

# Research Proposal

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## 1 Introduction

- The prevalence of anxiety have been increasing over the past 25 years (Calling, 2017).
- Several factors have been found to be associated with this longitudinal change of anxiety.
- For example, those who engage in regular exercise have had lower increase of the prevalence of anxiety.
- However, the prevalence of regular exercise has been increasing over the past 25 years (Leijon, 2015).
- It suggests that although regular exercise is important to reduce the risk of anxiety, its effect may not be strong in the population level.
- Exercise and eating are 2 major health related behaviors of humans, but usually difficult to be modified.
- Socializing is another behavior which has been found important to our health.
- It may also be difficult for a certain groups of people, but there have been findings that living in areas with high social capital would be beneficial no matter what they have social interactions.
- From these backgrounds, this study aims to examine the associations between neighborhood level social relations and longitudinal change of self-reported anxiety.

## 2 Aims

## 3 Methods

Table 1: Description of variables to be analyzed

Type	Name	Description
Outcome	Sarcopenia (categorical)	<b>Male</b> - max grip strength <26kg and SMI <7kg/m <sup>2</sup> . <b>Female</b> - max grip strength <18kg and SMI <5.7kg/m <sup>2</sup> .
	Max grip strength (continuous)	Max grip strength kg after two times trial.
	SMI (continuous)	SMI kg/m <sup>2</sup> measured by bio-impedance analysis.
Exposure	Mean land slope	Mean land slope (degree in angular unit) within 1000m network buffer from the residential point.
	Bus stop density	Number of bus stops within 1000m network buffer.
	Residential density	Number of residences within 1000m network buffer.
	Intersection density	Number of intersections within 1000m network buffer.
Covariates	Basic characteristics	Age, gender, BMI, smoking, drinking.
	Socio-demographic variables	Driving license, education.
	Comobidities	Musclue skeletal diseases, Stroke, Cardiovascular disease.