

## The Systematic Review on Physical Activity in Urban Neighborhoods

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**Abstract:** Physical activity considers as factor to make the urban neighborhoods more vibrant and alive. Besides of the physical activity's advantages for urban neighborhoods in urbanization fields, the health advantages highlighted by many scholars as one other important advantage of existing physical activity in urban neighborhoods. Based on the significance of physical activity in urban neighborhoods, this review article aims on establishing the factors associating with physical activity improvement or failures in urban neighborhoods. To do so, 25 research articles associating with physical activity in urban neighborhoods were evoked and reviewed. Despite of the existing result's inconsistencies, the significant factors affecting physical activity in urban neighborhoods are revealed. Most of undertaken articles that were focused on statistical strategies were validated and reliable physical activity is standardized. Moreover, the possible moderation of effects are surely investigated and warranted.

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### 1. Introduction

There are several researches developed methods measuring statistical research. For instance, Hamed Najafpour et al (2013) undertook social network analysis using UCINET Software and formal method to validate way-finding in Malaysian urban neighborhood and Mohsen Ghods, Hamed Najafpour et al (2014) and Mohsen Ghods, Hamed Najafpour, Naghmeh Abdolahi et al (2014) investigated on Structural Equation Model and Factor Analysis using LISREL software. In the research with the title of the systematic review on quality of life in urban neighborhoods, Hamed Najafpour et al (2014) highlighted the significance of sense of security in urban neighborhoods. Therefore, this research is developed based on researches with the focus on statistical approaches. Physical activity in urban neighborhoods considers as engine of urban neighborhoods to make them more vibrant and vital. Existing people in urban neighborhoods and communicating them to each other is one of the advantages of physical activity in urban neighborhoods. Walking, jogging, running, bicycling, window shopping and doing exercises in sport areas of neighborhoods are considered as physical activities in neighborhoods. As highlighted by Leung et al (2008) and Vogel et al (2009), physical activity in urban neighborhoods considers as a strategy due preventing

of increasing chronic diseases and health care expenditures. Centers for Disease Control and Prevention (2005) revealed that 60-70 percent of older adults do not follow the physical activity recommendations due obtaining their health benefits. Thus, there is a necessity for urban neighborhoods to improve the physical activity for this specific group of society. As suggested by Baranowski et al (1998), improving physical activity needs the physical activity's correlations. In the last decade most of the researches such as Brownson et al (2009), Brug et al (2006) and Trost et al (2002) developed the social and ecological models highlighting physical environmental correlates. In addition, Hill JO and Melanson EL (1999) acknowledged the physical activity in urban neighborhoods as a causal factor to the current obesity epidemic. In this regard, American College of Sports and Medicine (2000), Carron AV et al (2003) and Health, United States (2005) named numerous physiological and psychological health benefits of physical activity in urban neighborhoods such as reducing the risk of coronary heart disease, hypertension, colon cancer, osteoporosis, diabetes mellitus, depression and anxiety, while allowing for controlled weight loss. Statistics Canada (2000) reported that 56% of males and 39% of females are overweight or obese and Health, United States (2005) revealed a higher prevalence is evident in both males

and females of USA. In this regard, Jung RT (1997), Lakka H et al (2002) and Paeratakul S et al (2002) argued that is linked with major preventable diseases including type two of diabetes, cardiovascular disease, hypertension, stroke, gallbladder disease and some forms of cancer. According to Birmingham CL (1999), the costs spending for healthcare in terms of Canadian's obesity-related diseases revealed approximately 1.8 billion dollars per year. Therefore, there is a need to provide an effective prevention addressing and overcoming existing barriers of physical activity in urban neighborhoods. Sallis J, et al (1999) highlighted that because the physical environment of urban neighborhoods has the capacity due influencing large number of people, providing the supportive environments considers as enormous potential due encourage people participating in physical activity in urban neighborhoods. Barker RG (1968) identified it as behavior setting improvement which can affect undertaken behaviors in those settings and Sallis J, et al (1999) argued that it provides the opportunities, barriers and cues that can facilitate or discourage behavior including physical activity.

Several studies with the focus on physical activity in urban neighborhoods highlighted the different types of physical activities such as Ball et al (2007), Doyle et al (2006), Humpel et al (2004) and Li et al (2005) highlighted Walking for leisure; walking for exercise, Humpel et al (2004), Suminski et al (2005) and Vest and Valadez (2005) mentioned Walking for exercise; walking to get to and from places; contribution in social activity and De Bourdeaudhuij et al (2003) pointed the Sitting in public places. In addition, the opportunities for social interaction among people consider as other advantage of physical activity in urban neighborhoods which makes people feel stronger bond with their society and improve sense of social belonging. Considering the significance of physical activity for urban neighborhoods, this research aims on identifying the factors affecting physical activity in urban neighborhoods. To do so, 25 research articles with the focus on physical activity in urban neighborhoods are reviewed and the results are revealed in following sections.

