reported that they use the site more than 4 times per week. On the questionnaires some of the respondents had explained that their winter PA levels were quite reduced compared to their summer and spring PA levels. This discrepancy may be responsible for the misunderstood responses. All respondents lived within walking distance of the garden.

Of the total population of the West End, 44.7% of people are ages 40 and above. Demographics should be considered as a factor in site selection to enable physical activity. The responses about demographics, level of physical activity, frequency of site use and accessibility are illustrated in Figure 13.
Respondent Characteristics from Burrard Bridge Guerilla Garden Site

Fig. 13
The primary activity in this site was gardening. A second favored activity was building. Creating brick walls, installing pavers, art installations were all considered building activities. The main thing respondents liked about the site was its relaxing atmosphere. This included feeling safe, calm, and receiving a therapeutic experience. The perception of safety may be heightened because the site has transformed from an unused, bare concrete void to a colorful garden with clear signs of human care. The second most liked aspect of the site can be described as community engagement in the collaborative act of contributing to a community amenity. Teamwork in transforming a derelict space into something aesthetically pleasing and providing social capital was thought to be an important benefit provided by the site. A third recognized attraction of the site is the capacity for individuals to appropriate the environment for their own use. Figure 14 shows how the respondents ranked the given environmental variables based on significance to their use of the site. Appropriation capabilities were ranked first then safety followed by accessibility. The lesser degree of regulation was ranked fourth and facilities were ranked last in importance.
The final set of questions, illustrated in Table 4, is aimed at identifying personal preferences to physical activity variables. Respondents agreed that their physical activity participation is motivated by the desire to maintain health. The results show strong agreement for choice of different types of PA. Self-efficacy however was not agreed upon as a factor in PA participation. There was strong agreement for preference of unstructured PA over structured PA and that social interaction accompanied with PA is beneficial.
<table>
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</tbody>
</table>
Site 4: Lululemon Athletica Global Store Support Centre, 1818 Cornwall Avenue, Vancouver, B.C.

Loose Space Typology: Unstructured residual figure ground relationship

Location: The landscape surrounding the corporate headquarters is located at the corner of two major arterial streets.

Scale: 0.7 hectares

Previous Land-Use: Public open green space

Current Use: Public open green space

Landscape Character: The relatively flat open turf area is spotted with a few deciduous trees, a water feature, and pedestrian paths.

(http://chasingkristina.tumblr.com/)

Fig. 15 Site Images of Lululemon Global Store Support Centre
Observations

The same snowball methodological approach was taken with this site as well because the site had very limited use during the winter months. Due to winter weather conditions, I observed no activity on my initial visit to the site. Data was obtained by contacting an employee of the Lululemon Global Store Support Centre. The employee provided some information on their “Bring it Om Yoga!” public event held during the summer months.

Questionnaire Findings

No respondents were present to participate in the study. The use of this particular site is heavily dictated by seasonal weather conditions. Findings from the data gathered from the Lululemon employee indicate a corporate use of the space during the summer months. “Bring it Om Yoga!” is a public event hosted by Lululemon. Lululemon Athletica is a yoga-inspired apparel company that produces a clothing line and runs international clothing stores from its company based in Vancouver. The Bring it Om Cup Yoga in the Park is a promotional endeavor for the company that also facilitates free public access to yoga classes. A second objective of this event is to create support for the Vancouver Canucks hockey team by encouraging people to wear the team colours while they practice yoga in the space. The series of classes were very well attended by people of all ages. The findings show that while there was no apparent use during the winter, appropriation of the space for corporate promotion that enables free public access to physical activity was a successful use of the space during the summer.
Cross-case Questionnaire Findings: McLennan Bike Park, LaFarge Quarry, Burrard Bridge (Lululemon Global Store Centre site not included in the findings as no questionnaire results were collected)

From the 3 sites a total of 27 questionnaires were collected. Respondents’ age categories were determined in accordance to the Canadian Physical Activity Guidelines because an objective was to establish if users of the loose space sites were achieving recommended levels of PA as outlined in the guidelines. Based on these categories, 8% of respondents were youths aged 12-17. 81% of respondents fell in the adult age group that ranges from 18-64 years old. Older adults with an age of 65 or more comprised 11% of respondents. The demographic data show that although majority of respondents fell within the adult age group, observation revealed the presence of children and older adults. Many of the adult respondents also had children with them. There was a relatively equal distribution of male (60%) to female (40%) users of loose space. 80% of respondents reported themselves as being in good health or excellent health. 70% said that they used the sites 4 or more times per week for a period of approximately 35 minutes each. Based on the Canadian Physical Activity Guidelines (2011), adults and older adults should accumulate 150 minutes per week of moderate to vigorous physical activity. These results show that 70% of the loose space respondents are achieving the recommended physical activity levels. 63% of respondents lived within walking distance of the loose space while 37% did not but were still used the site. The responses about demographics, level of physical activity, frequency of site use and accessibility are illustrated in Figure 16.
Fig. 16  Cross-case Respondent Characteristics
When asked to describe their preference of use for each site, the most common responses all reflected the principal use for which the space was intended or locally believed to be used for. However, for each site respondents also reported a preference for multiple alternative activities. Four themes emerged in response to what the users liked most about the space. A theme related to experiencing nature was listed as an attribute. Perhaps because these characteristics are in such contrast to the urban lifestyle it provides a relaxing refuge. Respondents also mentioned liking a less managed environment. Accessibility emerged as a theme. Being able to walk from home and to have free access was viewed as a benefit. Unstructured environment was a third theme stated by respondents. These spaces exist in contrast to other heavily monitored and themed public open spaces. This allows for individual choice in using the site how you see fit. For example, the Lafarge site is primarily used for off leash dog walking which may be difficult to do elsewhere and is clearly valued by the local residents. A final theme that emerged was the ability for community engagement. The concept of contributing to local identity transforming an unused space into an amenity created a sense of pride and ownership of the space.

As shown in Figure 17, respondents were asked to rank characteristics in order of importance to their desire to use the space. Safety ranked first for the LaFarge and Burrard Bridge sites but last for the McLennan Bike Park site. A decreased level of regulation and opportunities for appropriation of environmental features were ranked equally as second most important. Accessibility was a unanimous third. All respondents indicated that the presence of facilities was the least important factor in their decision to use the site. This is in contrast to the research findings suggesting the influence of
conventional amenities on participation in physical activity (Giles-Corti et al., 2005; Kaczynski & Henderson, 2008). The dichotomy between these findings suggests that more research is needed to uncover environmental variables associated with physical activity.

Fig. 17 Cross-case Environmental Variables for Site Use

The intent of the final set of questions was to explore attitudes toward physical activity behavior. Statements were ranked according to strength of agreement. Exercise for the purpose of personal health was agreed to be important. Having options to participate in different types of physical activities was strongly agreed upon. There was disagreement by all towards the role of self-efficacy in motivation to try an activity. Respondents strongly agreed to the preference for unstructured types of PA and strongly
disagreed to structured types of PA. All respondents agreed that social interaction has a positive influence on participation in PA.

Findings from the cross-case analysis illustrate that different typologies of loose space affect levels of physical activity differently. The LaFarge site (structured brownfield) had the largest area and also the most physically active user group and most frequently used site. Physical activity for the utilitarian purpose of walking the dog could be related to the increased levels of physical activity. It also possessed the least amount of regulation. The environment offered opportunities for manipulation, appropriation, social interaction, and freedom in use. Although the site was the least regulated, respondents stated the highest perception of safety. Perhaps because the site was so frequently used and thus populated, there was a feeling of community and safety.

The Burrard site (unstructured by-product of engineering) had the smallest area and was mostly self-governing. There were opportunities for manipulation, appropriation and social interaction. The average age of this user group was 57. This could be part of the reason the site is seasonally used primarily in the summer, spring and fall. The findings also show a relationship between accessibility and age. With an aging demographic there seems to be an increased importance for physical activity opportunities within a walkable distance.

McLennan Bike Park (structured in use) had the highest risk use. The site was used less frequently and was also less accessible. These findings could indicate that people are willing to come from further distances if there is a unique opportunity that cannot be sought elsewhere. Also, gender may play a role in use of space. BMX is a typically male dominated sport, which was evident in the male dominated respondents.
Findings from the Lululemon site (unstructured space around the building envelope) indicate that seasonally usable space is hindered by a lack of features to be manipulated or appropriated. However, this site is a good example of a corporate use of loose space. The yoga in the park sessions have been successful in getting people active. An integration of a corporate agenda and use of loose space can improve access to public participation in physical activity.
### Table 5. Cross-case Respondent Preference for Physical Activity Variables

<table>
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<tr>
<th></th>
<th>Health as Motivation for Physical Activity (PA) %</th>
<th>Importance in Choice in PA Types %</th>
<th>Role of Self-Efficacy in PA Participation %</th>
<th>Preference for Structured PA %</th>
<th>Preference for Unstructured PA %</th>
<th>Importance of Social Aspects of PA %</th>
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<td>15</td>
<td>19</td>
<td>0</td>
<td>4</td>
<td>26</td>
</tr>
</tbody>
</table>
Chapter 5: Key Informant Semi-structured Interviews

Public Health Representative: Karen Armstrong, Coordinator Wellington-Dufferin-Guelph In Motion

Karen Armstrong has been involved in the field of public health for over 20 years. She holds a Diploma of Public Health and a Master’s in Public Policy and Administration. Her expertise is in the area of policy development and health promotion. For the past several years she has been the coordinator for WDG In Motion. In Motion is a collaborative partnership that provides health promotion strategies to encourage the development of healthy communities that support physical activity. The intent of this interview was to gain an understanding from a public health perspective into the socio-psychological aspects of exercise behavior. The compatibility of loose space in supporting positive exercise behavior was explored.

Findings

Armstrong describes that internal socio-psychological factors that influence participation in PA are inextricably linked to external environmental factors. Simple design changes to the physical environment are the first step to removing barriers to becoming active. No matter how strong a person’s desire to become active is, if the environment is working against you it is less likely to occur. Misguided cultural perceptions towards PA are known to be a barrier. For example, there is a misconception about certain types of structured sports and time spent engaged in activity. An average child gets approximately 6 minutes of actual playing time during a hockey game whereas
activity in an unstructured environment allows for a greater percentage of time spent to be active. Another perceived cultural barrier to PA is a Not In My Back Yard (N.I.M.B.Y) attitude. To challenge such attitudes an introduction of dialogue to bring awareness of PA benefits gained from alternative types of PA and alternative environments is justified.

In Armstrong’s experience, outdoor environments have been shown to possess more prompts to activity than indoor environments. Environments that are accessible will have the greatest impact on improving adoption and maintenance of PA. Accessibility can refer to financial cost, inclusivity, or ability to physically access a space. An environment that is free of cost, available for all to use, and is easy to get to is more likely to be used. Public private partnerships are essential to creative and efficient use of privately owned unstructured spaces. Interdisciplinary partnerships can be successful if expectations from both parties are clearly outlined.

Armstrong believes the most common socio-psychological factor that influences adoption and maintenance of PA is self-confidence. Children who are typically inactive are far more likely to try an activity in an unstructured and unregulated environment than a structured organized sport. Unstructured environments allow them to build confidence in their abilities through personal choice of activity and by providing appropriate level of challenge. A lesser degree of regulation can foster personal interest where a person can become an active creator and therefore perceives the activity as easy and non-threatening. A second socio-psychological factor that plays a role in PA participation is social interaction. From a marketing standpoint, social interaction is an effective strategy to influence people to become and stay active.
Municipal Parks & Recreation Representative: Alan, Duncan, Environmental Planner, City of Vancouver

Alan Duncan has been involved with the City of Vancouver since 1989. He holds a Bachelor of Landscape Architecture from the University of Guelph. For the past seven years Duncan has been working with the Vancouver Parks and Recreation Board as an Environmental Planner. The focus of this interview was to evaluate the effectiveness of current municipal policy in encouraging and supporting physical activity. The potential of loose space in relation to municipal trends and goals towards PA was compared.

Findings
Three major themes emerged from the interview with Alan Duncan.

1. The goals and objectives of the Vancouver Park Board are not being reflected in day-to-day operations.
2. The Park Board is extremely limited by their financial budget.
3. The City recognizes the important role of unstructured open space in facilitating participation in physical activity and is seeking creative ways to provide it.

Duncan explains that while the research has consistently proven the health benefits of access to open green space, it has been difficult to provide adequate parkland dedication. The concept of “shifting the balance” from a predominance of structured spaces for organized sports to providing more unstructured spaces for undefined activity is a goal that is slow to be realized. It seems that it is the lobby interest groups that receive the funding for their structured facilities that only serve a small portion of the
public. Another disconnect that Duncan points out is the need for pre-development planning of open space systems but a lack of effective policy to enable it. Development cost levies (DCLs) and community benefits contribute the lion’s share of funding for park acquisition but because they are divided among competing public sectors, are not enough to maintain the parkland dedication target of 1.1 hectares per 1000 people. DCLs are generally used towards maintenance of existing parks. Cash in-lieu and comprehensive development districts (CD-1) are two by-laws in place to ensure the provision of parkland to be accompanied with new development. These by-laws act as negotiating tools that rarely achieve the target because acquisition funds cannot keep pace with the high cost of real estate. CD-1 zoning allows for negotiation of design, density, and land-use. Because there is no specific park designation in the by-laws CD-1 zonings are the primary routes for acquisition.

