

# Questionnaire Design: Relation of Physical Activity and Safety

Vahid Bigdeli Rad<sup>\*1</sup>, Hamed Najafpour<sup>2</sup>, Esmaeil Shieh<sup>3</sup>, Hamid Bigdeli Rad<sup>4</sup>

<sup>1</sup> Department of Urban and Regional Planning, Faculty of Architecture and Urban Planning, Qazvin Branch, Islamic Azad University, Qazvin, Iran

<sup>2</sup> Department of Architecture, Rasht Branch, Islamic Azad University, Rasht, Iran

<sup>3</sup> Department of Urban Planning, Faculty of Architecture and Urban Planning, Iran University of Science and Technology, Tehran, Iran

<sup>4</sup> Department of Transportation Planning, Faculty of Civil Engineering, Iran University of Science and Technology, Tehran, Iran

\*Corresponding Author: Vahid.Bigdeli@qiau.ac.ir, +982833665275

---

## Abstract

A safe neighborhood encourages the residents to lead a more physically active lifestyle. A lack of physical activities elevates the risks of various health condition, most profoundly obesity and cardiovascular diseases. Various studies discussed on the effect of safety in physical activities of residents in their area. From study on previous models, it was observed that, these models did not consider all the specified safety factors and their effect at same time on physical activity. Moreover, in terms of safety in neighborhood, the assessment factors and models of Tehran neighborhoods are neither standardized nor readily available. Therefore, this paper presents the development of a questionnaire aimed at measuring the safety factors associated with physical activeness of the residents in urban Tehran neighborhoods that has been tested and validated through pilot study, industry recognized validity tests, and expert review. So that, Primary data were collected using survey questionnaires administered to 90 respondents in three neighborhoods of Tehran Metropolis and analyzed using Structural Equation Modeling (SEM) by Smart Partial Least Squares (PLS) software. The questionnaire has six research constructs linked to five specified research indicators. It is available in both Farsi and English, and back translation has been done by field experts to ensure its accuracy in representing the intended measurement. This questionnaire is expected to assist urban developers and managers in improving the safety condition in urban neighborhoods of Iran to promote physical activeness.

**Keywords:** Physical Activity, Safety, Urban Neighborhoods, Questionnaire Design

---

## 1. Introduction

A lack of physical activities has become an increasingly serious public health issue. It elevates the risks of obesity, cardiovascular diseases, hypertension, cancers, osteoporosis, diabetes, and mental illnesses [1], particularly obesity among children and adolescents [2]. As such, it becomes imperative that a comprehensive plan is in place to address a lack of physical activities among community members which encourages them to be more physically active. For a residential area, it has been found that this is closely related to the range of safety facilities provided in the neighborhood [3].

In regard to studies on safety in neighborhoods, some of the popular concepts which have been studied include the “defensible neighborhood” concept of Newman [4] or “broken windows” concept of Wilson and Kelling [5]. However, this has yet to be adopted or further investigated in Tehran neighborhoods. Therefore, the aim of this

paper is to discuss on a proposed flexible and adaptable design of safer community that will encourage the residents to be more physically active. Ramkissoon., et al. [6] as well as Monteath [7] have previously stated that a multiple techniques approach is able to provide a more holistic view on the similarities and discrepancies of different design. Another advocate of a diverse measurement model is De Almeida [8] who highlighted on the better results validation which such model is able to provide.

Based on Behzadfar., et al. [9] and Yaghmayi and Baghdadi [10], physical activity and its related safety issues are considered as important factors in Tehran urban neighborhoods. Nevertheless, Shokoohi., et al. [11] highlighted the lack of the study considering the safety factors associating with physical activity in Tehran neighborhoods as a concern for improving physical activity in Tehran neighborhoods.

Despite of existing research, they mostly did not

consider all the safety factors associated with physical activity. This research gathered all those factors and modeled them as whole. Moreover, in terms of safety in neighborhood, the assessment factors and models of Tehran neighborhoods are neither standardized nor readily available. Therefore, this current research intends to fill aforementioned gaps.

One of the notable multiple techniques approaches developed to measure research variables was by Rad., et al. [12]. The study focused on the factors affecting safety in urban neighborhoods; in year 2015, a subsequent publication was made on the corresponding correlation with physical activeness of the residents [13]. On the other hand, associated safety factors with physical activity in urban Tehran neighborhoods using the Structural Equation Modelling (SEM) approach [14]. The author also developed a survey questionnaire for the same purpose.

In addition, the structural equation modelling (SEM) approach was employed in this study to address a fundamental question; What are the appropriate and relevant questions on the evaluation of relationships between physical activities and safety measures in the neighborhoods of Tehran Metropolis?

## 2. Research Method

This session discusses about the steps undertaken to develop the main questionnaire survey. This is an integrated questionnaire established through extensive studies on published works relevant to the objective of this study. According to Williams [15]; Reynolds., et al. [16]; Sudman [17], the seven main steps are:

- 1) Extract the relative questions during literature review.
- 2) Optimize the relevance of the questions to become appropriate for this study; these became the pilot questions.
- 3) Validate the pilot questions through expert review (Group Decision Making) to gather comments for improvement.
- 4) Translate the survey instrument.
- 5) Perform pilot questionnaire survey.
- 6) Determine the validity and reliability of the questionnaire.
- 7) Finalize the main questionnaire survey.