## **2. Methods**

Based on the aim of this research, we undertook the most extensive consideration on associate research articles with physical activity in urban neighborhoods.

### **2.1 The Strategy of Research**

Web of Science as electronic search approach for this research were undertaken. Moreover, the research's scope identified in accordance with English research articles published from July 2002 to November 2012. When reviewing the articles

abstracts and conclusions, the most appropriate research articles with most association with physical activity criteria and research principles were undertaken. As final part, undertaken articles were examined with asking the experts in physical activity criteria to establish the robustness and accuracy of the research.

### **2.2 Selection of Criteria**

Examining the research articles with focus on physical activity in urban neighborhood and associating factors to this area was the main part of this research's scope. Meanwhile, those articles which exclusively considered the urban neighborhoods and physical activity were evoked and interventional and qualitative studies, proceedings of conferences and the opinions of experts were undertaken.

## **3. Research Results**

### **3.1 The Characteristics of Research**

As shown in Table 1, the characteristics of 25 reviewed articles were focused on physical activity in urban neighborhood with the diverse point of views. In addition, 10 articles with the number of 1, 2, 4, 5, 6, 9, 18, 19 20, 21 were review papers and other articles were based on demographic statistical analysis. The research articles undertook in this research was mostly considered American and Europeans urban neighborhoods (5) and the rest were based on Australian and Asian urban neighborhoods. Furthermore, the range of undertaken sample sizes was from below 150 to above 1000 participants with mostly focus on females and males as gender variety. To provide a comprehensive and detailed overview on concluded results from the reviewed articles, each extracted factor associating with urban neighborhoods' physical activity are explained with addressing different reviewed points of views. Moreover, the factors influencing urban neighborhoods' physical activity are tabulated and illustrated in Table 2 to summarize the achievements of this research.

### **3.2 Assessment of Factors Affecting Physical Activity in Urban Neighborhoods**

The overview on selected articles in this research revealed sixteen factors associating with physical activity in urban neighborhoods such as (1) Opportunities, (2) Weather, (3) Safety, (4) Demographic Variables, (5) Biological Variables, (6) Psychological Variables, (7) Cognitive Variables, (8) Emotional Variables, (9) Behavioral Attributes and Skills, (10) Social and Cultural Variables, (11) Physical Environmental Characteristics, (12) Physical Activity Characteristics, (13) Existence and Characteristics and Accessibility of Physical Facilities, (14) Aspects (Aesthetics), (15) Neighborhood Environment Scale; (Neighborhood Features, Perceived Safety, and Neighborhood

Character), (16) Urbanization that are well explained. Following section discussed about the reviewed articles specifying their research characteristics and mentioned factors associating with physical activity:

Nancy Humpel et al (2002), highlighted the environmental factors relating to adults participating in physical activity. They revealed that accessibility, opportunities, and aesthetic attributes have important effect on physical activity. In addition, they mentioned about less-strong effect of weather and safety on physical activity comparing to three aforementioned variables. Moreover, they revealed other factors such as biological, psychological, cognitive and emotional variables, behavioral attributes and skills, social and cultural variables, physical activity characteristics, existence and characteristics and accessibility of physical facilities and aspects (Aesthetics) associating with physical activity in urban neighborhoods. In their review paper, J. Van Cauwenberg et al (2011) reviewed 31 articles due investigating the association among physical environment and physical activity in older adults and they resulted the association among factors such as safety, physical environmental characteristics, physical activity characteristics, existence and characteristics and accessibility of physical facilities, neighborhood environment scale; (neighborhood features, perceived safety, and neighborhood character) and urbanization with physical activity among older adults in urban neighborhoods. P. Phongsavat et al (2007), considered the effect of psychological variables on physical activity participation in urban neighborhoods independent to environmental factors among New Zealand men and women. As result they revealed the association among safety, biological variables, psychological variables, social and cultural variables, physical activity characteristics, existence and characteristics and accessibility of physical facilities with physical activity in urban neighborhoods. Furthermore, G.R. McCormack et al (2010) reviewed 21 articles due considering the significance of factors such as safety, aesthetics, amenities, maintenance and proximity for physical activities occurring in urban neighborhoods' parks. Finally they revealed the association among variables such as opportunities, weather, safety, physical activity characteristics, existence and characteristics and accessibility of physical facilities and aspects (aesthetics) with physical activity in urban neighborhoods. In this regard, P. Tucker, J. Gilliland (2007) also reviewed 37 research articles to figure the effect of season, and consequently weather, on levels of physical activity and they highlighted the association between factors such as opportunities, weather and psychological variables with urban neighborhoods' physical activity. Moreover, L.H. McNeill et al (2006) identified the

