



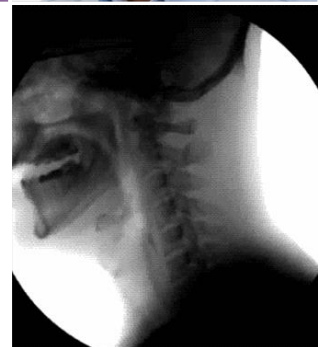
## Innovative food technology systems for independent senior living



Mats Stading  
Research Institutes of Sweden



Koichiro Matsuo  
Fujita Health University



## Participants



**RISE – Research Institutes of Sweden**  
Agrifood and Bioscience, Gothenburg  
Mats Stading, Evelina Höglund, Emma Bragd



**Fujita Health University**, Department of  
Dentistry, Aichi  
Koichiro Matsuo, Kazuharu Nakagawa, Hiroshige  
Taniguchi, Norie Kitoh



**Matsumoto Dental University**, Division of Oral  
and Maxillofacial Biology, Nagano  
Yuji Masuda, Koki Hatori



**Helsingborg Municipality**, Department of Care  
and Health, Helsingborg  
Jenny Håkansson



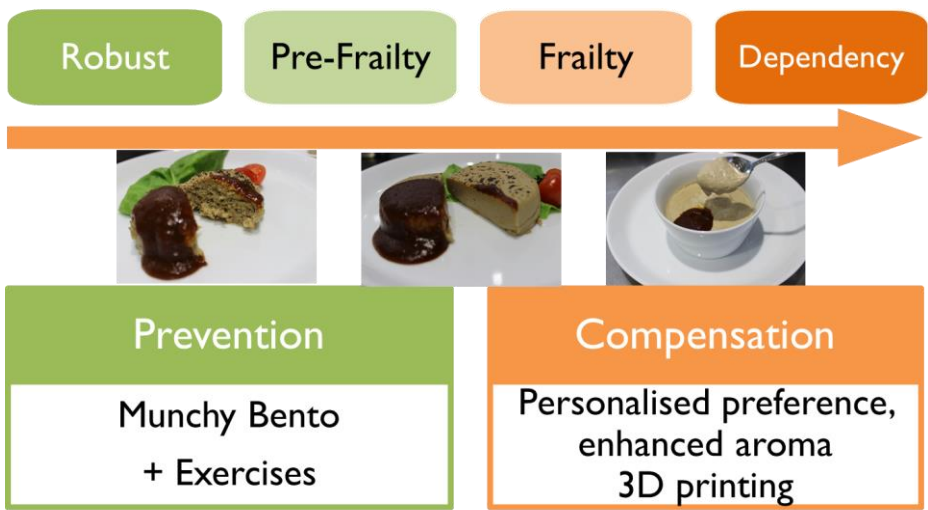
**Findus Special Foods**, Bjuv  
Gunnel, Stühr-Olsson, Amanda Olsson, Mikael  
Nilsson