The second theme revealed in the interview illustrates just how limited the City is by their financial budget. Duncan describes the City’s shift in focus from parkland acquisition to quality improvement of existing parks. Financially, this strategy is more attainable. Through good design, better understanding of how a space is used, and more accessible parks, improved quality can be achieved. The goal of providing walkable (within 5 minutes) access to nature from anywhere in the City has not yet been met. Parkland deficiencies are difficult to combat when the cost of land is so high. This approach of renewal and redesign is based on the principals of designing for diversity and inclusiveness. Designing for a variety of uses and ways in which the park can be experienced, in a way that appeals to different groups of people and ages is crucial.
To remedy some of these challenges involves shifting some of the responsibility of public health onto the private realm. Policies that require developers to provide amenity space can help to obtain more public open space. Duncan also explains that property owners could benefit from converting their purely aesthetic landscapes into productive landscapes for renter’s physical activity use. The City of Vancouver has implemented some programs to accommodate public use of municipal space. Due to few resources, exploring the idea of partnership with a non-profit liaison to manage these programs would be helpful.

A final theme from the interview refers to the City’s recognition of the important role of unstructured open space in facilitating physical activity. The City is constantly seeking creative ways to use space differently. Duncan believes that unstructured space, if not over programmed or over designed, can deliver flexible, multi-use space that the public desires. The City is responsive to local changing physical activity needs. There is municipal support for alternative types of physical activities. Proper design is critical in mitigating risk and bringing people together in positive ways. According to Duncan, unstructured physical activity should be a design objective of any park as it is human nature to find ways of using things that will work for them. Design that supports undefined activity and encourages spontaneity and creativity is an objective of the City of Vancouver.
Representative from Program for Public Use of Municipal Loose Space (low-risk):
Sarah Orchard, Coordinator Green Streets Program, Engineering Services, City of
Vancouver

Sarah Orchard holds a Master of Landscape Architecture from the University of
British Columbia. She is the coordinator of the Green Streets Program in Vancouver,
B.C. The Green Streets Program encourages citizens to beautify their neighborhoods by
creating and tending street gardens in traffic circles and corner bulges. The purpose of
this interview was to explore the process of converting an unstructured loose space into a
structured loose space. This interview investigates the process of incorporating public
access to municipal loose space that demonstrates a low-risk physical activity.

Findings

Since its inauguration in 1994, the Green Streets Program (GSP) has been very
well received. Appointment of a dedicated coordinator to manage, monitor and accept
public inquiries has facilitated greater access and use of publically owned loose space.
The GSP is made possible by partnerships between City departments. Funding for the
program comes from Engineering Services and finances the use of Park Board employees
for maintenance services. The City of Vancouver (C.O.V) has three programs to
stimulate improved use of municipal loose space: community gardens, greenways and
green streets. What differentiates them is how they are initiated. Use of space for
community gardens and greenways\textsuperscript{20} originate from community initiative. Community
members approach the City with ideas they have about using specific sites. The GSP was
created out of an evolution from community initiative to City initiative. Guerilla

\textsuperscript{20} Greenways refer to small bits of remnant land under 1 kilometer long that is taken care of and managed
by volunteers.
Gardeners in the Mt. Pleasant neighborhood began planting and tending gardens in traffic circles and bulges. There was a clear desire to continue this activity so the community members then approached the City with the idea. The City found the idea to be compatible with their traffic calming goals. The GSP functions as a traffic calming strategy for the City.

Orchard indicates that safety and liability related to volunteers working in the streets is a barrier to implementation of such programs. To date there have been no safety or liability problems. For safety reasons, only traffic circles and bulges located in residential areas and on calm streets are available for adoption by community members. Introducing a formalized application process where each volunteer is registered to a specific circle or bulge serves tracking and liability purposes. The City carries liability insurance on each registered volunteer. Upon approval for use every volunteer receives basic pedestrian safety training, a safety vest and is required to sign a waiver. A different situation occurs for the community gardens and greenways programs. Here the City is essentially leasing the land to the users. Land-uses must be approved by the city and the users must carry their own liability insurance as they assume the burden of liability. A further consideration that can impact the success of a program is the context in which it exists. Orchard points out Vancouver is unique in that the old city fabric containing more narrow streets and cueing streets\(^\text{21}\) is more conducive to slower driving speeds thus improving safety. Some of the land owned by Engineering Services is owned on a temporary basis. The City may retain this land for an indeterminate amount of time based on whether it can fulfill City goals or not. Each site has different stipulations and consequently approval for public use is case sensitive.

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\(^{21}\) Cueing streets are narrow streets with parking on both sides so that only one car can pass at a time
Since the GSP operates through the municipality there must be some degree of regulation for ensuring public safety. However, GSP sites are loosely monitored and intervention by the program coordinator only occurs when a problem arises. Aside from signing a waiver, suggestions and recommendations are made by the City but not enforced. There is room for personal freedom of choice in making the space your own. Signage indicating which traffic circles/bulges are part of the program or are up for adoption is a strategy that encourages self-initiated interest and an increased level of commitment from potential adoptees. Many of the sites have become extensions of community members’ own gardens. Cooperative and collaborative tending of these gardens have contributed to the identity of the neighborhood.

The benefits of the GSP mentioned by Orchard range from an individual level, community level to a municipal level. Those who don’t have private access to garden are able to do so here. The City offers incentives such as purchasing initial plantings, providing opportunities to work with a city landscape designer for sites not yet planted, free compost, and other social perks such as garden parties and newsletters. The most unexpected benefit of the GSP has been the community-building aspect. Gardening in a public space creates social interaction with people in the community. The municipality has seen a reduction in operating costs by employing willing volunteers. The overall quality and aesthetics of the urban environment is improved because of the level of effort of dedicated volunteers.

Lastly, Orchard explains that municipal cooperation with the public to provide such opportunities requires a level of transparency. A clear outline of expectations and requirements between the municipality and the public are necessary. Orchard believes
that successful implementation of programs to facilitate more efficient use of public space is possible by listening and responding to local needs.
Design Representative for Public Use of Municipal Loose Space (high-risk): Scott Henderson, Landscape Architect for the design of McLennan Bike Park

Scott is a landscape architect and urban designer with over 14 years of experience in Canada. He holds a Bachelor of Landscape Architecture from the University of Guelph. Scott is a registered landscape architect in the Province of Ontario and a member of the Canadian Society of Landscape Architecture (CSLA). As the principal of Adesso Design Inc. he has extensive experience in construction, site plan development, community planning and design and master planning. The purpose of this interview was to explore the process of converting an unstructured loose space into a structured loose space. This interview investigates the process of incorporating public access to municipal loose space that demonstrates a high-risk physical activity of BMX biking.

Findings

Henderson indicates that the evolution of McLennan Bike Park from a brownfield site into a structured formalized space has been hugely successful on multiple levels. Municipal support for alternative action sports\(^{22}\) is growing. Public response and demand have revealed the desire for provision of inclusive alternative recreation choices. Since the early 1990s, BMX and mountain biking have experienced rapid growth in participation which has created a demand for purpose-built facilities. Prior to municipal involvement, people were building their own riding areas in local woodlots and other unauthorized areas. The selling point that fueled municipalities to take action was the aim to improve public safety and to increase inclusion by improving accessibility.

\(^{22}\) Action sports commonly recognized include BMX (bicycle motocross), mountain biking, skateboarding, snowboarding and inline skating. These sports usually involve a higher level of risk compared to conventional sports.
Generally there seems to be an ambiguous municipal attitude towards use of loose space unless the use begins to create larger public health problems.

Due to the nature of construction land owners and designers assume a certain amount of risk and liability. Henderson points out that with action sports there is an inherent level of risk associated. This risk is also part of the attraction. Those who participate in actions sports generally understand and accept this risk. Injuries are seen as part of the sport and rarely result in legal matters. According to Henderson there are a number of strategies to minimize risk and design liability. Figure 18 illustrates 5 main strategies that Henderson suggests to reduce risk when dealing with design of a high-risk use of loose space.
<table>
<thead>
<tr>
<th>Strategy</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employ professionals</td>
<td>Use professionals with expertise in design, construction and maintenance practices</td>
</tr>
<tr>
<td>Design to standards and ensure facility is built as per plans</td>
<td>Engineering, International Mountain Biking Association (recognized standards for the particular sport), construction details: grading plan and detailed planning profiles</td>
</tr>
<tr>
<td>Collaboration between design professionals</td>
<td>Collaboration between in-house landscape architects, engineers, planning and design</td>
</tr>
<tr>
<td>Ace-in-the-hole</td>
<td>Designers must be experienced in the sport itself and have prior design experience with a similar project. First-hand experience with the sport is invaluable to the design process. The more people involved in the process that are knowledgeable with the sport the better (ex. designer, contractor, planner)</td>
</tr>
<tr>
<td>Open communication with municipal risk management team</td>
<td>Designers play negotiating role with risk management team to find appropriate solutions to create a challenging, satisfying and fun space with out sacrificing safety.</td>
</tr>
<tr>
<td>General design considerations</td>
<td>Appropriate feature design for varying levels of ability, sizing and spacing of elements, functional layout.</td>
</tr>
<tr>
<td>Progression-based design</td>
<td>Space caters to the development of beginner skills with natural advancement to intermediate and advanced skills. Filter areas tailored for particular skill sets allow users to self-gauge their ability before trying something more challenging. Placement of features situated according to skill level. (Beginner area closest to park entry)</td>
</tr>
<tr>
<td>Field testing</td>
<td>Test and tweak elements prior to opening park to public for safety</td>
</tr>
<tr>
<td>Maintenance Program</td>
<td>Scheduled monitoring to document conditions for legal reasons Staff monitoring</td>
</tr>
<tr>
<td>Public consultation</td>
<td>Communication between users, the municipality, and the designers is crucial to ensure cohesive design. Engagement strategies help to establish a sense of public ownership. (personal communication, January 11, 2012)</td>
</tr>
</tbody>
</table>

Fig. 18 Strategies to Minimize Risk for Municipal Design of a High-Risk Use of Loose Space
Henderson believes that it is possible to retain a degree of looseness within a structured environment. Looseness can be achieved by including public participation in the design process. Getting the “buy in” from the user groups is essential. Designer experience in the particular activity can produce more effective dialogue in determining user needs by communicating in the vernacular of the culture of the activity. A design that responds to the local style can increase the success of the design. Another approach that responds to the culture of the activity is to use terminology on signage that explains the rules of the site in a less prescriptive way. For example, instead of having rules there is a “Biker’s Code” of recommendations. The “Biker’s Code” uses language that is familiar to the BMX user group can often soften the reaction to authority.

Two major benefits Henderson describes from the formalization of McLennan Bike Park are a snowball effect of municipal implementation of action sport facilities and sport development. The municipality of Kitchener has set a precedent with McLennan Bike Park for other municipalities to follow. Providing areas for high-risk activities is now more tangible as some of the risk and liability perceptions have been dispelled. The main benefit from the park has been a rise in sport development. A hot bed of talent has emerged because of access to a facility. Not only has this benefited advanced riders, there has been an increased public awareness and participation in this otherwise inaccessible sport.
Chapter 6: Site Analysis of Loose Space

Rationale for Site Selection

In 2004 Evergreen, a not-for-profit organization that facilitates sustainable greening projects across Canada completed a study of Canada’s urban municipalities green space provision (Lindsay, 2004). The study found that Vancouver’s green space provisions were higher than their target of 1.1 hectares of green space per 1000 residents. But as shown in Figure 19, in comparison to other urban Canadian municipalities this target ratio is among the lowest. Vancouver has already lost 0.8% of its city’s park base to development and the trend of decreasing provision of green space is expected to continue (Lindsay, 2004).

Fig. 19  Green Space Provisions and Standards in Canadian Urban Municipalities

(Lindsay, 2004)
The City of Vancouver poses a unique spatial situation because while the city continues to grow its land base is constrained by geography and the United States boundary to the south. The population of Vancouver is now at 2,391,300 people and is expected to grow by approximately 100,000 people over the next 20 years. Population growth and development create implications for access and usability of green space. A site analysis of loose space showcases the potential for loose space to alleviate green space accessibility and usability issues to promote physical activity.

**Study Area**

![Study Area Diagram](image)

*Fig. 20 Loose Space Site Analysis Study Area*
As guided by current research, a walkable distance can be defined as 1 kilometer which translates into about a 10 minute brisk walk (Coombes et al., 2009; Maas et al., 2007). A 1-kilometer radius was mapped and measured in order to ensure all loose space measured was within a walkable distance. The centre point was chosen to allow the study area to encompass three different neighborhoods for assessment of neighborhood level green space provision in comparison to citywide provision rates. The placement of the epicentre was chosen to cover the greatest amount of land area between the Burrard Inlet and the northern edge of the mainland to eliminate the need to cross any bridges, which can be a barrier to accessibility. The site area includes parts of the Downtown, Strathcona and Mount Pleasant neighborhoods.

**Existing Parkland Deficiencies**

The total green space provision of the Downtown, Strathcona and Mount Pleasant neighborhoods were each analyzed separately. Table 6 provides information specific to each neighborhood in its entirety, not only within the study area.

