A survey of vegetation types adjacent to walking routes around Satoyama areas border suburban residential area

**Introduction**

Walking is important for man’s health and an easy and safe aerobic activity. Green spaces are beneficial to walkers for health not only because plants supply clean air, but also because their aromas provide a relaxing effect.

There are studies examining human health related to a green living environment. A five year follow up cohort study of 3144 older people in Tokyo, walkable green spaces positively influenced the longevity of urban senior citizens (T. Tanaka, et al. 2002.) [1], serving a population of 845,542 people in 98 Dutch practice morbidity related to green spaces in 1km radius, especially was strongest for anxiety disorder and depression. J. Mass, et al.2009 [2], Association of physical activity and neighbor hood area to what walking streets, park access, park or green spaces (Bethany, et al. 2009, Inoue, et al.2009) [3,4]. However there are no studies to appear what kinds of better vegetation on healthy walking routes. This study will give any suggestion for human health about green spaces around Satoyama area, so we can introduce Satoyama's new value.

- **Satoyama area**
  This means that cultivated land and forests (semi-deep mountains and article forests) with connected river.

- **Satoyama forest**
  The secondary forests in Satoyama area.

**Objective**

The research aims to examine the typical types of vegetation around Satoyama areas growing along roads where people regularly walk as well as their adjacent areas by computing which areas residential residents choose for their walking.

**Method**

- **Research area**
  The study area was Yokohama City in Kanagawa prefecture in Yokohama, Japan. There are big and small area around residential area. This reason that long ago this area have many Satoyama, especially inland. Since 1950's years ago, many residential were built for go to Tokyo or costal industrial area for work. So Satoyama became less and small.

  The study area, Tostuka in Yokohama City is Satoyama area border residential area. This area offers many kinds of green spaces, as well as residential areas. This area are covered with green 70.8% (city 18.79% vegetation map: Based on 1:25.000 map, 2000, 2001 survey) by Environment Research area

- **Survey area**
  Totuka in Yokohama City

- **Collect data**
  The questionnaires among suburban residents who are walking enthusiasts. A self-reporting questionnaire survey was conducted from March to April 2009 with the support of NGO non-governmental organization.

**Factors Examined in Questionnaire**

- **Sex, How old, Where living, Business, Reason for walk**
- **Usual routes for walking**
- **With whom on day walking**

The questionnaire was used residential neighborhoods. We defined neighborhoods as about 4km residential area. Because a survey reported that citizen active at daily living area is about this.

**Result & discussion**

Of the 400 questionnaires distributed, 177 were recovered, accounting for a response rate of 44.3%. We restricted our analysis to responses on 167 routes. Among the respondents, 71 were males (40.1%) and 105 were females (59.9%). Most of the respondents were in their 60s (N = 130 persons, 83.0%). We used to walking 167 routes for analysis.

The average length of walking routes was 3.763m and the range of route’s length was 2.214m from all average.

- **Vegetation type**
  - Trees (1.72) and grass (1.77) in resident → Map 1
  - The secondary broad-leaved deciduous forests (Japanese oak) in Satoyama area (1.83)
  - The bark of these trees is the right colour and the leaves let through soft sunlight.

- **Secondary broad-leaved deciduous forests**
  - It seems that diversity is rich and ecosystem is healthy.

In this area, there are second deciders (30.500m² park, forest, old style factory, with rural landscape

This study shows on this subject that healthy walker chose trees and grasses in residential area, the secondary broad-leaved deciduous forests. Consequently it was suggested Satoyama forests with well kept and diversity rich is the suitable place for walking. Trees are plant's volume, so more supply clean air and aroma. Thus forests is comfortable as walking space.

**Conclusion**

To take care of Satoyama forests will supply comfortable spaces for walking. So this result suggest valuable of Satoyama in promotion of human health. This study a Satoyama area. So we want to research on area of different types of green spaces. We must consider another factors of choice walking route, example about space and topography.

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