**Food Care Co.**, Head Office, Yokohama  
Koichi Ogawa, Noburu Yamazaki, Yutaka Takeuchi

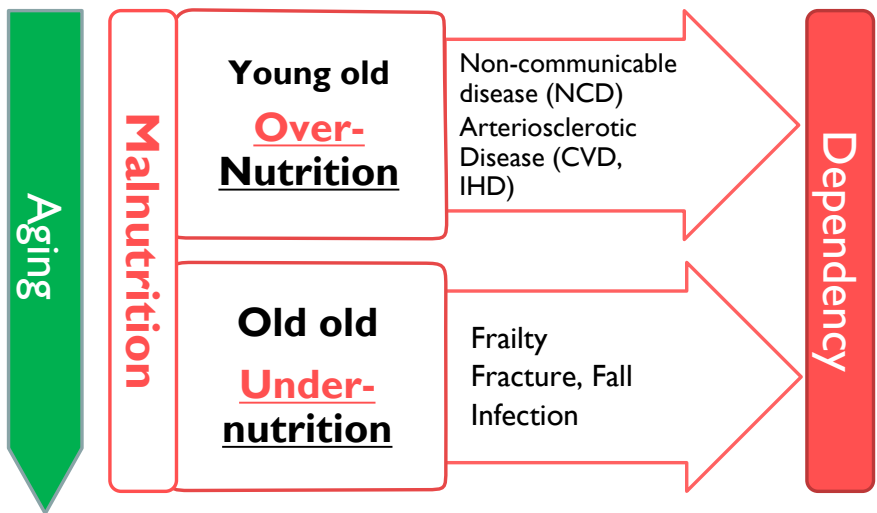


Independent to dependent



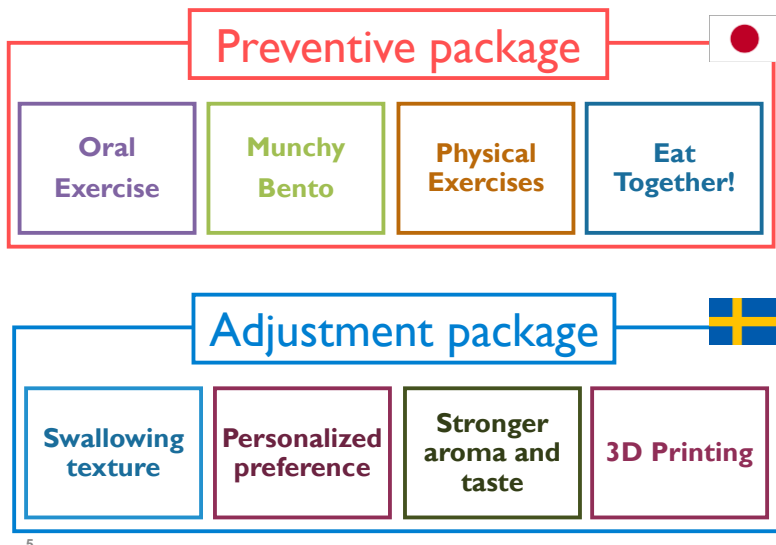
3

Malnutrition (over and under nutrition has significant impact on nursing care

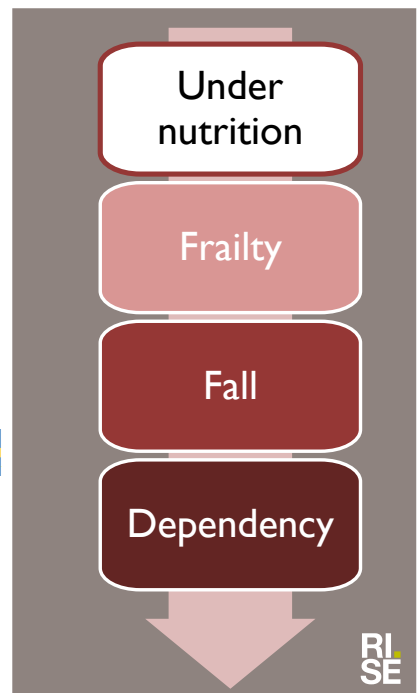


4

## Main objectives of the project



5



## Intervention study

Intervention period:

12 weeks (Apr to July, 2018) *now ongoing!*

### Intervention:

Physical exercises (2/w)

Oral exercises (3/w)

Eating munchy food bento (2/w at lunch)

Nutrition instruction

**Control:** physical exercises only

6



## Munchy food bento



7



## Current food alternatives for swallowing disorders

### 1. A common solution



## Current food alternatives for swallowing disorders

### 2. Worst case solution



go independent

## Current food alternatives for swallowing disorders

### 3. A good solution



Photo from Findus

**Food is crucial for active and healthy ageing**

- Sufficient protein and energy
- Continued oral function

**Participation of industry and public sector is vital**

- Industry to advice on product development and to produce food
- Public sector to evaluate end-user value

go



## An even better solution

- Personalized nutritional food to stay healthy during aging
- Food to retain oral functionality to stay active during aging
- Aroma, taste and texture adopted to age impaired function
- Food combined with exercise
- Novel and adopted processing and distribution

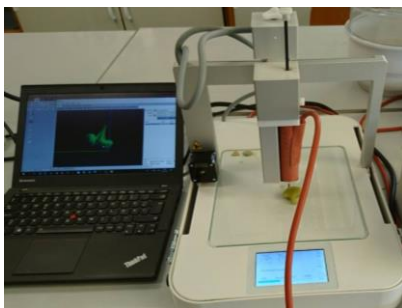


Contributes to active and healthy ageing through development of new, innovative and better solutions

go

## 3D Food Printing

- A print head is directed to deposit a stream of a food, layer by layer, predetermined by a 3D model.
- Properties
  - + Personalized nutrition and preference
  - + Complex, real shapes
  - Slow production



### Innovative aspects of the project

- 3D-printing of food
- Food preserving oral health
- Attractive to the end-users

go

## Bilateral project

- Common challenge for Japan and Sweden
- Many synergies
  - Knowledge and industrial experience  
Sweden: food for persons with dysphagia  
Japan: food to prevent dysphagia
  - Elderly population  
Sweden: 20% over 65 years  
Japan: 27% (world average 8.5%)
  - Japanese and Swedish food producing companies competing commercially
  - Synergistic academic competencies  
Japan: Oral processing  
Sweden: Swallowing

13



## Expected outcomes

- Phase 1
  - The concept has been proven and the most important parameters and techniques identified.
  - We have determined how to increase energy content and nutrients while adjusting taste and flavor to suit the preferences and needs of senior citizens.
  - The products also have diverse texture from munchy to easy to chew. Suitable distribution and processing techniques have also been determined.
- Phase 2, 2019 – 2021
  - the working parts of the concept will be further developed and refined, and up-scaled to production jointly with the participating companies and evaluated by the end-users.

14