## 3. The Strategy of Research

This section explains the seven main steps aforementioned in details. It should be emphasized here that the main objective of this study is to examine the relationship between safety in a Tehran neighborhood and the physical activeness

of the residents through a questionnaire survey.

### 3.1 Extraction of Relative Questions from Published Literature

In the work of Rad., et al. [13], the authors highlighted the following aesthetical aspects of a neighborhood which affect residents' active involvement in physical activities - social, cultural and psychological attributes; demographic variables and existence; accessibility and opportunities of physical facilities; physical environmental characteristics; and weather and safety. The authors further stressed on the significance of demographic effects; neighborhood and urban conditions; physical environment; satisfaction with local environment; urban neighborhood incivilities; and victimization experience as the key factors which influence safety in urban neighborhoods [12]. In year 2015, Rad., et al. [18] published another study which pointed out that a fear to leave the house; the number of people around; the problem with dogs; the street lighting; the traffic and victimization experience (vandalism, violence, attack or physically injured and robbery) should be included as other safety factors associating with physical activity in urban neighborhoods.

According to Tilley and Sidebottom [19], the diverse safety interpretation of societies' groups is the main item to introduce and design appropriate community interventions which improves safety. In relation to this, the academic staff of the Department of Urban and Regional Planning (Tehran's universities) opinions were gathered to identify the research factors corresponding to this research. This was done in view of the fact that, as concurred with Swatt., et al. [20], the factors that may be effective in one neighborhood may not be effective in others. True enough, the result of the Expert Questionnaire Survey revealed that 'problem with dogs' was insignificant in Tehran neighborhoods, and thus was removed from the group of safety factors associating with physical activity in Tehran urban neighborhoods at Iran.

After reviewing previous researches including: Swatt., et al. [20]; Harrison., et al. [21]; Doyle., et al. [22]; Hooker., et al. [23]; Suminski., et al. [24]; Craig., et al. [25]; Wilcox., et al. [26] and Ross. [27], the finalized research questions were grouped into logical coherent parts with corresponding components and constructs. The extracted relative questions were then grouped accordingly to develop the questionnaire survey. As recommended by Williams [15], the wordings were short, simple and specific so that the questions would remain clear and easy to answer.

### 3.2 Optimizing Optimization of Pilot Questions from the Literature

The literature has shown that Likert scale has

been the main tool used to rate the safety factors associated with physical activities in urban neighborhoods. Thus, the five Likert scale was also chosen for this study. In addition, according to the comments made by Lorenc., et al. [28] and Vagias [29] on the Likert-type scale response anchors, the most appropriate and relevant Likert scale should

be able to measure the entire response spectrum. In this research, the scale had been established as to measure negative (from the left) to positive (towards the right) responses. Other types of five Likert scale which have been reported in the literature are as follows:

**Table 1:** Diverse Type of Five Likert Scale

<b>Level of Safety</b>	Very Safe	Safe	Neutral	Unsafe	Very Unsafe
<b>Level of Likelihood</b>	Very Likely	Likely	Neutral	Unlikely	Very Unlikely
<b>Level of Agreement</b>	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<b>Level of Interesting</b>	Very Interesting	Interesting	Neutral	Uninteresting	Very Uninteresting
<b>Level of Frequency</b>	Always	Often	Sometimes	Rarely	Never
<b>Level of Importance</b>	Very Important	Moderately Important	Neutral	Slightly Important	Not Very Important
<b>Rating Scale</b>	1	2	3	4	5

### 3.3 Validation of Pilot Questions through Expert Review

The Group Decision Making approach was adopted by PVM., et al. [30] to validate their research data, and was deemed suitable for this research as well. In this study, the pilot questions

were given to academic staff of the Department of Urban and Regional Planning to validate their relevance as well as for further improvement. The following six tables tabulate the questions according to each safety factor associated with physical activeness of an urban Tehran neighborhood:

**Table 2:** Physical Activity Research Questions

1- How likely is it for you to do physical activity in your neighborhood?
2- Please specify the importance of doing physical activity in your neighborhood for you?
3- Please specify how interesting is doing physical activity in your neighborhood for you?
4- Do you agree with “it is pleasant for me to go for physical activity in my neighborhood”?
5- Do you have experience to go for physical activity more than two hours of a week (sum of total times you went for physical activity in a week) in your neighborhood?