association among five dimensions of social environment such as social support and social networks, socioeconomic position and income inequality, racial discrimination, social cohesion and social capital neighborhood factors with physical activity in urban neighborhoods. As result they highlighted the relationships among Opportunities, Biological Variables, Psychological Variables and Cognitive Variables with urban neighborhoods' physical activity. Investigating on the relationship among psychological and environmental factors with physical activity among Queensland regional neighborhoods, M. Duncan, K. Mummery (2005) revealed that association among factors such as opportunities, safety, demographic variables and aspects (aesthetics) with residents' physical activity. In addition, examining the effects of perceived social and physical environmental on urban neighborhoods' physical activity, B. Deforche et al (2010) highlighted cognitive variables, behavioral attributes and skills and physical environmental characteristics as factors associating with urban neighborhoods' physical activity.

Klaus Gebel et al (2007) reviewed 11 reviews and their antecedent source with focusing on examining the effects of physical environment and urban neighborhoods' physical activity. Finally, they resulted on association among safety, physical environmental characteristics and aspects (aesthetics) with urban neighborhoods' physical activity. On the other hand, K.L. Monda et al (2007) highlighted the association among rapid urbanization and physical activity among adults. M.P. Santos et al (2009) investigated on the association among Perceptions of some aspects of neighborhood environment and physical activity in urban neighborhoods. They revealed that physical activity in urban neighborhoods is affected by safety, emotional variables, physical activity characteristics and existence and characteristics and accessibility of physical facilities. Melissa Bopp et al (2005) investigated on discovering the factors associating with physical activity among African-American men and women. As result, they revealed the association among safety, demographic variables, psychological variables, cognitive variables and behavioral attributes and skills with physical activity. Examining effect of neighborhood's walkability on physical activity in urban neighborhoods, D. Van Dyck et al (2010) highlighted the association among physical environment characteristics and physical activity in urban neighborhoods. In addition, Bonnie K et al (2005) considered the correlation of personal, social and physical environmental with urban neighborhoods' physical activity. They revealed that safety and physical environment characteristics were factors associating with physical activity. J.R.

Panter, A.P. Jones (2008) examining the association among physical activity, perceptions of the neighborhood environment and access to facilities in English neighborhoods revealed that whether, safety and existence and characteristics and accessibility to physical activity facilities are correlated with physical activity in urban neighborhoods. Considering the effects of certain personal characteristics and environmental items on perception of leisure activities among urban neighborhoods' adults with developmental disabilities, M. Badia et al. (2011) revealed that opportunities and emotional variables as effective factors in urban neighborhoods' physical activity. Examining the social and environmental predictors of physical activity for women's leisure running, S. Titze et al (2005) highlighted the relationship of opportunities, weather, safety, cognitive variables, social and cultural variables, physical environmental characteristics, physical activity characteristics and aspects (aesthetics) with physical activity in urban neighborhoods. G McCormack et al (2004) examined the relationship among objective and self-report measures of the physical environment and physical activity behaviors and highlighted the association among opportunities, safety, biological variables, psychological variables, physical environmental characteristics, existence and characteristics and accessibility of physical facilities and aspects (aesthetics) with physical activity in urban neighborhoods. Discovering the association among dog ownership, health and physical activity, H. Cutt et al (2007) highlighted the positive association among doge ownership with physical activity and revealed the association among safety and physical activity in urban neighborhoods. Neville Owen et al (2004)

reviewed 16 research articles focusing on perceived environmental attributes with walking in urban neighborhoods and revealed the association among weather, safety, demographic variables and aspects (aesthetics) with physical activity in urban neighborhoods.

V. Baert et al (2011) reviewed 44 articles focusing on motivators and barriers for physical activity in urban neighborhoods among elderly and revealed the association among opportunities, weather, safety, psychological variables, cognitive variables and behavioral attributes and skills with physical activity. In this regard, R.E. Lee et al (2012) investigated on urban neighborhoods' factors influencing physical activity between African-American and Hispanic or Latina women. They revealed the association among safety, behavioral attributes and skills and neighborhood environment scale; (neighborhood features, perceived safety, and neighborhood character) with urban neighborhoods' physical activity. Furthermore, comparing leisure time physical activity between adults of diverse socio-economic neighborhoods, M.J. Annear et al (2009) highlighted the relationship among weather and urban neighborhoods' physical activity in urban neighborhoods. G.R. McCormack et al (2008) considering the association among destination proximity, destination mix and physical activity behaviors revealed the association of opportunities with physical activity in urban neighborhoods. In addition, Troped et al (2011) examined the effect of perceived environment on physical activity among U.S women and highlighted the relationship between safety and physical environment characteristics with urban neighborhoods' physical activity.