<table>
<thead>
<tr>
<th>District</th>
<th>Population</th>
<th>Area (Ha)</th>
<th>Green Space Needed to Achieve Target (Ha)</th>
<th>Existing Green Space (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Pleasant</td>
<td>23,615</td>
<td>364</td>
<td>25.97</td>
<td>14</td>
</tr>
<tr>
<td>Downtown</td>
<td>43,415</td>
<td>375</td>
<td>47.75</td>
<td>28</td>
</tr>
<tr>
<td>Strathcona</td>
<td>11,920</td>
<td>384</td>
<td>13.11</td>
<td>17</td>
</tr>
</tbody>
</table>

(City of Vancouver, 2006)
Although Lindsay (2004) reports that the City of Vancouver is meeting their target provision rates, Duncan reports that the City isn’t anywhere near meeting their target. This discrepancy indicates the need for a more precise definition of green space to facilitate accurate measurements. Regardless of this inconsistency, finding from this research reveal neighborhood-level green space deficiencies. Vancouver’s target of 1.1 hectares of green space per 1000 people is not being met in the Mount Pleasant and Downtown neighborhoods but is exceedingly met in the Strathcona neighborhood. Greater analysis of green space provision at the neighborhood scale can help to direct attention to the areas in most need of greater access to green space (Alan Duncan, personal communication, December 19, 2011). This research proposes loose space as a supplement to combating green space deficiencies. Figure 21 shows the existing municipal green space within the study area. Municipal green space accounts for 18.71 hectares of land.
Across Canada’s urban municipalities there is an average of 2.79 hectares of green space per 1000 people (Lindsay, 2004). The study area would need 44.15 Ha of green space to achieve an average of 2.79 Ha/1000 people. Table 7 shows the existing green space of 18.71 Ha slightly exceeds the target of green space provision of 17.40 Ha necessary to achieve 1.1 Ha /1000 people. However, intensification challenges require innovative solutions for improvement of access to desirable green space for physical activity.
It is difficult to determine how much green space per capita is enough. Although there is an outlined target, it is simply that, just a target. The target is a historical snapshot based on 1970s rates of existing green space. Securing green space in the face of a shortage of land accompanied by high land value will require finding creative ways to use existing space differently that are economically feasible (Alan Duncan, personal communication, December 19, 2011).

**Existing Loose Space within the Study Area**

As illustrated in Figure 22, a total of 36 loose spaces were mapped and categorized by typology, ownership, access, area, safety and environmental quality. The loose space identified in the study area contributes 22.49 hectares of additional land for opportunities for physical activity.

<table>
<thead>
<tr>
<th>District</th>
<th>Population</th>
<th>Area (Ha)</th>
<th>Green Space Needed to Achieve Target (Ha)</th>
<th>Existing Green Space (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Area</td>
<td>15,825</td>
<td>314</td>
<td>17.40</td>
<td>18.71</td>
</tr>
</tbody>
</table>
The addition of loose space to existing municipal green space could help to improve the declining rates of green space provision. Within the study area, the addition of loose space to the existing municipal green space would increase the green space area to 41.20 hectares. The addition of loose space to the study area increases the provision rate to almost match the national average of 2.79 hectares per 1000 people (44.15 hectares).
At the neighborhood level, the Downtown, Strathcona and Mount Pleasant neighborhoods need 86.84 hectares of green space in order to meet the target of 1.1 Ha per 1000 people. Currently they collectively account for 59 hectares of existing parkland. With the addition of just the loose space mapped within the study area (22.49 hectares), the total provision almost meets the target with 84 hectares. The sum of all the unmapped loose space in the 3 neighborhoods would surely go above and beyond. This assessment of loose space shows that there is potential for improving access to open green space within the city of Vancouver. The cumulative effect of loose space could remove neighborhood green space deficiencies creating walkable opportunities for recreation.

The following section gives a description of the specific characteristics of the loose spaces identified. The implications of the findings from the site analysis are discussed in terms of how the incorporation of the loose spaces can contribute to improving physical activity levels.
Loose Space Inventory Findings

Findings from the site analysis of loose space regarding the characteristics of the sites are shown below in Figure 23. Findings will be further discussed in relationship to the capability of loose space to encourage physical activity.

Fig. 23 Study Area Characteristics of Loose Spaces
Fig. 24 | Study Area Loose Space Characteristics Related to Environmental Correlates of Physical Activity
Implications of Loose Space Inventory Findings for Physical Activity

The findings from the site analysis of loose space indicate that loose space is capable of encouraging physical activity from multiple perspectives. Firstly, the distribution and frequency of which that loose space was found within the study area shows that it can fulfill the City of Vancouver’s objective for providing recreational space within a walkable distance. Twenty-seven of thirty six loose space sites mapped were located within one block of transit and also could be accessed from anywhere within the study area within a 10 minute walk. The distribution of loose space sites throughout the urban landscape suggest that if individual sites were strategically considered, together they could form a network of publically accessible outdoor recreation spaces.

Secondly, research has proven that spaces in which people perceive themselves as safe are more likely to enable participation in physical activity (Bedimo-Rung et al., 2005; Jones et al., 2009). All of the loose space sites documented had a least one form of visibility into the space. Majority of the sites had both clear visibility from a road and the surrounding homes. Informal surveillance of many of these sites would be easily achievable thus creating a level of perceived safety for people to engage in physical activity.

Thirdly, in response to the challenge of green space acquisition in intensifying municipalities the loose space identified here demonstrates the variety of typologies that exist for possible use. The findings show that the vacant and/or abandoned typology of loose space was most prevalent. Many vacant sites are under used as they await future programming. There is an opportunity to integrate temporary use of these sites. If the assigned singular use of a site is not being fulfilled the prospect of incorporating a value
added use such as physical activity could allow individuals to pursue recreational activities in the interim.

Finally, the results of this inquiry show that some loose space sites possess more physical activity encouraging attributes than others. A loose space inventory documenting the sites that would have the greatest impact in improving physical activity would allow a municipality to focus efforts in making priority loose space available through permitting access or through design intervention. Priority sites could also address areas with green space deficiencies. Figure 25 indicates in red the loose space sites with possess all four qualities of loose space that are correlated with physical activity. Sites that offer a variety of choice in activities to pursue and permit modification of the environment for achieving appropriate levels of challenge are in most need of enabling greater public access for physical activity.

![Priority Loose Space Sites](image)

**Fig. 25** Priority Loose Space Sites
Results show that twenty-nine out of thirty-six loose space sites mapped were privately owned. The application of this knowledge could benefit private owners of loose space by taking advantage of incentive-based municipal programs such as Community Improvement Plans (CIPs). CIPs are programs in which municipalities can provide grants, loans or property tax assistance to stimulate private sector investment in targeted areas of the community that require significant rehabilitation or revitalization such as loose space. Targeted areas include brownfield sites and publicly accessible open space.

The application of CIPs to these privately owned loose spaces could stimulate private sector investment to revitalize these sites for recreational use.
Chapter 7: Design Implications for Loose Space

Implications of Loose Space for Physical Activity

There is an inextricable link between the environment and health. As cities intensify, the issue of accessibility to open green space becomes more important. Access and provision are only two parts of the physical activity equation. Environments that support alternative forms of physical activity are necessary to improving participation rates. Conventional forms of physical activity do not appeal to a large proportion of the population. Loose space encourages alternative forms of movements and actions that can achieve health benefits. The proliferation of loose space in combination with its physical activity friendly attributes makes these spaces a valuable health resource. Findings from this research show that there are 4 main qualities found in loose space that facilitate physical activity. Opportunities to appropriate physical environmental features, the ability to support undefined spontaneous uses and a reduced degree of regulation were all reported as preferences for use of loose space. A major difference between loose space and other public open spaces that was found to improve participation in physical activity is that loose space permits evolution and informal modifications to the environment. This finding is correlated with research concerning adventure playgrounds. Both loose space and adventure playgrounds encourage people to interact with their environment by manipulating physical elements.

The process of incorporating low to high-risk uses of municipal loose space into the planning and management of a city has been well received. Central to the success of this process is acknowledging the value in alternative types of physical activities.
Environmental interventions that enable health require providing alternative recreation choices for all ages and skill levels. Loose space poses a unique opportunity to influence physical activity because they are indicators of what the surrounding community wants in terms of physical activities. How people are already using loose space prior to design intervention reveals a huge clue as to what future uses of the space may include. Four main themes emerged as characteristic to both low and high-risk uses of loose space. Interventions can serve to meet the public’s needs as well as municipal objectives. There is a general consensus that risk can be minimized through proper design and interdisciplinary collaboration between design professionals. Research findings suggest that the most important issue for designed loose space environments is public consultation in the design process. Open communication and clear expectations with the public is key in preserving a feeling of looseness in a designed loose space. At the heart of loose space use is the ability for individuals to plan, design and manage their own environments. Whether a loose space is unstructured or structured, the ability to tailor the environment seems to have an impact on its use.
Design Recommendations & Strategies: Reclaiming Loose Space for Physical Activity

A set of design recommendations and strategies for reclaiming loose space for physical activity was developed to raise awareness about the value of loose space for physical activity, found in Appendix D, “Design Recommendations & Strategies: Reclaiming Loose Space for Physical Activity.” The design recommendations and strategies were developed from a combination of findings from the survey of loose space, key informant interviews and site analysis of loose space. The scope of the recommendations extends to landscape architectural and urban planning professions. It may also be used to support the decision making for use of loose space by municipalities, private developers and community organizations. The design recommendations were evaluated by a series of professionals from public health, landscape architecture and urban planning disciplines (See Research Design for a list of names and credentials). An evaluation was essential to achieving a practical level of validity from experts working in disciplines that can influence public health.

A number of common themes emerged from the evaluators that they believed should be further addressed in the recommendations. While the scope of this study was investigating specifically the influence of loose space on physical activity, it was suggested that exploring influences of loose space on social and mental wellbeing could further promote the use of loose space. Another critique of the guide was related to the planning side of incorporating loose space into a city’s function. Consideration of loose space from a planning perspective could facilitate temporary use of loose space. This thesis offers some suggestions concerning the possibility of temporary use of loose space but again is beyond the scope of this study and requires further research.
Based on the evaluations of the design recommendations, some revisions were made. A more clear description of how intrinsic loose space qualities can be presented in a designed or programmed loose space is provided. There was some confusion regarding how safety and liability issues are dealt with in loose space. Revisions include relevant examples and precedents of different ways these issues can be addressed. The question of when and how in the planning process could planners have the greatest impact in promoting loose space was brought up. As previously mentioned, the planning aspect is not within the scope of this study. However, the recommendations do suggest the creation of a loose inventory to inform priority areas for greater access to loose space.

The strength of having the recommendations evaluated offers a level of professional relevance. A practical application of the recommendations would be to raise awareness of the value of loose space for encouraging physical activity to those involved in the design and management of urban landscapes. The design recommendations and strategies could be used as a starting point for greater discussion about the use of loose space for physical activity.

Some limitations associated with the evaluations are that the evaluators may not provide a representative sample of their profession. Time constraints placed on the evaluators may contribute to differences in the evaluation.
Chapter 8: Discussion

Health and the Built Environment: Environmental Correlates of Physical Activity

The trend towards a preference for unstructured forms of physical activity was substantiated by almost all of the users of loose space who were surveyed. The ability to self-select a variety of activities to pursue in loose space was central to their use of the space. The literature concerning environmental correlates of physical activity defines accessibility, the perception of safety and quality of the environment as the leading environmental variables correlated with physical activity. The results of this research confirm two of the three variables. From the loose space sites that were surveyed, the LaFarge Quarry site in Guelph was the most frequently used and respondents reported the highest levels of physical activity. Findings show that this particular site was in walkable distance for almost all of the respondents. The perception of safety is another variable that was supported as an important factor to the use of loose space. Results from the survey and key informant interviews indicate an increased sense of safety as a result of the highly interactive use of loose space. The versatility of loose space often attracts a wide variety of age groups who use the space in different ways. Environmental quality was not validated by this research as being correlated with physical activity. As described in the literature, environmental quality refers to the presence of conventional facilities and amenities. The opposite was found for the use of loose space. In a cross-case analysis of the preferences for the use of loose space, the presence of conventional facilities and amenities was consistently ranked as least important to use of the space. This finding suggests that a more comprehensive definition of what constitutes environmental quality in terms of physical activity is necessary.
The Application of Exercise Behaviour Theory to Inform Design

An objective of this research was to determine if loose space is capable of encouraging physical activity in relationship to the psychological processes associated with exercise behaviour. Guided by a similar approach taken by Clements and Dorminey’s Spectrum Matrix (2011), the influence of environmental qualities of loose space was investigated to explore the influence of cognitive processes on physical activity. The principle of intrinsic motivation for greater adoption and maintenance of physical activity was proven to be true for the users of loose space. Many of the activities observed in loose space were performed for the enjoyment of the activity itself and were self-selected. Research shows an increased likelihood of physical activity in settings where the basic psychological needs of choice, challenge and social relatedness are met (Deci & Ryan, 2002). The freedom of choice to pursue alternative activities is supported in loose space because of a reduced sense of regulation. Challenge and risk can be experienced in loose space. Design intervention at McLennan Bike Park in Kitchener has improved participation in BMX biking by offering elements that challenge a range of skill sets. The findings of this research support Clements and Dorminey’s Spectrum Matrix approach to landscape design with consideration engaging flow. The popularity of McLennan Bike Park for all ages illustrates the capacity of loose space to deliver appropriate levels of challenge for participants to enter a state of flow.