**Table 3:** Feel Afraid to Leave the House Research Questions

1- Please specify the likelihood that one or more below options happen to you while you leave the house for physical activity in your neighborhood?
<ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there.</li> <li>• Someone will try to rob you or steal something from you when you are outside.</li> <li>• Someone will try to attack you or beat you up when you are outside.</li> </ul>
2- Please specify the importance of one or more below options (as issue) happen to you while you leave the house for physical activity in your neighborhood?
<ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there.</li> <li>• Someone will try to rob you or steal something from you when you are outside.</li> <li>• Someone will try to attack you or beat you up when you are outside.</li> </ul>
3- Please specify how safe is your neighborhood from one or more below options happen to you while you leave the house for physical activity in your neighborhood?
<ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there.</li> <li>• Someone will try to rob you or steal something from you when you are outside.</li> <li>• Someone will try to attack you or beat you up when you are outside.</li> </ul>
4- Do you agree with “I don’t feel afraid of one or more below options happen to me while I leave the house for physical activity in my neighborhood”?
<ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there.</li> <li>• Someone will try to rob you or steal something from you when you are outside.</li> <li>• Someone will try to attack you or beat you up when you are outside.</li> </ul>
5- Do you have experience that one or more below options happen to me while you leave the house for physical activity in your neighborhood?

- Someone will try to break into your home when you are not there.
- Someone will try to rob you or steal something from you when you are outside.
- Someone will try to attack you or beat you up when you are outside.

**Table 4: Number of People around Research Questions**

1.	How likely is it for you to feel afraid or unsafe of the crowded places or places with many people around while you do physical activity in your neighborhood?
2.	Please specify the importance of the crowded places or places with many people around (as issue) while you do physical activity in your neighborhood?
3.	Please specify how safe do you feel in the crowded places or places with many people around while you go for physical activity in your neighborhood?
4.	Do you agree with “I feel safe when doing physical activity in the crowded places or places with many people around of my neighborhood”?
5.	Do you have experience to feel unsafe or afraid of the crowded places or places with many people around while you do physical activity in your neighborhood?

**Table 5: Street Lighting Research Questions**

1.	How likely is it for you to refrain of going for physical activity at nights because of darkness of the streets or lack of street lighting?
2.	Please specify the importance of street lighting as an issue for you to go for physical activity at night in your neighborhood?
3.	According to the sufficiency of street lighting of your neighborhood please specify how safe do you feel when you go for physical activity at night in your area?
4.	Do you agree with “my neighborhood’s street lighting is good enough to make me feel safe when I do physical activity at night there”?
5.	Do you have experience to feel afraid or being reluctant to go for physical activity at night in your neighborhood because of insufficient or unsuitable street lighting there?

**Table 6: Traffic Research Questions**

1.	How likely is it for you to feel unsafe of traffic or cars with high speed in your neighborhood while you do physical activity in your neighborhood?
2.	Please specify the importance of traffic or cars with high speed (as issue) in your neighborhood while you do physical activity there?
3.	According to the traffic or cars with high speed in your neighborhood, please specify how safe do you feel when you go for physical activity in your neighborhood?
4.	Do you agree with “the traffic or the speed of the cars in my neighborhood is not that serious to make me feel afraid or unsecure of doing physical activity there”?
5.	Do you have experience to feel afraid or unsafe of traffic or the cars with high speed in your neighborhood while doing physical activity there?

**Table 7: Victimization Experience Research Questions**

1.	How likely is it for you to be the victim of vandalism, violence, attack or physically injured or robbery while you do physical activity in your neighborhood?
2.	Please specify the importance of being the victim of vandalism, violence, attack or physically injured or robbery (as issue) while you do physical activity in your neighborhood?
3.	Please specify how safe do you feel from being the victim of vandalism, violence, attack or physically injured or robbery when you go for physical activity in your neighborhood?
4.	Do you agree with “my neighborhood is safe and free of vandalism, violence, attack or physically injured or robbery while I do physical activity there”?
5.	Do you have experience to be the victim of vandalism, violence, attack or physically injured or robbery while you do physical activity in your neighborhood?

### 3.4 Translation of the Survey Instrument

The main language of the questionnaire should be in Farsi, seeing that its focus was on Tehran urban neighborhoods in Iran. However, the original questionnaire was developed in English, which thus warranted a translation from English to

Farsi. In order to maintain its accuracy after translation, this had been performed by two researchers in urban and regional planning who were fluent in both English and Farsi. There are three main well-known translation techniques - direct, parallel and back translation. This translation was done in back translation. This is in

view that Chen and Boore [31] had successfully used this technique. Also, as highlighted by Mullen [32], the most accurate and appropriate translation method is when the source of questionnaire is translated into the target language and then translated back to the original language by a bilingual person. If the translation had been highly accurate, there should be no loss of information or misinterpretation when back translation is done.

### 3.5 Pilot Questionnaire Survey

The pilot questionnaire survey was done in a small group. The results were analyzed to find out the suitability of the questions according to the research aim and principles.

### 3.6 Validity and Reliability Tests of Designed Pilot Questionnaire

The validity and reliability of the questionnaire was also identified during the pilot study. The questionnaires were distributed to 90 residents in Tehran neighborhoods, which were the Abouzar Gharbi, the Abbas Abad and the Tajrish neighborhoods. The Partial Least Squares [14] approach was adopted; the research model was developed by identifying the indicators (prepared questions) to its relevant construct (safety factors associated with physical activity in urban neighborhoods). Figure 1 presents the designed model and results.