**Table 1: The Characteristic of Research Based on 25 Reviewed Articles**

References	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	
Sample size																											
n ≤ 150																											
150 (n ≤ 500)															X	X	X					X					4
500 (n ≤ 1000)																											2
n ≥ 1000			X				X	X		X	X		X											X			7
Country																											
America							X					X		X										X			5
Europe								X					X		X	X											5
Asia											X						X										2
Australia			X																				X	X			3
Setting																											
Urban							X	X		X	X	X	X	X	X	X	X						X	X	X	X	14
Urban + rural			X																								1
Gender																											
Female + male			X				X	X		X	X	X	X	X	X	X							X	X			11
Female													X				X								X		4

References: 1: Nancy Humpel (2002), 2: J. Van Cauwenberg et al (2011), 3: P. Phongsavan et al (2007), 4: G.R. McCormack et al (2010), 5: P. Tucker, J. Gilliland (2007), 6: L.H. McNeill et al (2006), 7: M. Duncan, K. Mummery (2005), 8: B. Deforche et al (2010), 9: Klaus Gebel et al (2007), 10: K.L. Monda et al (2007), 11: M.P. Santos et al (2009), 12: Melissa Bopp et al (2005), 13: D. Van Dyck et al (2010), 14: Bonnie K et al (2005), 15: J.R. Panter, A.P. Jones (2008), 16: M. Badia et al. (2011), 17: S. Titze et al (2005), 18: G McCormack et al (2004), 19: H. Cutt et al (2007), 20: Neville Owen et al (2004), 21: V. Baert et al (2011), 22: R.E. Lee et al (2012), 23: M.J. Annear et al (2009), 24: G.R. McCormack et al (2008), 25: Troped et al (2011).

**Table 2:** Summary of Factors Influencing Physical Activity

No	Physical Activity Variables	Sub-Variables	References
1	<b>Opportunities</b>	Presence of sidewalks, Home equipment, Lack of equipment, Awareness of facilities, Satisfaction with recreation facilities, Neighborhood environment, My area offers opportunities for physical activity, Local clubs and others provide opportunities, Coastal residence, Functional environment (footpath/shop)	Nancy Humpel (2002), G.R. McCormack et al (2010), P. Tucker, J. Gilliland (2007), L.H. McNeill et al (2006), M. Duncan, K. Mummery (2005), M. Badia et al. (2011), S. Titze et al (2005), G McCormack et al (2004), V. Baert et al (2011) and G.R. McCormack et al (2008).
2	<b>Weather</b>	Poor weather, Lack of good weather	Nancy Humpel (2002), G.R. McCormack et al (2010), P. Tucker, J. Gilliland (2007), J.R. Panter, A.P. Jones (2008), S. Titze et al (2005), Neville Owen et al (2004), V. Baert et al (2011) and M.J. Annear et al (2009).
3	<b>Safety</b>	Traffic, Feel Afraid to Leave the House, Street Lighting, Victimization Experience (Vandalism, Violence, Attack or Physically Injured, Mugging and so on), Potential for Larking, Problems with Dogs and Number of People Around	Nancy Humpel (2002), J. Van Cauwenberg et al (2011), P. Phongsavan et al (2007), G.R. McCormack et al (2010), M. Duncan, K. Mummery (2005), Klaus Gebel et al (2007), M.P. Santos et al (2009), Melissa Bopp et al (2005), Bonnie K et al (2005), J.R. Panter, A.P. Jones (2008), S. Titze et al (2005), G McCormack et al (2004), H. Cutt et al (2007), Neville Owen et al (2004), V. Baert et al (2011), R.E. Lee et al (2012) and Troped et al (2011).
4	<b>Demographic Variables</b>	-	M. Duncan, K. Mummery (2005), Melissa Bopp et al (2005) and Neville Owen et al (2004).
5	<b>Biological Variables</b>	-	Nancy Humpel (2002), P. Phongsavan et al (2007), L.H. McNeill et al (2006) and G McCormack et al (2004).
6	<b>Psychological Variables</b>	-	Nancy Humpel (2002), P. Phongsavan et al (2007), P. Tucker, J. Gilliland (2007), L.H. McNeill et al (2006), Melissa Bopp et al (2005), G McCormack et al (2004) and V. Baert et al (2011).
7	<b>Cognitive Variables</b>	-	Nancy Humpel (2002), L.H. McNeill et al (2006), B. Deforche et al (2010), Melissa Bopp et al (2005), S. Titze et al (2005) and V. Baert et al (2011).
8	<b>Emotional Variables</b>	Having a spouse and/or supportive family and friends, Interpersonal relationships, trust between neighbors	Nancy Humpel (2002), L.H. McNeill et al (2006), M.P. Santos et al (2009) and M. Badia et al. (2011).
9	<b>Behavioral Attributes and Skills</b>	The number of sufficiently active people within the neighborhood, the interaction between the individual and the environment, individual level interventions	Nancy Humpel (2002), B. Deforche et al (2010), Melissa Bopp et al (2005), V. Baert et al (2011) and R.E. Lee et al (2012).
10	<b>Social and Cultural Variables</b>	Social capital, social support from friends, family, and healthcare providers	Nancy Humpel (2002), P. Phongsavan et al (2007), L.H. McNeill et al (2006) and S. Titze et al (2005).

