

## 論文審査の結果の要旨および担当者

報告番	※ 甲 第
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論 文 題 目

Built Environment and Frailty: Understanding the influence of neighbourhood on older people's health

(構築環境とフレイル：高齢者の健康への近隣環境の影響に関する理解)

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## 論文審査の結果の要旨

別紙 1 - 2

**ABSTRACT:** Frailty is defined as a state of extreme vulnerability to intrinsic and extrinsic stressors leading to an increased risk of adverse outcomes, such as hospitalisation, institutionalisation and death. The role of place in older adults' health is not a new concept but has only recently been recognised as important for the achievement of healthy ageing. Although there is some research suggesting that the neighbourhood built environment is associated with walking, physical activity and well-being in older adults, very little has been done to investigate the relationships between frailty and neighbourhood environment. This research sought to understand relationships between these factors in two culturally different cities, Nagoya, Japan and Adelaide, Australia. As a secondary aim we have investigated medical students' awareness about the topic of frailty. Research from this doctoral thesis found that neighbourhood built environment was significantly associated with frailty in older adults. And fifth-year medical students' perceived competence and the level of importance assigned to assessing, diagnosing and managing frailty significantly improved after a geriatric medical rotation. The worse neighbourhood characteristics identified in might lead to detrimental behavioural adaptations that constrict individual life-spaces, as well as impacting in the older adults' physical and social activity levels, leading to worsening frailty states.

A1: We do acknowledge that excluding participants that had the diagnosis of dementia in the Nagoya Longitudinal Study could have introduced a selection bias in the current further analysis of frailty and neighbourhood perceptions. We acknowledge the importance of including older patients with increasing levels of frailty in scientific research, and we have addressed these aspects in Chapter 4 (Feasibility study) recruiting from a group of older adults taking part in a residential care rehabilitation program. Older adults with frailty are often excluded from medical research, and this misrepresentation may lead to less importance being given to this population. Actively recruiting from participants living on supported living such as residential aged care or retirement villages might be an interesting strategy to actively recruit patients with increased frailty and cognitive impairment.

A2. As proposed by the Ecological Models of Aging, the environment can act as hinder or promoter healthy behaviours. As indicated by our research, where both samples (Adelaide and Nagoya), the diversity of land uses, defined as the presence of different types of areas in the neighbourhood (commercial, residential, public, and private spaces) was significantly associated with frailty. We suggest that promoting neighbourhoods that have a diversity of destinations, as well as accessibility to them would be an interesting way to promote healthy behaviours such as social and physical activity participation, and thus influence on frailty status of the population in this area.

A3. In chapter 7 (Nagoya study), all analysis were adjusted to physical activity, unfortunately we did not have accelerometry data in Japan, so the Baecke's physical activity questionnaire was used as a surrogate. We do agree that accelerometry data is a more accurate measure of participants' physical activity, and we have tried to capture that in the Adelaide sample, but unfortunately an increased amount of missing data was found in the use of accelerometry. We have acknowledged these details in chapter 7 and 8.

以上の理由により、本研究は博士（医学）の学位を授与するに相応しい価値を有するものと評価した。

## 試験の結果の要旨および担当者

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(試験の結果の要旨)			
<p>主論文についてその内容を詳細に検討し、次の問題について試験を実施した。</p> <p>1. Given the importance of dementia as a public health concern, and the particular limitations that it may present for getting out and about in one's neighbourhood, what do you think was the specific impact of excluding people with dementia that is more than mild? Ideally this is something that could be discussed in greater detail in chapters 7 and 8. Do you think this could have impacted your results in ways that are meaningful and relevant for policy and practice? Can you think of study designs that may capture a frailer sample better if future studies were done? It is great to see that you have published or have submitted so many papers from your thesis and from additional related projects not included in the thesis.</p> <p>2. Regarding the Environmental Press spectrum - how could it be relevant in terms of intervention? We tend to think only of lifting people out of adverse situations. But this would suggest that we need to provide enrichment too.</p> <p>3. As physical activity (PA) is thought to mediate the association between living environment and frailty, I suggest using PA as estimated by accelerometry to compare the relative importance of perceived and actual environmental measures.</p> <p>以上の試験の結果、本人は深い学識と判断力ならびに考察力を有するとともに、地域在宅医療学・老年科学一般における知識も十分具備していることを認め、学位審査委員合議の上、合格と判断した。</p>			