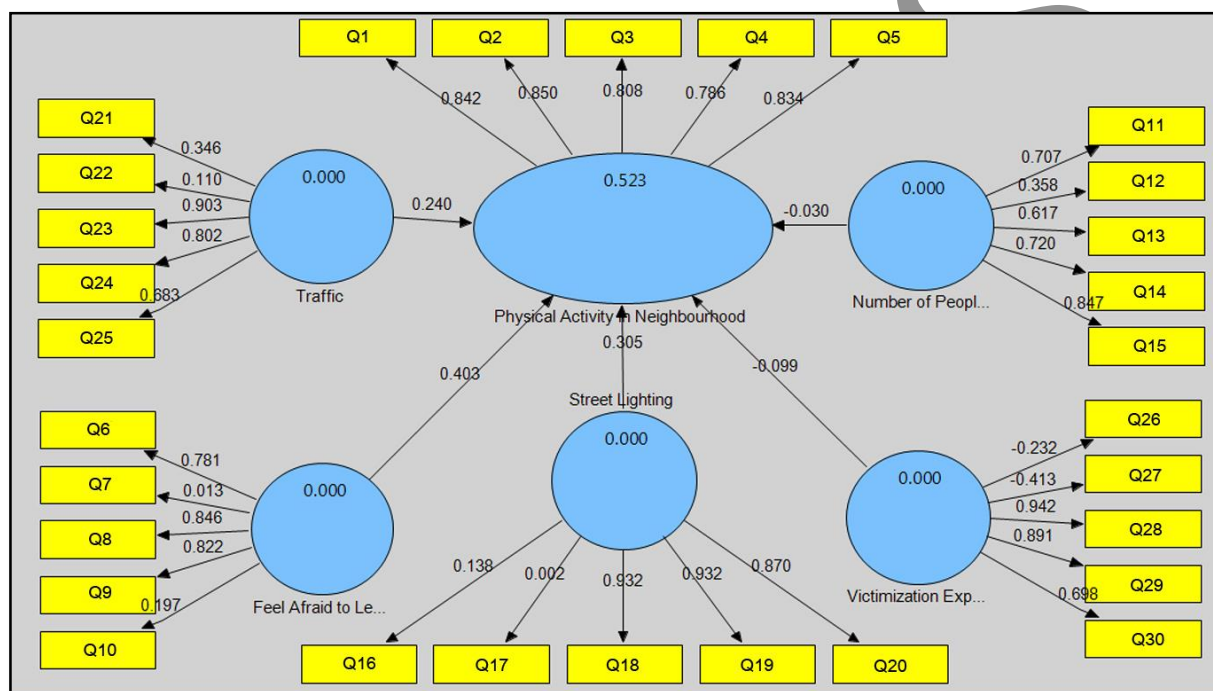


Figure 1: PLS Model Measurement before Removing Unacceptable Indicators (Questions)

The figure above showed that the six research constructs had been linked with five specified research indicators. Loading values were also assigned to each specific research construct and indicator. Then, to examine the appropriateness of the research indicators, the outer loading was calculated. This outer loading demonstrated whether an indicator (question) had appropriately measured the construct (factor) which it was meant

to, i.e., its reliability [33]. According to Chin [34] as well as Gefen and Straub [35], the outer loading is acceptable when it is 0.007 and above. In this study, the indicators which had less than 0.700 outer loading were removed and the calculation was done again. This was repeated until all outer loadings had reached 0.700 or above. The results are shown in Table 8; grey signifies all indicators with less than 0.700 outer loading.

Table 8: Outer Loadings before Removing Indicators with Values Bellow 0.700

F.N	The Name of Construct	Question Number	Outer Loadings	F.N	The Name of Construct	Question Number	Outer Loadings
1	Physical Activity in Neighborhood	Q1	0.842084	4	Street Lighting	Q16	0.138321
		Q2	0.849942			Q17	0.001744
		Q3	0.807700			Q18	0.931852
		Q4	0.785597			Q19	0.931810
		Q5	0.834162			Q20	0.870429

2	Feel Afraid to Leave the House	Q6	0.781134	5	Traffic	Q21	0.345612
		Q7	0.012947			Q22	0.110017
		Q8	0.846276			Q23	0.902774
		Q9	0.821730			Q24	0.802380
		Q10	0.197320			Q25	0.683054
3	Number of People Around	Q11	0.707297	6	Victimization Experience	Q26	-0.232478
		Q12	0.357816			Q27	-0.412827
		Q13	0.616738			Q28	0.942215
		Q14	0.719849			Q29	0.890729
		Q15	0.846551			Q30	0.698044

Figure 2 and Table 9 present the final result of the outer loading calculation of all indicators. This

became the final model of this research.