Social support networks developed through continued use of a space are evident in loose space. The multifunctional nature of the space attracts all age groups and a variety of user groups. Loose space supports undefined uses that are chosen by the community and therefore can become an expression of local identity. The users of loose
space reported that community interaction in collectively creating something of local amenity was an attraction to using loose space. Sarah Orchard, coordinator of the Green Streets Program, attributes the unexpected benefit of community building and social interaction gained by permitting public use of municipal loose space as a primary factor in the success of the program.

**Municipal Policy, Physical Activity and Loose Space**

Municipal objectives surrounding physical activity and health tend to focus on inclusivity and equitable access for all, responding to the evolving physical activity needs of the public and “shifting the balance” towards providing more opportunities for unstructured forms of physical activity. A survey of 4 different typologies of loose space indicates that these spaces are responding to the evolving physical activity needs of the public. Loose space seems to be encouraging physical activity as 70% of the survey respondents were meeting the Canadian Physical Activity guidelines.

As indicated by key informant Alan Duncan, many municipal policies to secure open green space are not keeping pace with population and development growth. There is a growing need to use existing space creatively to provide opportunities for outdoor physical activities. A site analysis of loose space in Vancouver indicates that 18.71 hectares of loose space exists within the 314 hectare study area. The addition of loose space to the current provision rates of green space can help to improve accessibility to opportunities for physical activity. Additionally, loose space could have the greatest impact on improving physical activity levels by creating an inventory of loose space that indicates the sites that possess the most environmental qualities that are correlated with
participation in physical activity. A further application of this knowledge could be used in the case of Community Improvement Plans. As outlined in Section 28 of the Ontario Planning Act (2009), privately owned loose space fulfills the requirements for receiving municipal loans, grants and tax reductions for rehabilitation.

Economics, Physical Activity and Loose Space

A population health approach argues that environmental interventions must be made a priority to improve physical activity levels. The financial burden on the healthcare system due to inactivity can be offset by a focus on health promotion rather than healthcare. Current trends such as a growing low-income population and a decrease in access to private green space illustrate the relevance of loose space in providing opportunities to free activity pursuits. Toronto’s Social Development Strategy calls for increasing the availability of community space by making city-owned space available on reasonable terms (2001). The Green Streets Program in Vancouver is an example of how public use of municipal loose space can be easily incorporated to encourage participation in physical activity.
Barriers to Use of Loose Space

Loose space has typically been perceived as lacking in value. The value of loose space lies in its ability to encourage physical activity. The findings from the survey of loose space suggest that these spaces are in fact quite highly valued by the people using the sites. The high frequency of use conveys value. People value landscapes differently. Survey results show that respondents preferred loose space to other public open spaces because it is less managed and manicured landscape.

Loose Space and Contemporary Planning Classification

Contemporary planning classification systems do not recognize loose space as a spatial typology within the urban environment. However, loose space is evident in all urban centres as it is created as a by-product of development. An approach to planning that can accommodate changing uses over time and spontaneous appropriation has tremendous potential for urban regeneration. Key informant findings corroborate the role of loose space as a feasible venue for incorporating physical activity uses within the existing structure of the urban environment.
Chapter 9: Conclusions

Summary of Research

The primary research goal of this study was to explore the implications of loose space for physical activity based on loose space qualities, distribution and frequency in an urban environment. Physical activity is a complex phenomenon that is influenced by multiple factors. A review of the literature was employed to gain an understanding of key underlying issues regarding the role of the environment in encouraging physical activity and theoretical exercise behaviour factors in the adoption and maintenance of physical activity. This research is unique as it seeks to draw parallels between environmental, psychological and policy-related influences of physical activity and loose space environments. Literature concerning the environmental correlates of physical activity and theoretical perspectives helped to situate the study into the larger body of research in physical activity adoption and maintenance. Inquiry into urban municipal trends relating to physical activity, the built environment and health were analyzed for compatibility of loose space as a viable option to improve physical activity.

Twenty-seven users of loose space from four loose space typologies were surveyed to determine how loose space was being used and its influence on physical activity. Questionnaire findings revealed that 70% of loose space users were meeting the Canadian Physical Activity Guideline recommendations. The most influential variable to the use of the site was listed as the ability to appropriate the physical environment for individual purposes.

Key informant semi-structured interviews with representatives from the fields of public health, municipal organizations and landscape architecture were conducted to
determine the capability of loose space to influence physical activity. Responses suggest that choice, challenge and social interaction are 3 of the most influential factors for adoption and maintenance of physical activity. Opportunities for choice, challenge and social interaction were found to be present in loose space environments. Key informants indicate that unstructured loose space qualities can be presented in a structured loose space through design or programming intervention. Successful integration of structured loose space uses of high and low-risk are achievable and can result in improving desirable physical activity opportunities to the public realm.

The implications of loose space for physical activity were further explored in terms of distribution and frequency of loose space in an urban environment. A combination of observational and remote mapping of an urban intensifying area of Vancouver, B.C. reveals that neighborhood scale green space deficiencies do exist. Based on Vancouver’s green space per capital allotment targets, the addition of loose space can alleviate deficiencies and help to bring Vancouver’s provision of green space up to the national average. Map findings show there is a high frequency and distribution of loose space within a walkable area. Implications of accessibility and connectivity verify that improved public access to loose space could positively influence physical activity.

Design recommendations and strategies for reclaiming loose space for physical activity were developed to increase awareness of the potential for reclaiming loose space in the pursuit of improving health. The guide provides strategies and design considerations for the improving access to public and privately owned loose space and how loose space qualities can be enhanced through design and programming.
Limitations of the Study

There were a number of limitations to this study. Firstly, seasonal weather constraints hindered the ability to collect data for the survey of different typologies of loose space. Time constraints of the thesis process did not allow for summer collection of data, which is typically the time of year when more people would be using these outdoor spaces. Conversely, this limitation also highlighted the fact that there are seasonal implications for the use of loose space. Survey data collection was also limited by the fact that one researcher cannot access all of the loose space users present. Multiple research assistants could enable data collection from more of the sample population.

Secondly, using Google Earth and Street View to identify the loose space in a given area is limited by the currency of the satellite imagery provided. Google Earth images may be up to 3 years old. Vacant or abandoned typologies of loose space are constantly changing in terms of location. Therefore to gain an accurate representation of loose space a combination of Google Earth and physically observing the identified sites is recommended.

A third limitation of this study pertains to the applicability of the “Loose Space for Physical Activity” guide. The guide is not conclusive but rather a starting point to stimulate thinking around a complex phenomenon. It is not within the scope of this study to address issues other than the relationship between physical activity and loose space. The feedback from the evaluations is constructive in many ways and can offer ideas about future research concerning loose space. A limitation of this method of evaluation is that it could carry some evaluator bias. Due to time constraints, this process
was limited to three evaluators from the same disciplines that were used in the key informant interviews. Drawing evaluation feedback from a larger number of evaluators could provide a more holistic view from each discipline.

**Future Research**

This study was a preliminary exploration of the relationship between loose space and physical activity. It appears that a relationship does exist and further research is needed. Research concerning loose space could investigate more specifically the environmental variables present in loose space and how they influence physical activity levels. The ability to modify and appropriate the environment coupled with a decreased sense of regulation warrant greater examination in regards to physical activity adoption and maintenance. Identification of specific loose space environmental correlates of physical activity could aid in the creation of a loose space inventory. The inventory could thus reveal the sites that will make the biggest impact in encouraging physical activity and resolve green space deficiencies.

Another area for future research involves the multifunctional nature of loose space. The scope of this study was limited to the relationship between physical activity and loose space. Future research into how loose space affects social and mental wellbeing may assist in promoting public awareness and use of such spaces.

A third area that warrants future research goes beyond the scale of individual loose space sites and into the planning realm. Finding ways to incorporate loose space into the planning and management of cities could help to create a network of loose spaces throughout the urban fabric. Research that focuses on when and how in the planning
process planners could have the greatest impact in creating or promoting loose space may help to achieve greater public access to loose space.

In conclusion, loose space possesses qualities found to be compatible with correlates of physical activity behaviour. Freedom of choice, decreased levels of regulation, and appropriation and modification of the environment are special qualities unique to loose space. In addition, the distribution and prevalence of loose space in urban areas make it a viable option for providing publically accessibly green space. Results from this study show that use of loose space seems to have a positive influence on physical activity.
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Appendix A: Loose Space Questionnaire

Loose Space Questionnaire

Date: ____________________________  ☐ Male  ☐ Female
Age: ____________________________

Section 1: General Physical Health

1. Please rate your physical health:
   ☐ Excellent  ☐ Good  ☐ Average  ☐ Poor  ☐ Very Poor

2. Moderate physical activity is any activity that is intense enough to cause a increase in breathing rate, heartbeat, and body temperature. If you had to estimate, how many times in the last 7 days did you participate in moderate physical activity for about 20 minutes at a time?
   Please write estimated number: ______

Section 2: Use of the Space

3. How often do you use this space (or a space similar to this) for about 35 minutes at a time?
   ☐ More than 4 days per week  ☐ Never
   ☐ Once a week  ☐ First time
   ☐ Once a month
   ☐ Less than once a year

4. Is your house with in walking distance from this space? (5-10 minutes).
   ☐ Yes  ☐ No

5. Please describe the activities you like to do most in this space (or similar type of space):
   ____________________________________________________________
   ____________________________________________________________

6. Please describe what you like most about this space:
   ____________________________________________________________
   ____________________________________________________________

Section 3: Characteristics of the Space

7. Please rank the items listed from 1 to 5 according to what is most important to you when you use this space.

<table>
<thead>
<tr>
<th></th>
<th>1st choice</th>
<th>2nd choice</th>
<th>3rd choice</th>
<th>4th choice</th>
<th>5th choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Environmental features I can adapt for my own use</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Presence of paved trails, benches, washrooms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Low levels of regulation and surveillance</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Proximity to my house</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Section 4: Physical Activity Behaviour and the Environment

8. Please check the box that best shows how you feel about each of the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of my main reasons for exercising is to manage my weight</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>It is important to me to be able to choose from multiple types of physical activity rather than doing one thing continually</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>If I know I'm not good at a sport I won't try it</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I enjoy physical activity that is led by an instructor</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Exploring how to do something physically on my own time motivates me</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I prefer participating in physical activity when it's with my friends and/or family</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Traditional sports activities are more interesting to me than finding my own ways to be physically active</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

Thank you for completing the survey!
Appendix B: Loose Space Inventory

Inventory of Potential Loose Space: Vancouver, B.C., Canada

This data is a preliminary exploration into the potential existing loose space available with in an urban designated area of the City of Vancouver. It recognizes that quantity does not equate to quality PA participation. It is provided as a tool to guide further research and offers a potential alternative space for outdoor PA. As guided by current research, a walkable distance can be defined as 1 kilometer which translates into about a 10 minute brisk walk (Coombes et al., 2009; Maas et al., 2007).

1. Reference #: 
2. Area (hectares): 
3. Types of activities the space was designed for:

4. Typology of Loose Space:  
   - Unstructured by-product of engineering  
   - Structured brownfield  
   - Unstructured figure/ground  
   - Structured transportation  
   - Structured abandoned or vacant  
   - Structured currently in use

5. Environmental Correlates of Physical Activity Assessment

A) Environmental Quality:
   - Open to all  
   - Elements that can be appropriate for own use  
   - Freedom to pursue a variety of activities  
   - Opportunities for exploration, discovery, manipulation of environment

B) Accessibility: Is there access to public transport with in 1 block of the space?
   - Yes  
   - No

C) Safety: How visible are surrounding roads?
   - Clearly visible (@ least 1 road visible)  
   - Partly visible (@ least 1 road partly visible)  
   - Not visible (no roads visible)

   How visible are surrounding houses?
   - Clearly  
   - Partly  
   - Houses cannot be seen
Appendix C: Key Informant Interview Questions

Kim Harper, December 9, 2011. Key Informant Interview Questions: Alan Duncan, Vancouver Parks and Recreation Environmental Planner

Loose Space: Rethinking an underused space capable of encouraging greater participation in physical activity

Briefing
- My research will examine loose space and its capability to increase levels of physical activity (PA) by exploring qualities and characteristics of such spaces and how that relates to current physical environmental and psychological factors enabling PA.
- Definition of loose space and LS framework (see attachments)
- **Goal of study** = To evaluate LS as an alternative public open space to promote PA. What is LS’s influence on health behavior?

Introducing Questions
1. How did you first get interested in the field of environmental planning?
2. How long have you been working with Vancouver Parks and Rec?

Parks, Green Space and Physical Activity (PA) Trends: This series of questions addresses the relationship and trends associated with parks and PA.

3. In your opinion, how important is the relationship between parks to physical activity in an urban environment?
4. There seems to be a growing trend towards greater participation in unstructured PA. Can you please elaborate on this?
5. The cities population has a wide variety of PA needs. In a diverse park system, how important is it that all parkland classifications fit inside a box?
6. Can you please tell me about how the C.O.V. determines that 1.1Ha/1000 people is an adequate ratio of green space?
7. Research involving environmental correlates of PA has shown that proximity to green space in urban areas is associated with higher levels of PA. Is walkability taken into account for parkland allocation?
8. I’d like to ask you about the concept of providing quality Vs. quantity for parks. Can you describe what kinds of things “quality” refers to?
9. How are alternatives to traditional activities integrated into the park system?
10. Proposed activities can sometimes be risky (skateboarding, bmx biking, etc). How do you approach that in terms of safety and liabilities?

Policy and PA: These questions assess how policy can affect PA levels.

