

“SENAPAN” - Swiss Panel of Elderly People

Insights into nutritional and sensory changes in elderly people

J. Rudorf, S. Clauss, J. Kinner, A. Bongartz, C. Brombach

ZHAW - Zurich University of Applied Sciences, Institute of Food and Beverage Innovation, Wädenswil, Switzerland

Introduction

The average age in industrialized countries is constantly increasing which gives rise to challenges in many areas of life. To study issues that are associated with food, sensory and nutrition the Zurich University of Applied Sciences in Wädenswil (Switzerland) has founded the “senpan” (Swiss Panel of Elderly People) that participates in a **multidisciplinary long-term study**. Since 2012 the groups Sensory and Nutrition have been investigating the relationships between **sensory decline, liking, food intake, physiology and social aspects** in a consumer panel with members over 65 years old. The study is designed to identify and quantify changes in sensory perception and nutritional behavior over the next few years through annual assessments. This poster provides a general overview of the project. Two further posters provide insight into initial areas of focus within the project framework:

- “Insights into sensory changes in elderly people” (P031)
- “The impact of age on perception” (P032)

Project overview

The “senpan” currently comprises 60 persons between 64 and 85 years old [52% female, 48% male, average age 69,5 ($\pm 3,92$)] years. All participants live at home and do not require nursing or care services. The panellists participate annually in the following series of tests: **Nutrition:** Food Frequency Questionnaire (FFQ), questionnaires concerning food and social life. **Physiology:** anthropometric measurements: Body Mass Index (BMI), Waist Hip Ratio (WHR), Physical Activity Level (PAL), circumference of upper arm and calf, BIO-impedance measurements. Strength and mobility tests: hand grip strength, Timed-Up & Go-Test, Chair-Rise Test. **Sensory:** reading test, detection of taste threshold, detection of smell threshold, hearing test, three kinesthetic tests (mouthfeel, distinguishability of surfaces with different grain size, distinguishability of hardnesses)

Materials and Methods

Distinguishability of surfaces was carried out with sand paper of different grain sizes (80, 100, 120, 180 and 240 μm) in a ranking test. Samples were assessed with the dominant hand. It was valuated according to DIN ISO 8587:2010. The PAL was indicated by the participants according to the following classification: extremely inactive 1.2, sedentary 1.45, moderately active 1.65, vigorously active 1.85, extremely active 2.2. The PAL Sport according to the following: 0.3= 30-60 min. 4-5x/ week; 0.15=30-60 min. 2-3 x/ week; 0.075=30-60 min. 1x/ week; 0.01=less often than 1x/week; 0=never. The BMI was evaluated by measuring height and body weight and computed according to the following formula: body weight in kg divided by the square of the body height in m).The WHR was evaluated by measuring the waist and hip circumference around the fullest part and computed as follows: circumference waist (cm) divided by circumference hip (cm). The intake of food was evaluated via an FFQ.

Results

Table 1 displays the results of the anthropometric measurements of the two tests that were carried out in 2012 and 2013. It illustrates that the participants are vigorously active and do sport 4-5 times per week for 30-60 min. Women have slightly higher PAL levels compared to men, which means that they are more active. The BMI levels show that the female participants are of normal weight, whereas the male participants are moderately overweight. The WHR levels indicate no increased risk for cardiovascular diseases for men and women. No differences were observed between the anthropometric figures that were collected in 2012 and 2013. **Figure 1** illustrates the intake of the main food groups compared with the data from the Swiss nutritional agency. It shows that the intake of unsweetened beverages, fats and oils; meat, fish, egg, meat substitutes and fruits are above the recommended levels, whereas the intake of milk and milk products; grains, pasta, potatoes and rice and vegetables are below.

Results (cont'd)

Table 1: Results of the anthropometric measurements. ¹The Physical Activity Level is a measurement unit to express the amount of energy a person consumes by activity. ²The body mass index is the ratio of weight to body height squared (kg/m^2). It is used to determine a person's ideal weight range and is a guideline for assessing overweight and obesity (<18.5...underweight, 18.5-25...normal weight, 25-30 over weight, >30 obese). ³Circumference waist/circumference hip. A WHR >0.85 for women and >1 for men is associated with a higher risk for cardiovascular diseases (WHO).

	2012 N= 56		2013 N=60	
	female	male	female	male
PAL ¹	1,81 \pm 0,09	1,76 \pm 0,10	1,82 \pm 0,12	1,73 \pm 0,12
PAL Sport	0,16 \pm 0,09	0,16 \pm 0,10	0,13 \pm 0,09	0,14 \pm 0,09
BMI ²	23,4 \pm 3,93	26,2 \pm 2,49	24,4 \pm 4,26	27,0 \pm 4,63
WHR ³	0,81 \pm 0,05	0,95 \pm 0,05	0,84 \pm 0,06	0,95 \pm 0,81

Figure 2 shows that participants had difficulties in ranking sand paper with different grains sizes from fine to coarse. The samples with the smaller grain sizes were ranked in the correct position less often than the samples with the bigger grain sizes. This suggests that the haptic sensitivity of people above 65 years is reduced especially for small particles. Furthermore, there appeared to be no significant difference between the haptic capacity of men and women or Furthermore, *no difference between the haptic capacity of men and women was identified.*

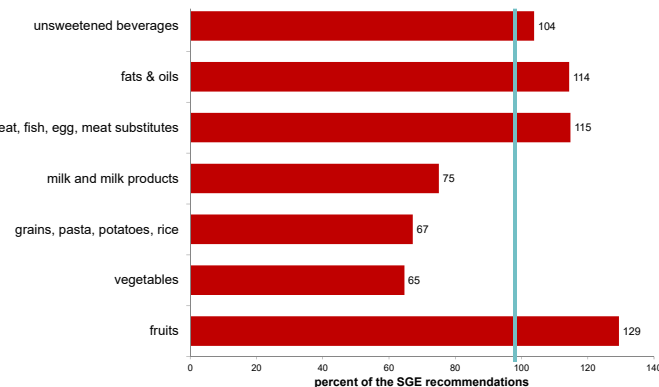


Figure 1: Daily intake of the main food groups compared with levels recommended by the Swiss nutritional agency (SGE) expressed as percentages

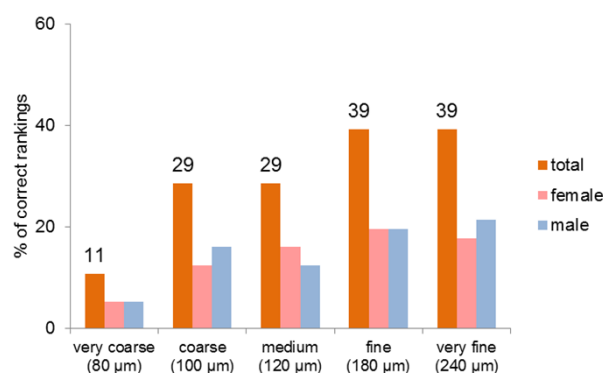


Figure 2: Percentage of correctly positioned samples in the ranking test on distinguishability of surfaces

Perspectives

Within the next few years, a **unique set of data** will be collected with the “senpan” which is referring to the **nutritional behaviour, nutrition-related physiological parameters, physiological capacities, sensory abilities and social life** of people in Switzerland above 65 years old. The study will contribute to a better understanding of the changes that accompany aging and provide a baseline for further projects aimed at improving the nutritional status and well-being of the elderly and the aged.