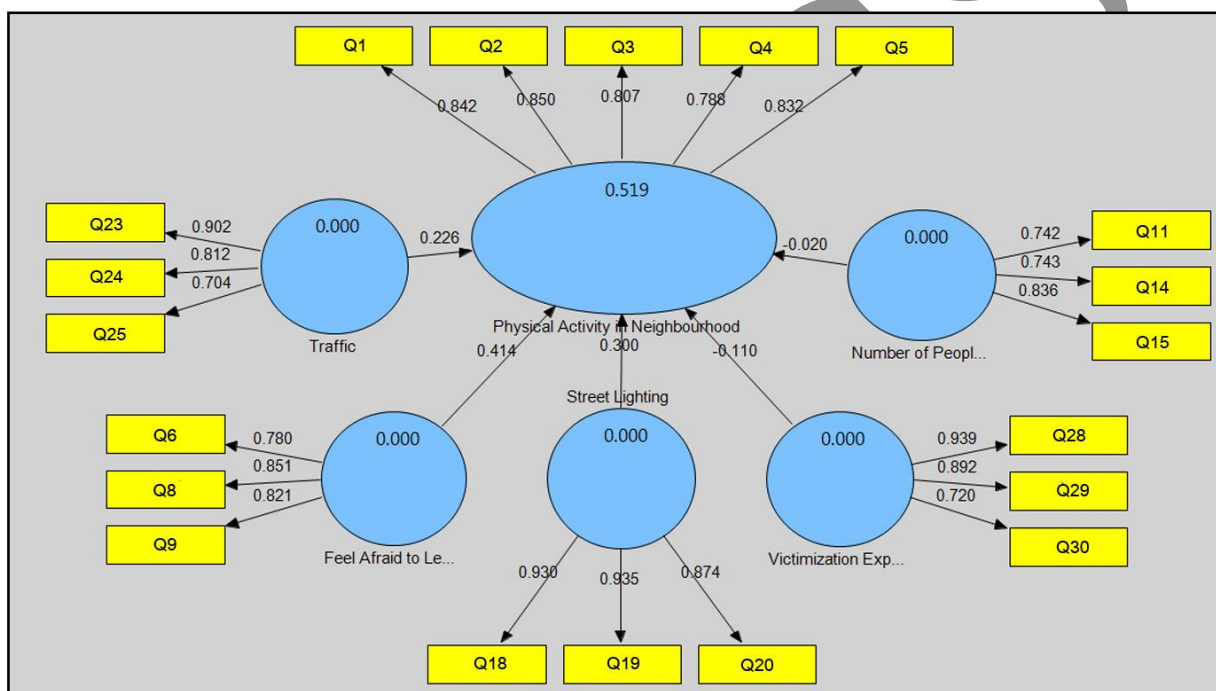


Figure 2: PLS Model Measurement after Removing Unacceptable Indicators (Questions)

Table 9: Outer Loadings after Removing Indicators with Values Bellow 0.700

F.N	The Name of Construct	Question Number	Outer Loadings
1	Physical Activity in Neighborhood	Q1	0.841521
		Q2	0.850123
		Q3	0.807466
		Q4	0.787730
		Q5	0.832494
2	Feel Afraid to Leave the House	Q6	0.780272
		Q8	0.850541
		Q9	0.820997
3	Number of People Around	Q11	0.742304
		Q14	0.743416
		Q15	0.836075
4	Street Lighting	Q18	0.930434
		Q19	0.935394
		Q20	0.874075

5	Traffic	Q23	0.901934
		Q24	0.811522
		Q25	0.703836
6	Victimization Experience	Q28	0.938633
		Q29	0.892260
		Q30	0.719886
The Sequence of Deleting the Questions		Q7-Q10-Q12-Q13-Q16-Q17- -Q21-Q22-Q26- Q27	

The bottom of Table 9 shows that 10 indicators with less than 0.700 outer loading were removed from the model. For the remaining indicators, cross-loading was then performed to examine whether the indicators had been loaded equally on

the other constructs as well as their own theorized construct. A construct is said to have been loaded equally when the value is longer on the intended construct than other constructs. Table 10 presents the corresponding results.

Table 10: Cross-Loadings of Latent Variables and Indicators

Q.N	1*	2*	3*	4*	5*	6*
Q1	<b>0.841521</b>	0.500176	0.055833	0.586300	0.512266	0.323906
Q2	<b>0.850123</b>	0.450067	0.114893	0.442266	0.409002	0.240413
Q3	<b>0.807466</b>	0.562520	0.018685	0.318984	0.367404	0.161721
Q4	<b>0.787730</b>	0.567675	0.110229	0.489317	0.414539	0.067374
Q5	<b>0.832494</b>	0.535064	0.343048	0.400251	0.457774	0.182225
Q6	0.388384	<b>0.780272</b>	0.203453	0.304730	0.281854	0.263856
Q8	0.512666	<b>0.850541</b>	0.277429	0.408903	0.412584	0.260894
Q9	0.615808	<b>0.820997</b>	0.101981	0.481256	0.455170	0.202246
Q11	0.097667	0.159913	<b>0.742304</b>	0.118159	0.022932	-0.016365
Q14	0.055246	0.109029	<b>0.743416</b>	0.016629	0.018859	-0.111095
Q15	0.161609	0.217262	<b>0.836075</b>	0.103413	0.325270	0.114145
Q18	0.515148	0.471425	0.202819	<b>0.930434</b>	0.488735	0.564189
Q19	0.548085	0.503552	0.078700	<b>0.935394</b>	0.384501	0.460913
Q20	0.434608	0.389564	0.030618	<b>0.874075</b>	0.388403	0.456343
Q23	0.526946	0.543131	0.307143	0.411031	<b>0.901934</b>	0.323082
Q24	0.402067	0.284344	0.066122	0.245750	<b>0.811522</b>	0.038162
Q25	0.321364	0.298616	0.131846	0.490265	<b>0.703836</b>	0.336587
Q28	0.266402	0.252203	0.015571	0.476388	0.303342	<b>0.938633</b>
Q29	0.148872	0.181210	0.012668	0.499973	0.220410	<b>0.892260</b>
Q30	0.152894	0.318656	0.099399	0.426000	0.178395	<b>0.719886</b>