11. Are policies such as density bonuses and park dedication effectively working to meet targeted per capita allotment?
12. What is your opinion on the role of public/private partnerships in increasing PA?
13. With a growing population, what are the challenges associated with meeting per capita parkland allotment?
14. In the Downtown District, 4/19 areas are zoned for parks and open space. Based on the urban design principle of mixed-use, in the future what direction do you see zoning by-laws moving? Is there potential for more outdoor spaces to engage in PA in the urban core?

Loose Space (LS) and PA: This set of questions explores the potential capability of LS as an alternative public open space to participate in PA.

15. Based on intensification and lack of space for acquisition of new parkland, what do you think the “new urban park” will look like?
16. Do you think there is a place and need for alternative types of PA and PA environments?
17. I would like to ask you about the Green Streets Program. How did it get started? Has it been successful? Benefits and challenges?
18. What is the strategy for approaching programs such as “Green Streets” in terms of city standards of service?
19. In your opinion, based on qualities and characteristics of loose space, could it offer a new typology of recreational space in the urban environment?

Concluding Questions

20. Do you have any final recommendations concerning parks or policy that could assist my research?

Loose Space: Rethinking an underused space capable of encouraging greater participation in physical activity

Briefing

• My research will examine loose space and its capability to increase levels of physical activity (PA) by exploring qualities and characteristics of such spaces and how that relates to current physical environmental and psychological factors enabling PA.
• Definition of loose space and show LS framework
• Goal of study = To evaluate LS as an alternative public open space to promote PA.
  What is LS’s influence on health behavior?

Introducing Questions

21. How did you first get interested in the field of public health?
22. How long have you been working in the field of public health?

PA and Public Health Trends: This series of questions addresses the evolution of PA trends.

23. There seems to be a move towards reducing barriers to PA rather than trying to change people’s behavior. Could you please elaborate on this?
24. Do you think that the concept of daily moderate intensity PA and accumulation of 30 min has increased PA behavior more than the older concept of vigorous intensity to achieve health benefits?
25. Current research has found that less active people are more likely to adopt and maintain unstructured PA rather than structured. Have you found this to be true in your experience?
26. What strategies seem to be most effective in targeting sedentary populations?
27. What are the main barriers why people don’t become physically active? What are the main reasons people give for being regularly PA?

Psychological Theory and PA: These questions deals with cognitive processes related to PA.

28. In terms of theoretical frameworks for PA adoption and maintenance, is there a specific framework more often adopted by public health agencies such as In Motion?
29. How effective do you think concepts like observational learning and self-efficacy are in PA?
30. Could you speak to the concept of social support and social networks in PA adoption and maintenance?
31. Based on what you’ve encountered, what are the most influential cognitive factors that motivate people to be and stay active?
32. Are you aware of the Theory of Flow (Csikszentmihalyi, 1990) and the Theory of Multiple Intelligences (Gardner, 1983)? If not, I can describe them. Do you think these theories could be effectively applied to inform the design of more meaningful and engaging PA landscapes based on your knowledge of people’s cognitive processes towards PA?
Physical Environment and PA: This set of questions investigates how environmental variables affect PA.

33. Some people believe that research into psychological factors pertaining to PA will not be useful if in the end our environment inhibits it. Can you elaborate on that?
34. From your knowledge, what are the most influential environmental variables that either enable or inhibit PA?

Policy and PA: These questions deal with how policy can affect PA levels.

35. How do you believe policy has affected population wide PA levels? Are there any positive examples you can think of?
36. What is your opinion on the role of public/private partnerships in increasing PA?

Loose Space (LS) and PA: This set of questions explores the potential capability of LS as an alternative public open space to participate in PA.

37. Urban environments are changing. Outdoor public open space is becoming increasingly scarce. Do you think there is a place and need for alternative types of PA and PA environments?
38. In your opinion, based on qualities and characteristics of loose space, could it offer a new typology of recreational space in the urban environment?

Concluding Questions

19. Do you have any final recommendations concerning PA that could assist my research?
Kim Harper, January 6, 2012. Key Informant Interview Questions: Sarah Orchard, Green Streets Coordinator, Engineering Services, City of Vancouver

**Loose Space: Rethinking an underused space capable of encouraging greater participation in physical activity**

**Briefing**
- My research will examine loose space and its capability to increase levels of physical activity (PA) by exploring qualities and characteristics of such spaces and how that relates to current physical environmental and psychological factors enabling PA.
- Definition of loose space and LS framework (see attachments)
- **Goal of study** = To evaluate LS as an alternative public open space to promote PA. What is LS’s influence on health behavior?

**Introducing Questions**
39. How long have you been working with the City of Vancouver?
40. How did you first get involved with the Green Streets Program?

**The Green Streets Program:** This series of questions investigates the program itself
41. When did the Green Streets program begin and what was the impetus for initiation?
42. Why is the program is managed by Engineering Services rather than Parks & Rec?
43. Are you aware of any other urban municipalities that have a program similar to Green Streets? Precedents?

**The Process:** This set of questions explores the implementation, management, and challenges
44. How does the city identify which sites are appropriate for use by the public?
45. It seem like gardening is the main activity supported by green streets. Are there any other activities that the city tolerates in these loose spaces?
46. If a citizen came across a loose space site that they would like to appropriate for gardening, how should they go about it? What steps should they take?
47. Are these sites monitored by the city?
48. Can you please speak to the operating budget for the program?

**Liability:** These questions address issues that pertain to liabilities involved running the program
49. In terms of management, the city has standards of service, is it possible or necessary that these found spaces comply? How do you deal with situations where people do not comply?
50. To date has there been any liability issues? What is the protocol if issues arise?
51. In your opinion, do the community benefits of this program outweigh the liabilities?
52. Guerilla type activities have and will continue to occur. Such activities possess qualities that draw people to participate that are different than regulated activities. In your opinion, how important is it that the city be involved in the use of these loose spaces?

**Evaluating Green Streets:** This set of questions is meant to determine the level of success of the program
53. From the point of view of the city, has this program been successful? Will the COV continue down this road?
54. What have been some of the beneficial outcomes from Green Streets?
55. Other than liability issues, have there been any other challenges along the way?
56. Based on the progress of Green Streets, would you recommend that other urban municipalities initiate a similar program?
Concluding Questions

57. Do you have any final recommendations concerning collaborative and cooperative partnerships between the public and the municipality that could assist my research?

**Loose Space: Rethinking an underused space capable of encouraging greater participation in physical activity**

**Briefing**
- My research will examine loose space and its capability to increase levels of physical activity (PA) by exploring qualities and characteristics of such spaces and how that relates to current physical environmental and psychological factors enabling PA.
- Definition of loose space and LS framework (see attachments)
- **Goal of study** = To evaluate LS as an alternative public open space to promote PA. What is LS’s influence on health behavior?

**Introducing Questions**
58. How long have you been working in landscape architecture?
59. What was your job title when you were working for IBI/PEIL Group in the design of McLennan Bike Park?

**The Design Process of McLennan Bike Park**
60. What was the impetus for converting McLennan into an official municipal park?
61. What role did the city play in the design process? Public participation?
62. In your opinion, do you think there is a trend moving towards provision of higher-risk action sports? Is successful implementation possible?
63. Could you please describe some of the major design challenges of this project?

**Liability and Management**
64. Can you please describe what is meant by the term “design liability” and how it influences such a project?
65. Who does the burden of responsibility fall on once the project has been completed?
66. How does risk assessment factor into the design process? Are there best practices/standards to minimize risk?
67. In terms of maintenance of the site, do designers have to outline specific maintenance issues for the physical elements of the park to remain at their safest?

**Evaluating Implementation**
68. From your point of view, has the design of McLennan Bike Park been successful?
69. Would you say that the bike park is more used now that it is officially sanctioned or before when it was self-regulated?
70. In your experience with this project, has the atmosphere of self-governing changed much since the park became officially regulated?
71. Based on your experience in the design and implementation of McLennan, would you recommend that other urban municipalities take on such projects?

**Concluding Questions**
72. Can you offer any recommendations for future collaborations with a municipality in implementing an action sport environment?
73. In your professional opinion, can the design profession contribute positively to the processes of evolution from an unstructured to structured loose space while still retaining some characteristics of loose space? (freedom of choice, variety of activities, manipulation, discovery, meaningful PA experiences)
Appendix D: Design Recommendations & Strategies: Reclaiming Loose Space for Physical Activity

Reclaiming Loose Space for Physical Activity: Design Recommendations & Strategies

Kim Harper | Master of Landscape Architecture | University of Guelph, Ontario, Canada

Making Better Use of Existing Space
Examples of Loose Space Typologies

Structured

Brownfield: Landschaftspark Duisburg-Nord, Germany

This former site was an industrial blast furnace now repurposed as a 230 hectare multifunctional public space. The ore bunkers shown here are now used for climbing walls. There are over 400 different climbing routes ranging in degrees of difficulty.

(Vendrus, 2009)

Vacant and/or Abandoned: LentSpace, Manhattan, NY

LentSpace was previously a unused vacant site. The site is a combination of city-owned public land and privately owned space. A partnership allows public temporary use of the site for artistic programming including physical activity opportunities for gardening, movable art installations and performances.

(Nemeth, 2011)

Unstructured

By-product of Engineering: Underpass Park, Toronto

Underpass Park is an example of reclaiming a derelict space for encouraging physical activity. This 1 hectare site provides opportunities for gardening, public art, basketball and ball hockey. A section of the site was left unprogrammed to encourage local uses as decided upon by the community.

(Skira, 2011)

Figure/Ground Relationship: Woodwards Building, Vancouver

In the redevelopment of the Woodwards building, 3 buildings come together to produce residual loose space that was converted into an atrium. It is a multifunctional public open space that is used for basketball, gathering and public events.

(Vancity Buzz, 2009)
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Purpose

The intent of this guide is to raise awareness about the value of loose space for physical activity. This guide provides strategies and design considerations for improving public use of municipal and privately owned loose space.

Scope

The scope of these recommendations extends to landscape design and urban planning professions. The guide may also support the decision making for use of loose space by municipalities, private developers and community organizations.

Value

The Ottawa Charter for Health Promotion (1986) was the first to recognize that the creation of environments that support physical activity was at the heart of public health promotion. The physical activity research community proposes that environmental interventions that enable physical activity can target a greater percentage of the population than individual interventions can (Frank, Schmid, Sallis, Chapman and Saelen, 2005; Giles-Corti, Timperio, Bull and Pikora, 2005). A focus on specific loose space qualities and distribution holds the potential to encourage more of the population to be active.

Potential Implications

The built environment has a direct influence on physical activity. Green space usability and green space accessibility have implications for the health of urban communities. This guide purposes loose space as an alternative typology of space for encouraging healthy behaviours in response to the challenges associated with growing rates of inactivity.
The Problem

In Canada, levels of obesity are on the rise despite the well-known health benefits of regular physical activity. Statistics Canada (2011) reveals that 63% of Canadians are not active enough to achieve health benefits. There are inextricable links between the built environment and health. Our modern environment is one of efficiency in which our daily living patterns require less physical effort than they used to. In Canada, 80% of the population lives in urban areas. Statistics Canada (2007) found that residents of Canada’s largest cities generally reported lower levels of physical activity than those in smaller cities and less populated areas. Another trend contributing to inactivity in the urban environment is a growing shortage of accessible open green space. Proximity to green space in urban areas is associated with higher levels of physical activity (Coombes, Jones and Hillsdon, 2010; Frank, Engelke and Schmid, 2003; Maas, Verheij, Groenewegen, de Vries and Spreeuwenberg, 2006). As access to green space decreases so does the likelihood of participation in physical activity. Growing cities are in most need of access to open green space but are least able to obtain it because of the high cost of land and development pressure on the land (Maas, et al., 2006; United Way of Toronto, 2002).

This guide suggests that loose space may provide a viable solution to improving physical activity levels by providing alternative activities perhaps more desirable to more of the population. Physical activity needs are changing as the population evolves demographically and culturally. Traditional forms of physical activity do not appeal to all segments of the population. Additionally, the distribution of loose space in an urban environment could provide an innovative solution in combating the growing shortage of accessible space to recreate.
What is Loose Space?

Loose space is part of the ordinary, common urban landscape. It can be found in any city as it is a by-product of urbanization. Trancik (1986) argues that every modern city has vacant, unused land in its downtown core and that hundreds of acres of loose space can be found in any major American city. An increase in the variety of street types, land-uses and concentration of activities gives rise to the creation of loose space. Although loose space constitutes a large portion of the urban landscape it has been a relatively neglected area of study because it is beyond the scope of traditional land-use planning classifications. Loose space can range from vacant and/or abandoned lots to brownfield sites to residual left over spaces produced from road layout or engineered structures. Appendix A describes the various typologies of loose space in greater detail.

Each loose space site operates under a spectrum of different conditions. They range in size, shape, degree of regulation and ownership can be private or public. Such a diverse variety of loose spaces encourage a wealth of creative activity experiences not possible in other themed static public open spaces. The use of loose space can occur alongside an existing assigned use, where a previous use once existed, or where no use ever existed. The following section will describe the qualities inherent to loose space that encourage physical activity.
Loose Space and its Implications for Physical Activity

The level of regulation of a loose space can vary from no regulation, or self-directed regulation, up to official regulation. However, loose space is typically subject to less intense regulation which tends to impart a sense of freedom to choose when, where and what kinds of activities to pursue. Loose space enables people to engage in alternative forms of physical activity that are not available in other more heavily constrained public spaces. A major difference between loose space and other public open space or park environments is that in loose space an individual can appropriate environmental elements for their own use. Users can become active creators by interacting with and making informal changes to the physical environment to varying degrees depending on the site. New spatial experiences are possible because users actively appropriate the physical landscape to meet their own needs. Physical elements are appropriated in inventive ways that are in contrast to the “functional” urban space and its sedate patterns of use (Franck & Stevens, 2007). Loose space is that it is constantly evolving in form and use.