11	<b>Physical Environmental Characteristics</b>	Street connectivity in predominantly, objectively measured residential density, land use mix diversity, density of places of employment and total green and open spaces at neighborhood level (neighborhoods defined by neighborhood associations), environmental influences	J. Van Cauwenberg et al (2011), B. Deforche et al (2010), Klaus Gebel et al (2007), D. Van Dyck et al (2010), Bonnie K et al (2005), S. Titze et al (2005), G McCormack et al (2004) and Troped et al (2011).
12	<b>Physical Activity Characteristics</b>	Walk-ability and cycling, including its components: and street connectivity, functionality of physical environment	Nancy Humpel (2002), J. Van Cauwenberg et al (2011), P. Phongsavan et al (2007), G.R. McCormack et al (2010), L.H. McNeill et al (2006) and M.P. Santos et al (2009).
13	<b>Existence and Characteristics and Accessibility of Physical Facilities</b>	A cycle path is accessible, Busy street to cross, Busy street to cross, Negotiate steep hill, Access to facilities (local park), Facilities on frequently traveled route, Density of pay and free facilities, Neighborhood residential, Number of convenient facilities, Lack of facilities, No facility nearby (women), Available facilities inadequate, Access to built facilities, Access to natural facilities, Distance to bikeway, Park or beach in walking distance, Shops are in walking distance	Nancy Humpel (2002), J. Van Cauwenberg et al (2011), P. Phongsavan et al (2007), G.R. McCormack et al (2010), M.P. Santos et al (2009), J.R. Panter, A.P. Jones (2008) and G McCormack et al (2004).
14	<b>Aspects (Aesthetics)</b>	Neighborhood friendly, Pleasant near home, Local area is attractive, Enjoyable scenery, Hills, Living environment, Appeal (traffic/trees), attractive neighborhood	Nancy Humpel (2002), G.R. McCormack et al (2010), M. Duncan, K. Mummery (2005), Klaus Gebel et al (2007), S. Titze et al (2005), G McCormack et al (2004) and Neville Owen et al (2004).
15	<b>Neighborhood Environment Scale; (Neighborhood Features, Perceived Safety, and Neighborhood Character)</b>	Aggregated individual scores in neighborhoods defined by census block groups	J. Van Cauwenberg et al (2011) and R.E. Lee et al (2012).
16	<b>Urbanization</b>	-	J. Van Cauwenberg et al (2011) and K.L. Monda et al (2007).

#### 4. Conclusion

In this research 25 research articles have met the review research's criteria. As result, 16 factors influencing physical activity in urban neighborhoods are revealed. Safety was the most common factors among all researched articles and Urbanization was the least. At the beginning of the research, it started on explicating the significant of physical activity in urban neighborhoods and then the factors influencing urban neighborhoods' physical activity are revealed with the purpose of providing a comprehensive and holistic group of factors influencing urban neighborhoods' physical activity from previous researches. As result, Factors such as Opportunities, Weather, Safety, Demographic Variables, Biological Variables, Psychological Variables, Cognitive Variables, Emotional Variables, Behavioral

Attributes and Skills, Social and Cultural Variables, Physical Environmental Characteristics, Physical Activity Characteristics, Existence and Characteristics and Accessibility of Physical Facilities, Aspects (Aesthetics), Neighborhood Environment Scale; (Neighborhood Features, Perceived Safety, and Neighborhood Character) and Urbanization are highlighted as factors influencing urban neighborhoods' safety.

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