\*Note: 1: Physical activity in urban neighborhood, 2: Feel afraid to leave the house, 3: Number of people around, 4: Street lighting, 5: Traffic, 6: Victimization experience.

As shown in table above, the loadings on the intended construct (bolded in text) were all more than other existing loadings of each column. After

that, the composite reliability and Cronbach's Alpha values were established for each construct. Table 11 illustrates the results.

Table 11: Composite Reliabilities and Cronbach's Alpha of Constructs in Model

Construct	Composite Reliability	Cronbach's Alpha
Physical Activity in Urban Neighborhood	0.913659	0.881938
Feel Afraid to Leave the House	0.858143	0.758646
Number of People Around	0.818262	0.718965
Street Lighting	0.938103	0.901221
Traffic	0.849828	0.737231
Victimization Experience	0.889947	0.815383

Henseler, et al. [36] and Green and Salkind [37] highlighted that the acceptable composite reliability and Cronbach's alpha values should be equal or more than 0.8 and 0.6, respectively. As shown in Table 11, all constructs have met the mentioned values. Lastly, the discriminant validity of the questionnaire was established.

According to Fornell and Larcker [38] and Bollen [39], discriminant validity measures the average extracted variance for each construct,

which should be more than 0.50, as well as the square of the correlation among a construct and all other constructs. The correlation among the constructs should be lower than the square root of the extracted average variance [40]. Table 12 presents the calculated Average Variance Extended (AVE) value and the corresponding squares for each construct. Table 13 presents the extracted values for discriminant validity.

**Table 12: Average Variance Extracted (AVE)**

Constructs	AVE	AVE's Square
Physical Activity in Urban Neighborhood	0.679287	0.824
Feel Afraid to Leave The House	0.600902	0.775
Number of People Around	0.834892	0.913
Street Lighting	0.655813	0.809
Traffic	0.731799	0.855
Victimization Experience	0.679287	0.824

**Table 13: Discriminant Validity for Model**

F.N	1*	2*	3*	4*	5*	6*
1*	<b>0.824000</b>					
2*	0.637030	<b>0.817000</b>				
3*	0.155651	0.228211	<b>0.775000</b>			
4*	0.550096	0.501616	0.117302	<b>0.913000</b>		
5*	0.527957	0.483088	0.224573	0.460185	<b>0.809000</b>	
6*	0.236350	0.289856	0.043070	0.540571	0.285828	<b>0.855000</b>

\*Note: 1: Physical activity in urban neighborhood, 2: Feel afraid to leave the house, 3: Number of people around, 4: Street lighting, 5: Traffic, 6: Victimization experience.

As shown in table 12 and table 13, all the Average Variance Extended (AVE) and discriminant validity values caught the identified standard values which means that the designed questionnaire survey is valid and reliable.

### 3.7 The Final Questionnaire

The questions with the acceptable values abovementioned were given to the experts in urban planning field for recommendations and revisions. These were incorporated before the final questionnaire was released. The final questionnaire is as shown in Table 14.

### 4. Conclusion

The aim of this research was to present the development of a questionnaire survey for measuring the safety factors associated with the physical activeness in Tehran neighborhoods. The intention is to provide a guideline which enhances both spectrum improved safety in the neighborhood and higher physical activeness among the residents. The questionnaire was developed in seven major steps. This questionnaire is expected to assist urban developers and managers in improving the safety condition in urban neighborhoods of Iran.

**Table 14: The Final Questions of Questionnaire Survey**

<b>Physical Activity in Tehran Urban Neighborhoods</b>
1. How likely is it for you to do physical activity in your neighborhood?
2. Please specify the importance of doing physical activity in your neighborhood for you?
3. Please specify how interesting is doing physical activity in your neighborhood for you?
4. Do you agree with "it is pleasant for me to go for physical activity in my neighborhood"?
5. Do you have experience to go for physical activity more than two hours of a week (sum of total times you went for physical activity in a week) in your neighborhood?
<b>Feel Afraid to Leave the House in Tehran Urban Neighborhoods</b>