Epidemiological research has found that moderate intensity forms of physical activity can provide health benefits (Frank, et al., 2003; Centers for Disease Control and Prevention, 1996). Moderate intensity physical activity involves working hard enough to noticeably raise your heart rate and requires a moderate amount of effort. To improve the health of those who are not meeting the recommended physical activity guidelines it is necessary to provide alternative physical activity choices to reduce barriers to participation. Many of the activities pursued in loose space can be characterized as
moderate intensity and can achieve the same health benefits as traditional sports. The
uses of loose space are considered alternative because they are different than the
activities pursued in conventional primary open spaces. Figure 1 shows some examples
of the types of activities that can be found in loose space.
Fig. 1 Examples of Alternative Forms of Physical Activities Found in Loose Space
**Loose Space & Exercise Behaviour Theory**

When considering how external environmental factors can enable health it is important to address how internal psychological processes may respond to landscape conditions. The compatibility of loose space with principles from two leading health promotion models, self-determination theory and social cognitive theory, suggest that loose space is an environment that can fulfill the basic psychological needs for adoption and maintenance of physical activity. Figure 2 is a representation of how specific exercise behaviour principles can be accomplished by specific qualities possessed by loose space.

---

**Fig. 2** The Relationship between Loose Space Qualities and Principles from Social Cognitive Theory and Self-Determination Theory
Loose space is an unstructured environment that allows for choice in a range of physical activities. Unstructured physical activities are informal activities of low to that are individually oriented. It has been found that unstructured forms of physical activity are easier for people to adopt and adhere to (Foot, 1996; Frank et al., 2003; Dunn et al., 1998). Unstructured activities can be shorter in duration, require less specialized equipment, facilities and money.

Self-determination theory argues that intrinsically motivated participation in physical activity is more likely to be maintained (Deci & Ryan, 2002). Meaningful physical activity experiences are possible when the basic psychological needs of autonomy, competence and relatedness are met. Autonomy is when a person perceives they have real choices and are at the origins of their own decisions. Loose space generally has a reduced sense of regulation that creates an increased sense of freedom to self-select activities. This sense of freedom allows individuals to engage in activities they might not otherwise try in more constrained environments. The sense of choice is also fulfilled in loose space because of its multifunctional nature. Loose space has the capacity to accommodate a diverse variety of activities simultaneously. Competence refers to an individuals need to feel a sense of mastery and challenge. Competence is enabled by freedom of choice. An individual will self-select an activity to pursue that they deem challenging and appropriate to their own abilities and thus experience greater success. Challenge can be pursued through exploration and experimentation. Progressions of appropriate challenge are self-chosen. Relatedness refers to having satisfying and supportive relationships.
Social networks and social supports have been found to positively impact decision making regarding health behavior (Allender, Cowburn and Foster, 2006; Katzmarzyk and Ardern, 2004). There are many opportunities for social interaction in loose space. Loose spaces is a communal environment where anyone seems entitled to appropriate elements for their own use provided the space remains open for other to use. The multifunctional nature of loose space invites different user groups and different age groups to cohabitate the site. Loose space accommodates transformation and change attracting a variety of users for different reasons. Revitalizing a site through indeterminate occupation fuels a diverse social atmosphere to promote social interaction.

Social Cognitive Theory argues that the concept of self-efficacy is the single most important variable in determining behaviour change (Bandura, 1998). Self-efficacy is the belief about the personal capacity to perform a given behaviour when faced with a variety of challenges. According to Karen Armstrong, WDG In Motion Public Health Coordinator, children who are typically inactive are far more likely to try an activity in an unstructured and unregulated environment than a structured organized sport. Unstructured environments allow them to build confidence in their abilities through personal choice of activity and by providing appropriate level of challenge (personal communication, January 10, 2012).

The ability of loose space to facilitate the basic psychological needs of autonomy, competence, relatedness and self-efficacy indicate that it may be a desirable environment for more of the population to be active. The next section will discuss how loose space can encourage physical activity in relationship to accessibility.
Loose Space and Accessibility Challenges

In 2006 nearly half of all Canadians, were living in the country’s 3 largest urban areas: Montreal, Vancouver and the Greater Golden Horseshoe of Southern Ontario. Between 2001-2006 the population growth in these 3 areas represented more than half of Canada’s total population growth (Statistics Canada, 2009). Population growth coupled with intense development has resulted in a growing shortage of public access to open green space. Figure 3 shows that actual provision rates seem to be exceeding the municipal standards in most cases. However, it also indicates that Vancouver, Montreal and Toronto (Canada’s largest cities) are among the lowest provision rates in Canada.

(Adapted from Lindsay, 2004)

Fig. 3 Legislated Parkland Dedication Rates in Canada’s Provinces and Territories
A site analysis of a 314 hectare site in Vancouver was conducted to determine where loose space existed and if its addition to current green space standard provision rates could help to achieve Vancouver’s goal of creating accessible green space within a walkable distance from anywhere in the city. A walkable distance is defined as 1 kilometer, or about a 10-minute brisk walk (Coombes et al., 2009; Maas et al., 2006). Figure 4 shows a total of existing municipal green space of 18.71 hectares. The identified loose space accounts for 22.49 hectares. This example reveals that loose space in an already dense urban fabric does exist. The frequency and distribution indicate that in terms of accessibility, loose space could offer a walkable environment for recreation opportunities. The addition of loose space was found to alleviate neighborhood level green space deficiencies and brought Vancouver’s standard of 1.1 hectares/1000 people up to the national average of 2.79 hectares/1000 people.

This example highlights the capability of loose space as a potential solution to acquiring open space for public recreation within a growing city. If strategically considered beyond an individual scale, collectively loose space could form a network of publically accessible open spaces. The following sections provide strategies for the renewal and preservation of loose space for physical activities.
Vancouver, B.C.

- Loose space beneath bridge
- Loose space
- Municipal parks

Total Loose Space = 22.49 Ha  \( 1:12000 \)
Total Park Space = 18.71 Ha

Fig. 4  Loose Space and Municipal Green Space with in a 1 Kilometer Radius Walkable Circle
Renewal Vs. Preservation of Loose Space

A relatively large portion of loose space exists in most urban environments that are currently being informally used by local residents or is an under used resource that could be more efficiently used if accessible to the public. As shown in Figure 5, even within Canada’s most urban cities a relatively large amount of vacant loose space exists that could be used for physical activities.

![Fig. 5 Area of Vacant Loose Space in Major Urban Cities in Hectares](image)

The use of loose space can range from temporary and spontaneous to permanent. It is not within the scope of this document to prescribe either the renewal or preservation of loose space but rather to offer strategies for both that can be applied in a contextually sensitive manner.

There is a belief that special qualities of loose space are lost the moment we try to recreate them through design intervention. On the contrary, there have been many cases in which the transformation of an unstructured loose space to a more structured loose space has retained many of the loose qualities that encourage physical activity. This guide provides design-related approaches that seek to utilize the processes at work in an
unstructured loose space. Figure 6 illustrates the 4 major attributes of loose space that encourage physical activity that can be presented in a structured loose space environment.

The following sections will describe the issue of renewal of loose space through design or programming intervention as well as the issue of preservation without intervention.
Renewal through Design or Programming Intervention: Retaining Intrinsic Loose Space Qualities in a Structured Loose Space

Loose space operates within a range of site-specific conditions creating no two sites the same. Design and programming interventions to loose space can influence the degree to which certain qualities, such as regulation, are present. A structured loose space can still retain the essential qualities necessary to facilitate physical activity. Renewal through design is an effective way to increase public awareness of a particular use of loose space. There is a general consensus among urban municipalities that safety can be minimized through proper design. Especially with informal high-risk use of loose space, renewal through design and risk management is valuable in mitigating potential risk. Figure 7 outlines recommendations for retaining looseness within a structured loose space and a description of how to carry out the recommendations.

<table>
<thead>
<tr>
<th>RECOMMENDATIONS</th>
<th>GENERAL ACTIONS REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewal rather than clean slate</td>
<td>• Look to existing uses of unstructured loose space for clues as to what the local community wants for future use of a structured loose space</td>
</tr>
<tr>
<td></td>
<td>• Enhance what is already present by showcasing unique landscape features that are compatible with desired uses</td>
</tr>
<tr>
<td>Process driven approach</td>
<td>• Design for uses that are motivated by local physical activity desires not products inserted into a community</td>
</tr>
<tr>
<td></td>
<td>• Enhance unstructured loose space through public consultation and collaborations with relevant organizations</td>
</tr>
<tr>
<td>Reduced sense of regulation for an increased sense of freedom of choice</td>
<td>• Presence of rules can be offset by integrating some opportunities for personal choice</td>
</tr>
<tr>
<td></td>
<td>• Recommendations are perceived as less prescriptive than rules</td>
</tr>
<tr>
<td></td>
<td>• Permit personalization/modification to the environment</td>
</tr>
<tr>
<td></td>
<td>• Design features that can be used/experienced in different ways as users see fit</td>
</tr>
</tbody>
</table>

Fig. 7 Recommendations for the Transformation of Unstructured Loose Space to Structured Loose Space
Fig. 8  Examples of Designed and/or Programmed Structured Loose Space

Figure 8 illustrates how unstructured loose space can undergo a process of evolution from unstructured to structured loose space while still retaining a degree of looseness. Different typologies of loose space operate within a range of constraints and possibilities. In more structured forms of loose space, the integration of design and programming can be applied in ways that still facilitate physical activity encouraging qualities. More specific ways of achieving intrinsic loose space qualities in a designed or structured loose space are summarized in the following performance standards.
### Performance Standards: Structured Loose Space Design Matrix

<table>
<thead>
<tr>
<th>DESIGN ELEMENTS</th>
<th>Multiplicity</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstructured space with few fixed structures</td>
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<td></td>
<td></td>
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<tr>
<td>- unprogramed open areas for undefined activity</td>
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<td></td>
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<tr>
<td>- flexibility to accommodate change</td>
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<tr>
<td>Spatial elements can absorb different forms of appropriation</td>
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<tr>
<td>Progression-based design</td>
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<tr>
<td>- elements of varying levels of risk for mastery for mastery</td>
<td></td>
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<tr>
<td>Use of filters to challenge different levels of physical ability</td>
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<tr>
<td>Different surface textures</td>
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<tr>
<td>Naturalized areas with a diverse range of natural elements</td>
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<tr>
<td>- less managed and manicured</td>
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<tr>
<td>Design for crime prevention through environmental design principals</td>
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<tr>
<td>- C.P.T.E.D. to consider natural surveillance, natural access, territorial</td>
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<tr>
<td>reinforcement, maintenance</td>
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<tr>
<td>On-site materials recycling</td>
<td></td>
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<tr>
<td>- use of remnant patterns of infrastructure</td>
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<tr>
<td>- reprogramming functions of existing structures</td>
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<tr>
<td>Range of landscape elements to activate varying cognitive and perceptual</td>
<td></td>
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<tr>
<td>abilities</td>
<td></td>
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</tbody>
</table>

### USE

<table>
<thead>
<tr>
<th>USE</th>
<th>Multiplicity</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serves more than one primary use, preferably 2 or more</td>
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<tr>
<td>Design responds to local physical activity needs and style</td>
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<tr>
<td>- reveals what is already present (take cues from present use)</td>
<td></td>
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<tr>
<td>Space accommodates transformation, evolution, change</td>
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<td></td>
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<tr>
<td>- personalization</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- creation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- modification of the environment encouraged</td>
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<tr>
<td>Opportunities for different types of physical movement experiences</td>
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<tr>
<td>- fine/gross motor skills</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- balance, agility, stillness</td>
<td></td>
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</tbody>
</table>
### Access

<table>
<thead>
<tr>
<th>Inclusive</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>- activity opportunities for different age groups and user groups</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessible</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>- within walking distance of residence or transit (500m-1km)</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>- open to all for use, free of cost</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Physically open</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>- ease of movement through site, permeable to the street</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emergency access provided</th>
<th>Safety</th>
<th>Dynamic Movement</th>
<th>Freedom of Choice</th>
<th>Community</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

**Multiplicity** = The capacity to accommodate diverse activities and experiences through multifunctionality (Manoloupou, 2007).

**Multifunctionality** = Refers to one space that fulfills several functions simultaneously in comparison to mixed-use that refers to a mix of development types where each unit only has one sanctioned land-use.

**Communality** = Promotes social interaction and community identity. Anyone seems entitled to appropriate the space provided it still remains open to appropriation by others.