6.	How likely is it for you that one or more below options happen to you while you leave the house for physical activity in your neighborhood? <ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there</li> <li>• Someone will try to rob you or steal something from you when you are outside</li> <li>• Someone will try to attack you or beat you up when you are outside</li> </ul>
7.	Please specify how safe is your neighborhood from one or more below options happen to you while you leave the house for physical activity in your neighborhood? <ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there</li> <li>• Someone will try to rob you or steal something from you when you are outside</li> <li>• Someone will try to attack you or beat you up when you are outside</li> </ul>
8.	Do you agree with “I don’t feel afraid of one or more below options happen to me while I leave the house for physical activity in my neighborhood”? <ul style="list-style-type: none"> <li>• Someone will try to break into your home when you are not there</li> <li>• Someone will try to rob you or steal something from you when you are outside</li> <li>• Someone will try to attack you or beat you up when you are outside</li> </ul>
<b>Number of People Around in Tehran Urban Neighborhoods</b>	
9.	How likely is it for you to feel afraid or unsafe of the crowded places or places with many people around while you do physical activity in your neighborhood?
10.	Do you agree with “I feel safe when doing physical activity in the crowded places or places with many people around of my neighborhood?”
11.	Do you have experience to feel unsafe or afraid of the crowded places or places with many people around while you do physical activity in your neighborhood?
<b>Street Lighting in Tehran Urban Neighborhoods</b>	
12.	According to the sufficiency of street lighting of your neighborhood please specify how safe do you feel when you go for physical activity at night in your area?
13.	Do you agree with “my neighborhood’s street lighting is good enough to make me feel safe when I do physical activity at night there”?
14.	Do you have experience to feel afraid or being reluctant to go for physical activity at night in your neighborhood because of insufficient or unsuitable street lighting there?
<b>Traffic in Tehran Urban Neighborhoods</b>	
15.	According to the traffic or cars with high speed in your neighborhood, please specify how safe do you feel when you go for physical activity in your neighborhood?
16.	Do you agree with “the traffic or the speed of the cars in my neighborhood is not that serious to make me feel afraid or unsecure of doing physical activity there”?
17.	Do you have experience to feel afraid or unsafe of traffic or the cars with high speed in your neighborhood while doing physical activity there?
<b>Victimization Experience in Tehran Urban Neighborhoods</b>	
18.	Please specify how safe do you feel from being the victim of vandalism, violence, attack or physically injured or robbery when you go for physical activity in your neighborhood?
19.	Do you agree with “my neighborhood is safe and free of vandalism, violence, attack or physically injured or robbery while I do physical activity there”?
20.	Do you have experience to be the victim of vandalism, violence, attack or physically injured or robbery while you do physical activity in your neighborhood?

## References

- [1] Thomas, J.R., Silverman, S. and Nelson, J., 2015. Research Methods in Physical Activity, 7E. Human kinetics.
- [2] Skinner, A. C., & Skelton, J. A. (2014). Prevalence and trends in obesity and severe obesity among children in the United States, 1999-2012. *JAMA pediatrics*, 168(6), 561-566.
- [3] Dinsa, G.D., Goryakin, Y., Fumagalli, E. and Suhrcke, M., 2012. Obesity and socioeconomic status in developing countries: a systematic review. *Obesity reviews*, 13(11), pp.1067-1079.
- [4] Newman, O., 1972. Defensible space (p. 264).
- [5] Wilson, J.Q. and Kelling, G.L., 1982. Broken windows. *Critical issues in policing: Contemporary readings*, pp.395-407.
- [6] Ramkissoon, H., Smith, L. D. G., & Weiler, B. (2013). Relationships between place attachment, place satisfaction and pro-environmental behaviour in an Australian national park. *Journal of Sustainable Tourism*, 21(3), 434-457.
- [7] Monteath, K., 2009, December. Assessing open space provision using network analysis. In *Proceedings of the Institution of Civil Engineers*.

- Engineers-Municipal Engineer (Vol. 162, No. 4, pp. 219-226). Thomas Telford Ltd.
- [8] De Almeida PhD, J.P., 2013. Interactive multicriteria decision support system for spatial planning analysis. *Proceedings of the Institution of Civil Engineers*, 166(1), p.3.
- [9] Behzadfar, M., Abdi, F., & Mohammadi, M. (2014). Evaluating the physical and psychological indicators effective on promotion of the pedestrian-based capacity of major urban spaces of Farahzad village of Tehran. *Iran University of Science & Technology*, 24(1), 45-55.
- [10] Yaghmayi S. & Baghdadi A. (2014). Safety of Urban Spaces Using Crime Prevention through Environmental Design Approach (Case Study: District 19 of Tehran Municipality). MAGNT Research Report. (Vol. 2, No. 5, pp. 243-253).
- [11] Shokoohi, R., Hanif, N. R., & Md Dali, M. (2011). Children walking to and from school in Tehran: associations with neighbourhood safety, parental concerns and children's perceptions. *Asian Journal of Environment-Behaviour Studies*, 2(4), 13-26.
- [12] Rad, V.B., Najafpour, H., Ngah, I., Shieh, E. and Rad, H.B., 2014. The Systematic Review on Safety in Urban Neighborhoods. *Life Science Journal*, 11(10).
- [13] Rad, V.B., Najafpour, H., Ngah, I., Shieh, E. and Rad, H.B., 2014. The Systematic Review on Physical Activity in Urban Neighborhoods. *Life Science Journal*, 11(9).
- [14] Ringle, C. M., Wende, S., & Becker, J. M. SmartPLS Statistical Software For Structural Equation Modeling [Internet]. Smartpls.com. 2017 [cited 2017 Jan 22].
- [15] Williams, A. (2003). How to... Write and analyze a questionnaire. *Journal of Orthodontics*, 30(3), 245-252.
- [16] Reynolds, N., Diamantopoulos, A., & Schlegelmilch, B. (1993). Pre-testing in questionnaire design: a review of the literature and suggestions for further research. *Market Research Society. Journal.*, 35(2), 1-11.
- [17] Sudman, S., & Bradburn, N. M. (1983). Asking questions: a practical guide to questionnaire design.
- [18] Rad, V. B., Najafpour, H., Ngah, I., Shieh, E., Rashvand, P., & Rad, H. B. (2015). What Are The Safety Factors Associating with Physical Activity in Urban Neighborhoods? (A Systematic Review). *J. Appl. Environ. Biol. Sci.* 2015 5(3): 259-266.
- [19] Tilley, N., & Sidebottom, A. (Eds.). (2017). *Handbook of crime prevention and community safety*. Taylor & Francis.
- [20] Swatt, M.L., Varano, S.P., Uchida, C.D. and Solomon, S.E., 2013. Fear of crime, incivilities, and collective efficacy in four Miami neighborhoods. *Journal of Criminal Justice*, 41(1), pp.1-11.
- [21] Harrison, R. A., Gemmell, I., & Heller, R. F. (2007). The population effect of crime and neighbourhood on physical activity: an analysis of 15 461 adults. *Journal of epidemiology and community health*, 61(1), 34-39.
- [22] Doyle, S., Kelly-Schwartz, A., Schlossberg, M., & Stockard, J. (2006). Active community environments and health: the relationship of walkable and safe communities to individual health. *Journal of the American Planning Association*, 72(1), 19-31.
- [23] Hooker, S. P., Wilson, D. K., Griffin, S. F., & Ainsworth, B. E. (2005). PEER REVIEWED: Perceptions of Environmental Supports for Physical Activity in African American and White Adults in a Rural County in South Carolina. *Preventing chronic disease*, 2(4).
- [24] Suminski, R. R., Poston, W. S. C., Petosa, R. L., Stevens, E., & Katzenmoyer, L. M. (2005). Features of the neighborhood environment and walking by US adults. *American journal of preventive medicine*, 28(2), 149-155.
- [25] Craig, C. L., Brownson, R. C., Cragg, S. E., & Dunn, A. L. (2002). Exploring the effect of the environment on physical activity: a study examining walking to work. *American journal of preventive medicine*, 23(2), 36-43.
- [26] Wilcox, S., Castro, C., King, A. C., Housemann, R., & Brownson, R. C. (2000). Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. *Journal of epidemiology and community health*, 54(9), 667-672.
- [27] Ross, C. E. (2000). Walking, exercising, and smoking: does neighborhood matter?. *Social science & medicine*, 51(2), 265-274.
- [28] Lorenc, T., Clayton, S., Neary, D., Whitehead, M., Petticrew, M., Thomson, H., ... & Renton, A. (2012). Crime, fear of crime, environment, and mental health and wellbeing: mapping review of theories and

causal pathways. *Health & place*, 18(4), 757-765.

[29] Vagias, W.M., 2006. Likert-type scale response anchors. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University.

[30] PVM, T., MA, M.G., CVS, P. and MRICS, M., 2010. Value management for sustainable decision making. *Proceedings of the Institution of Civil Engineers*, 163(1), p.43.

[31] Chen, H. Y., & Boore, J. R. (2010). Translation and back-translation in qualitative nursing research: methodological review. *Journal of clinical nursing*, 19(1-2), 234-239.

[32] Mullen, M.R., 1995. Diagnosing measurement equivalence in cross-national research. *Journal of International Business Studies*, 26(3), pp.573-596.

[33] Chang, L.M., Chang, S.I., Ho, C.T., Yen, D.C. and Chiang, M.C., 2011. Effects of IS characteristics on e-business success factors of small-and medium-sized enterprises. *Computers in Human Behavior*, 27(6), pp.2129-2140.

[34] Chin, W.W., 1998. The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), pp.295-336.

[35] Gefen, D. and Straub, D., 2005. A practical guide to factorial validity using PLS-Graph: Tutorial and annotated example. *Communications of the Association for Information systems*, 16(1), p.5.

[36] Henseler, J. and Fassott, G., 2010. Testing moderating effects in PLS path models: An illustration of available procedures. In *Handbook of partial least squares* (pp. 713-735). Springer Berlin Heidelberg.

[27] Green, S.B. and Salkind, N.J., 2010. *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. Prentice Hall Press.

[28] Fornell, C. and Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, pp.39-50.

[39] Bollen, K.A., 1989. *Structural equation models*. Encyclopedia of biostatistics.

[40] Hulland, J. and Richard Ivey School of Business, 1999. Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic management journal*, 20(2), pp.195-204.