**Filters** = Areas tailored for particular skill sets allow users to self-gauge their ability before trying something more challenging. Placement of features are situated according to skill level. (Beginner area closest to park entry. Advanced areas more difficult to get to.)
Preservation: Raising Awareness of the Value of Loose Space and Improving Access without Design Intervention

Acknowledging the health giving value of loose space and preserving it without any intervention can also enable opportunities to physical activity. The temporary, or informal, use of loose space is becoming more prevalent in today’s urban environments as people are seeking out space to pursue alternative activities. Loose space environments possess a unique condition that public participation attempts to capture. People are already using loose space in ways that they deem important. There is a self-recognition of the possibilities inherent to the space to pursue activities not originally intended for that space (Franck & Stevens, 2007). Unstructured loose space can be an expression of local activity needs and desires. This bottom-up approach to programming and designing of these spaces contributes to the health benefits gained from use of the space. Self-determined forms of regulation predict continued participation in regular physical activity and tend to result in increased perceptions of satisfaction and competence (Buckworth, Lee, Regan, Scheinder and Diclemente, 2007; Deci & Ryan, 2002; Silva, Marklan, Carraca, Vieira, Coutinho and Teixeira, 2011; Wilson, Mack, and Grattan, 2008).

Contemporary land-use classification systems are based on the assignment of function in which loose space is not recognized. This guide purposes that while loose space is perceived as without an economically productive function, the value of loose space rests in its ability to facilitate healthy behaviours. Interim transition typologies of loose space are constantly evolving and changing in location due to shifts in the global and local economies. Finding ways to integrate temporary use of such sites would allow individuals the opportunity to pursue recreational activities in the interim. Temporary
Interventions in the use of loose space can serve as testing grounds that can lead to permanent change. Figure 9 shows examples of how temporary use of loose space can be incorporated by public and private landowners.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint-use Agreements</td>
<td>Create agreements with public and private landowners for access to loose space. For example, agreements with school districts or private business owners for use of a space after business hours for undefined physical activities.</td>
</tr>
<tr>
<td>TempLot</td>
<td>TempLot is a concept based on negotiated temporary use of vacant loose space between community members. “Urban pioneers” can access online an evolving map of available vacant plots and suggest possible uses. Essentially this is a communication tool between owners and potential users to make better use of existing space. (Social Cities of Tomorrow, 2012)</td>
</tr>
<tr>
<td>Corporate Promotion</td>
<td>Corporate use of the loose space surrounding the building envelope for health promoting events to enhance corporate image. For example, Lululemon Athletica, a yoga-inspired athletic apparel company hosts free yoga classes outdoors in the loose space surrounding their building in Vancouver during the summer.</td>
</tr>
<tr>
<td>Loose Space Inventory</td>
<td>Municipalities can identify the loose space existing within their cities. This inventory can be used to strategically plan for either renewal or preservation of high priority areas deficient in green space. The example below is a loose space inventory from a 314 hectare site in Vancouver, B.C. The image on the right shows in red the loose space sites that possess the most intrinsic qualities for encouraging physical activity. These sites would therefore have the greatest impact on improving activity levels and should have priority for renewal or preservation.</td>
</tr>
</tbody>
</table>

Fig. 9 Strategies to Incorporate Temporary Use of Loose Space
The Role of Municipal Policy: Increasing Opportunities for Physical Activity in Loose Space

Population-wide levels of physical activity are directly affected by policy. Policy has the power to change the practices that impair health rather than changing the habits of individuals. Two growth management policies that seek to improve the use of loose space are Community Improvement Plans and Incentive Zoning Codes. Figure 10 describes how these policies can be applied to loose space.

Fig. 10 Municipal Policies to Improve the Use of Loose Space
Safety, Risk and Liability Issues

Loose space can bring associations of marginalized populations, criminal activity and other negative connotations. In many cases, just the opposite has been found. The concepts of self-regulation and self-sustained behavior are highly characteristic of loose space (Kamvasinou, 2006). It has been found that an increase in user safety can result from the creation of social self-governance (City of Kitchener, 2010; Hiss, 1991). The multifunctional nature of loose space invites users of all ages for a variety of activities. As a space becomes populated a sense of community can help to inspire a sense of ownership through occupation.

Risk and challenge are important components in motivation to be physically active. In spite of this, a culture of risk avoidance has encouraged us to avoid challenges and become skeptical about innovation. Risk avoidance often cancels out inventiveness. Designing for “good risks” and unpredictable situations is key in creating physically stimulating environments. Research shows that risk is sought out regardless of how safe an environment is. Children have been found to use seemingly safe playground equipment in dangerous ways because the environment was not challenging enough (Cooper, 1974). Loose space can offer a wide range of activities to provide appropriate levels of challenge for all abilities. The aim is to create challenging levels of risk without sacrificing safety.

There is no one solution when dealing with liability issues involved with the use of loose space. Solutions must be contextually based. The degree to which official regulation is necessary will also be case sensitive. To demonstrate a range of different
ways liability issues can be handled, 3 loose space sites that exhibit low, moderate and high levels of risk are shown in Figure 11.

LaFarge Quarry, Guelph
- Low level of risk, off leash dog walking, hiking, biking
- Privately owned by LaFarge, a supplier of construction materials
- Brownfield site, aggregate quarry inactive since 1994
- LaFarge is aware people are using the site informally but has taken no action. People use the site at their own risk and accept that they are technically trespassing

Green Streets Program, City of Vancouver
- Moderate level of risk, gardening traffic circles and corner bulges
- Municipally organized program
- Formalized application process so the City can carry liability insurance on all registered volunteers
- Context Sensitive: Vancouver has an older city fabric with narrower streets which slows traffic. Volunteers only permitted to garden sites located on calm residential streets

McLenman Bike Park, City of Kitchener
- High level of risk, BMX biking course with dirt jumps
- Employ professional design expertise to minimize risk for an activity that was going to continue regardless of intervention
- Design liability = Must demonstrate the space is designed, built and maintained to a certain standard
- Detailed grading plans, field testing, ensuring built as per plans, maintenance program to monitor conditions of the built elements
- Designer knowledge and experience is a must high-risk specific uses such as “action sports” (BMX, skateboarding, inline skating, snowboarding)
Summary

There is an inextricable link between the environment and health. As cities intensify, the issue of accessibility to open green space becomes more important. Access and provision are only two parts of the physical activity equation. Environments that support alternative forms of physical activity are necessary to improving participation rates. Conventional forms of physical activity do not appeal to a large proportion of the population. Loose space encourages alternative forms of movements and actions that can achieve health benefits. The proliferation of loose space in combination with its physical activity friendly attributes makes these spaces a valuable health resource.

Designers and planners of the landscape hold the power to be pro-active in creating environments that can enable healthy behaviours rather than inhibit them. This guide was developed to increase the awareness of the value of loose space for physical activity. The strategies outlined here are intended to spark a new way of thinking about loose space as a resource rather than a neglected part of the urban fabric. This guide provides preliminary evidence for the support of loose space to encourage physical activity. Loose space has the potential to be a practical application for addressing changing physical activity needs within the existing structure of a city.
References


City of Kitchener. (2010). *City of Kitchener Parks Strategic Plan*.


Lindsay, L. (2004). *Green space acquisition and stewardship in Canada's urban municipalities: Results of a nation-wide survey.* Vancouver, Canada: Evergreen.


United Way of Greater Toronto. (2002). *Opening the doors: Making the most of community space*. Toronto:

Image References


Appendix A: Typologies of Loose Space

Loose Space

1. The space is outdoors
2. The space is being used in a way other than intended
3. Actions must be voluntary
4. The space possesses particular physical features that invite people to appropriate them for their own use
5. People have actively fashioned the space to suit their needs
6. Freedom of choice to pursue a variety of activities
7. Must be freely accessible to all
8. Regulation ranges from self-organized to officially regulated

Structured Space
- Developed from a land-use perspective
- Planned for particular assigned function at one time
- Varying degrees of regulation

Unstructured Space
- Undeveloped from a land-use perspective
- Not formally organized
- No intended use, uncommitted space
- Reduced level of regulation
- Lacking conventionally appealing features

Interim Transition Sites
- Previously assigned function now detached
- Publicly or privately owned
- Self-directed regulation
A. Brownfields
B. Vacant and/or Abandoned Sites

Currently in Use
- Publicly or privately owned
- Imposed formalized regulation

Residual Space
- Left-over unstructured landscape
- Self-directed regulation
- Adjacent to spaces with fixed delineated function
A. Space around a building envelope
B. By-Product of Engineering
Appendix E: Evaluations of Design Recommendations & Strategies

Cover Page

RECLAIMING LOOSE SPACE: AN UNDER USED RESOURCE TO ENCOURAGE PHYSICAL ACTIVITY

Evaluation of the “Recommendations for the Design and Management of Loose Space”

The purpose of this evaluation is to determine the utility of the proposed “Recommendations for the Design of Loose Space” (RDMLS) in providing guidance and support to the design and decision making involving loose space. The evaluation is guided by principals and theory associated with physical activity in regards to urban design, exercise behavior and current municipal trends.

Your input from this evaluation will be used to further my thesis research and contributes to the body of knowledge aimed at improving overall levels of physical activity through design of the physical environment. Your participation is greatly appreciated.

Instructions

1. Open the pdf evaluation in Adobe Acrobat. To download a free Adobe Acrobat Reader follow this link: http://get.adobe.com/reader/
2. The pdf is an interactive form that is fillable by computer. Please place a check in the appropriate box for each question by clicking once on the chosen box. Click twice to remove a check.
3. At the end of each section there are text boxes to write comments. To insert comments into the text box, click once on the box and wait for the cursor to appear.
4. Once you have completed the evaluation please save the file to a location of your choice.
5. Please attach the file to an email and send it to: kharpe01@uoguelph.ca

Alternatively, you may choose to print out the evaluation and fill it in by hand then fax it to me at: 519-767-1686 (Please direct attention to Sean Kelly/Kim Harper)

Kind regards,

Kim Harper
RECLAIMING LOOSE SPACE: AN UNDER USED RESOURCE TO ENCOURAGE PHYSICAL ACTIVITY

Evaluation of the Recommendations for the Design of Loose Space

The evaluation is composed into 3 sections. Each section responds to specific concepts and principals put forth in the “Recommendations for the Design of Loose Space.” Using the given scale, please choose the box you believe best addresses the given statements. Only answer statements with in your scope of knowledge. Please check the box marked N/A if the statement does not apply to your area of expertise.

VS = very successful      S = successful      N = neutral
U = unsuccessful          F = failure          N/A = not applicable

Section 1. Urban Design and Planning Principals

The following section is guided by urban design and planning principals. Please assess the success or failure of the RDMIS in addressing the following principals.

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<th>Principle</th>
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*Sustainable Urbanism Principals (Farr, 2006)*
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*Principals for Design of Good Public Spaces, Project for Public Space (Francis, 2003).*

*Common city space Vs. Specialized themed environments*

*(Gehl, 1987)*

Comments about urban planning and design principals:

- Activities - depends on the size of the site and the range of possible or permitted activities.
- Safety - Perception of safety by neighbours might decline if the space is seen as being used by marginalised groups, or involving unwanted/unnecessary activities. Actual safety might decline if site is used for risky activities.
- Sociability - depends on whether the activities are suited to a diversity of age groups, and how 'safe' they feel.
Section 2: Public Health Policy

The following section is guided by current municipal trends in public health policy. Please assess the success or failure of the RDML in addressing the following objectives.

<table>
<thead>
<tr>
<th>Public Health Approach</th>
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<td>Create environments that support physical activity</td>
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<td>Reduce expenditures in health care by focusing on</td>
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<td>making changes to the physical environment</td>
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| Municipal Policies and Trends                                |    |   |   |   |   |     |
| Green Space & Open Space Systems                             |    |   |   |   |   |     |
| Improving public access and enjoyment of lands under public ownership |    |   |   |   |   |     |
| Per capita allotment of green space target of 1.1 ha per 1000 people within a walkable distance |    |   |   |   |   |     |
| Green space usability responds to community needs and diverse uses |    |   |   |   |   |     |

| Growth Management                                           |    |   |   |   |   |     |
| Urban regeneration to revitalize areas of the city that are largely vacant or under used |    |   |   |   |   |     |
| Adding new parks and amenities particularly in growth areas |    |   |   |   |   |     |
| Fiscal constraints encourage finding creative ways to use existing space differently |    |   |   |   |   |     |

| Public Private Partnerships                                 |    |   |   |   |   |     |
| "Open for business" approach to align community and business objectives |    |   |   |   |   |     |
| Maintain and increase public access to privately owned land where appropriate |    |   |   |   |   |     |
| Enhance role of public and stakeholder groups                |    |   |   |   |   |     |

Comments about public health policy:
Promotion of . . Depends - it might be a garden that mainly invites contemplation
Design and . . It's very hard to show reduced health costs, and if the activities are risky and involve accidents, might actually increase costs
Section 3: Application of Behavioral Theory to Inform the Design of Physically Engaging Environments

The following section explores the use of landscape elements to create active opportunities that engage the users perceptual and cognitive capacities. Please assess the success or failure of the RDMLS in addressing the following objectives.

Design solutions respond to:

Create engaging environments through:

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<td>- Understanding</td>
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<td>Users contribute to the planning, design, and management of their environment.</td>
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<td>- Exploration</td>
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<td>Richness or variety in landscapes offers different possibilities.</td>
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<td>- Enjoyment &amp; Participation</td>
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<td></td>
<td>Environment that encourages appropriation of physical elements and manipulation of the environment let the users become active creators.</td>
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</table>

Major Themes for Engaging People (Kaplan, Kaplan and Ryan, 1998)

The Spectrum Matrix (Clements & Dorminey, 2011)

- Theory of Flow
  - Environment provides opportunities to engage in activities that present appropriate levels of challenge as enter a state of flow (Csikszentmihalyi, 1990).

- Theory of Multiple Intelligences
  - Environment provide users with a range of challenges related to cognitive and perceptual abilities (Gardner, 1983).

Social Cognitive Theory (Bandura, 1998)

- Self-efficacy
  - Belief about personal capacity to perform a given behavior. Is developed through mastery of challenge.

- Outcome expectations
  - Beliefs about likelihood and value of consequences of behavior and challenges. Expectations more likely to be met if intrinsically motivated.

Self-determination Theory (Deci & Ryan, 2002)

- Autonomy
  - Self-determined choice in activity. Intrinsic motivation

- Competence
  - The need to feel a sense of mastery and challenge

- Relatedness
  - Environment supports social interaction, collaboration and social relationships.
Theory of Loose Parts (Nicholson, 1972)

- Discovery Method
  High-interaction environments with many loose parts for inventiveness and creativity. Manipulation of variables promotes experimentation.

Comments about behavioral theory and the design of healthful environments:

As a general comment, it might have all these benefits, if done properly - which is the point of your recommendations, I guess.
Section 4: Relevance and Feasibility

This section evaluates the relevance and feasibility of the RDMLs for disciplines who have the ability to positively impact physical activity levels. Please assess the success or failure of the RDMLs in addressing the following objectives.

The overall concepts outlined in the "Recommendations for the Design of Loose Space" offer:

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<td>A strength of argument and ability to support the concept of loose space and its potential to promote physical activity</td>
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<td>An understanding of the relationship between landscape design and cognitive / perceptual factors for facilitating physical activity</td>
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<td>An understanding of alternative physical activity needs and design solutions to attain them</td>
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<td>Relevance for urban design and planning related fields in creating an activity-friendly urban fabric</td>
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<td>Relevance for other fields that play a role in contributing to public health</td>
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<td>Feasible strategies to incorporate greater access and use of existing urban space for active living</td>
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<td>An innovative approach to working towards improving physical activity levels in an urban context</td>
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Comments about overall relevance and feasibility of concepts included in the RDLS:

Understanding of alternative physical activity needs - NO, you have not really given me examples, except the BMX and gardening ones - is that all there is? That is why I suggested giving a number of examples of how this space could be used.
RECLAIMING LOOSE SPACE: AN UNDER USED RESOURCE TO ENCOURAGE PHYSICAL ACTIVITY

**Evaluation of the Recommendations for the Design of Loose Space**

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Common city space vs. Specialized themed environments

*(Gehl, 1987)*

Comments about urban planning and design principles:
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<tr>
<td>- Green Space &amp; Open Space Systems</td>
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<tr>
<td>Green space provides access to communities and diverse uses</td>
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<td>- Public Private Partnerships</td>
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Comments about public health policy:
Section 3: Application of Behavioral Theory to Inform the Design of Physically Engaging Environments

The following section explores the use of landscape elements to create active opportunities that engage the users perceptual and cognitive capacities. Please assess the success or failure of the RDMLS in addressing the following objectives.

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</thead>
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<tr>
<td>- Understanding</td>
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<td>Users contribute to the planning, design, and management of their environment</td>
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<tr>
<td>- Exploration</td>
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<tr>
<td>Richness or variety in landscapes offers different possibilities</td>
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<tr>
<td>- Enjoyment &amp; Participation</td>
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Major Themes for Engaging People (Kaplan, Kaplan and Ryan, 1998)

The Spectrum Matrix (Clow & Dominy, 2011)

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<thead>
<tr>
<th>- Theory of Flow</th>
<th>Environment provides opportunities to engage in activities that present appropriate levels of challenge to enter a state of flow (Chu et al., 1990).</th>
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<td></td>
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<tr>
<td>- Theory of Multiple Intelligences</td>
<td>Environment provide users with a range of challenges related to cognitive and perceptual abilities (Landau, 1983).</td>
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</tbody>
</table>

Social Cognitive Theory (Bandura, 1986)

<table>
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<tr>
<th>- Self-efficacy</th>
<th>Belief about personal capacity to perform a given behavior. Is developed through mastery of challenge.</th>
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<tr>
<td>- Outcome expectations</td>
<td>Beliefs about likelihood and value of consequences of behavioral choices. Expectations more likely to be met if intrinsically motivated.</td>
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Self-determination Theory (Deci & Ryan, 2002)

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<tr>
<th>- Autonomy</th>
<th>Self-determined choice in activity; Intrinsic motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Competence</td>
<td>The need to feel a sense of mastery and challenge</td>
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<tr>
<td>- Relatedness</td>
<td>Environment supports social interaction, collaboration and social relationships</td>
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</tbody>
</table>
Theory of Loose Parts (Nicholson, 1972)

- Discovery Method
  High interaction environments with many loose parts for inventiveness and creativity. Manipulation of variables promotes experimentation.

Comments about behavioral theory and the design of healthful environments:
Section 4: Relevance and Feasibility

This section evaluates the relevance and feasibility of the RDMLS for disciplines who have the ability to positively impact physical activity levels. Please assess the success or failure of the RDMLS in addressing the following objectives.

The overall concepts outlined in the “Recommendations for the Design of Loose Space” offer:

<table>
<thead>
<tr>
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A strength of argument and ability to support the concept of loose space and its potential to promote physical activity
An understanding of the relationship between landscape design and cognitive / perceptual factors for facilitating physical activity
An understanding of alternative physical activity needs and design solutions to attain them
Relevance for urban design and planning related fields in creating an activity friendly urban fabric
Relevance for other fields that play a role in contributing to public health
Feasible strategies to incorporate greater access and use of existing urban space for active living
An innovative approach to working towards improving physical activity levels in an urban context

Comments about overall relevance and feasibility of concepts included in the RDMLS:

On page 8 (under site selection) you identify that one of the key characteristics of ‘loose space’ sites is that they enable a range of uses that are not possible in other (planned) public open areas. (The focus of your work being recreation) The key question that arises from your work is - how can you have a ‘structured’ loose space and still retain the intrinsic meaning of a ‘loose space’. I.e. uses that are not possible in other planned public open areas? What is the meaning and role of ‘loose spaces’ in our present day cities? How do these spaces compare to planned open spaces - Is it just a question of a lack of access or do our planned urban open spaces not cater to people’s real needs. Is loose space a more appropriate type of space / function for a park space in the contemporary city? I.e. Does urban open space meet the needs of a changing society? (similar to your definition from page 8). My inclination is that public space planning is still stuck in the 50’s where things are approached from a top down perspective - resulting in status quo open spaces, not designed with the user in mind, not encouraging real engagement and interaction with others and nature. Through the transformation of a ‘loose space’ into a planned public space there is the risk of negating/destroying the intrinsic value / meaning as that of a place of spontaneity / inventiveness / unspoken beauty/wilderness. This is the most interesting question about the area of study you have chosen, but it is only briefly addressed in the design considerations. This should be included as a ‘potential implication’ on page 2 and further discussed in the design considerations.
Evaluation: Sheila Boudreau

**RECLAIMING LOOSE SPACE: AN UNDER USED RESOURCE TO ENCOURAGE PHYSICAL ACTIVITY**

**Evaluation of the Recommendations for the Design of Loose Space**

The evaluation is composed into 3 sections. Each section responds to specific concepts and principals put forth in the “Recommendations for the Design of Loose Space.” Using the given scale, please choose the box you believe best addresses the given statements. Only answer statements with in your scope of knowledge. Please check the box marked N/A if the statement does not apply to your area of expertise.

VS = very successful  S = successful  N = neutral  
U = unsuccessful  F = failure  N/A = not applicable

**Section 1. Urban Design and Planning Principals**

The following section is guided by urban design and planning principals. Please assess the success or failure of the RDMLS in addressing the following principals.

<table>
<thead>
<tr>
<th>Connectivity</th>
<th>VS</th>
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<th>N</th>
<th>U</th>
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<th>N/A</th>
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<tbody>
<tr>
<td>Public network of public spaces at the block scale.</td>
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<td>Claiming public space for public purposes</td>
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<th>Walkability</th>
<th>VS</th>
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<th>N/A</th>
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<tr>
<td>Access to amenity within 1 km (10min walk)</td>
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<td>to increase convenience and local permeability</td>
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<table>
<thead>
<tr>
<th>Multifunctionality</th>
<th>VS</th>
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<th>N/A</th>
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<tbody>
<tr>
<td>Places with a variety of choices with a multiple uses that respond to local needs</td>
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<table>
<thead>
<tr>
<th>Community identity</th>
<th>VS</th>
<th>S</th>
<th>N</th>
<th>U</th>
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<th>N/A</th>
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<tbody>
<tr>
<td>Fosters distinctive neighborhood identity with a strong sense of place. Supports cultural diversity.</td>
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<tr>
<th>Community interaction</th>
<th>VS</th>
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<th>N</th>
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<tr>
<td>Chance encounters and social interaction</td>
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<thead>
<tr>
<th>Preserve open space</th>
<th>VS</th>
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<thead>
<tr>
<th>Mixed land-use</th>
<th>VS</th>
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<th>N</th>
<th>U</th>
<th>F</th>
<th>N/A</th>
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</table>

*Sustainable Urbanism Principals (Farr, 2008)*
Needs, rights, meanings
Responsive to needs of users. Democratic in accessibility. Meaningful for the community.

Accessibility
Improves access to opportunities for health

Activities
A variety of activities can occur simultaneously in one site

Safety
Perception of safety increases as the frequency of use increases. Eyes on the street for natural surveillance (Jacobs, 1961).

Sociability
Intersetivity and diversity of user age groups

**Principles for Design of Good Public Spaces, Project for Public Space (Francis, 2003).**

Common city space vs. Specialized themed environments
Supports inclusion, flexibility and diversity

*(Gehl, 1987)*

Comments about urban planning and design principles:
- difficult to answer these without reading and rereading the document
- document needs editing and formatting (numbering system)
- suggest adding a column for entering where the Recommendations deal with each item
- discuss with planners how "land-use" (as a legal planning term) fits into this thesis
- term "mixed-use" in "multifunctionality" definition is also unclear (what are development units?)
- mere discussion about effective public consultation methods and expectations
- unclear from the document what kinds of activities can take place, who are the users, etc.
- missing the importance of designing for user comfort (e.g. shade, warmth, resting/seating, viewing, etc.)
Section 2: Public Health Policy

The following section is guided by current municipal trends in public health policy. Please assess the success or failure of the RDMLs in addressing the following objectives.

<table>
<thead>
<tr>
<th>Public Health Approach</th>
<th>VS</th>
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<tbody>
<tr>
<td>- Promotion of environmental interventions</td>
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<td>Create environments that support physical activity to improve health at a population-wide level</td>
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<td>- Design and management of the urban environment</td>
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<td>Reduce expenditures in health care by focusing on making changes to the physical environment</td>
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<td>Municipal Policies and Trends</td>
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Comments about public health policy:
- Discussion about health expenditures not fully described in document
- More specifics are needed in the Recommendations to show how municipal policies/trends can help
- Growth areas but also high priority areas require attention
- Focus in public health policy is currently on walkability and pedestrian comfort (recommendations need to tie into this with examples - such as NYC, Toronto Public Health or Peel Health’s recent initiatives)
Section 3: Application of Behavioral Theory to Inform the Design of Physically Engaging Environments

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- Understanding: Users contribute to the planning, design, and management of their environment
- Exploration: Richness of variety in landscapes offers different possibilities
- Enjoyment & Participation: Environment that encourages appropriation of physical elements and manipulation of the environment let the users become an active creator.

Major Themes for Engaging People (Kaplan, Kaplan and Ryan, 1998)

The Spectrum Matrix (Clements & Dominy, 2001)

- Theory of Flow: Environment provides opportunities to engage in activities that present appropriate levels of challenge to enter a state of flow (Csikszentmihalyi, 1990).
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- Competence: The need to feel a sense of mastery and challenge
- Relatedness: Environment supports social interaction, collaboration and social relationships
### Theory of Loose Parts (Nicholson, 1972)

<table>
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<tr>
<th>Method</th>
<th>Description</th>
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<tbody>
<tr>
<td>Discovery</td>
<td>High-interaction environments with many loose parts for inventiveness and creativity. Manipulation of variables promotes experimentation.</td>
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</table>

**Comments about behavioral theory and the design of healthful environments:**

- Very difficult to answer the above; it would help if the answers were rephrased
- Answered the above assuming the public consultation process is effective from the public's perspective
- "Beliefs" about use and capacity are a post-occupancy measurement
- Ditto for whether the environment supports social interaction, collaboration, relationships
- Each of these could be a thesis subject
- Cannot answer the question of whether the "Design solutions respond to" each of them, because they require site-specific/situational measurements (can only use these as supporting evidence for the need for loose space)
- What exactly are these "loose parts", and how can issues of theft, vandalism, and shared-use be dealt with?
Section 4: Relevance and Feasibility

This section evaluates the relevance and feasibility of the RDMLS for disciplines who have the ability to positively impact physical activity levels. Please assess the success or failure of the RDMLS in addressing the following objectives.

The overall concepts outlined in the “Recommendations for the Design of Loose Space” offer:

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</table>

Comments about overall relevance and feasibility of concepts included in the RDLS:
References


Metro Vancouver. *Metro Vancouver 2040 shaping our future: Regional growth strategy Bylaw no. 1136*.


Wright, G. (2010). *Toronto official plan*. Toronto: