

## **How to Support Independent Living for Elderly by Developing Services and Technology**



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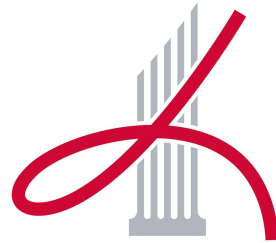
PIRAMK University of Applied Sciences

## Contents:

- Introduction of PIRAMK – University of Applied Sciences
- Supporting independent living of elderly and disabled people
  - education, operations models developed and carried out in PIRAMK's projects
- **ITSE -facilities** and cooperation with Aid device and other technology enterprises
- Mapping home visits, **fall risk assessment** of elderly people and **prevention of falls**



# PIRAMK – University of Applied Sciences



PIRAMK



## Education Clusters

- Wellbeing Services (e.g. Health Care, Social Services)
- Wellbeing Technology (e.g. Physiotherapy, Biomedical Laboratory Services, Data Management)
- Cultural Services (Music, Media)
- Business Administration and Tourism Services (e.g. Tourism, Hotel and Restaurant Management, Service Management)





## **Research and Development Activities**

- create preconditions for research, development, and consulting services in PIRAMK University of Applied Sciences
- utilise the multidisciplinary nature of PIRAMK University of Applied Sciences within research and development work
- invest in projects aiming at developing the operation and services of companies and the public sector regionally in the Tampere Region, nationally, and internationally



## Competence Development Programmes

- Wellbeing Services and Technology
- Experience Services
- Management of Services and Networks
- Service and Product Development programme (**PractiCo**®)
- Education Services
  - further and continuing education, specialisation studies, personnel training, seminars

# Services for elderly and disabled people in Finland :

## Challenges:

- Aging of population → increase in the need for services
- Long distances to services
- Quality, effectiveness and client-orientation of services

## Possibilities:

- Development of services, new operation models
- Focus on home care, support services, preventive activity
- Skilful and qualified nursing and care personnel
- More intensive utilisation of technology and aid devices
  
- Closer cooperation between diverse administrative sectors



# TECHNOLOGY SKILLS TO HOME CARE SERVICES



→ supporting the independent coping and quality of life of elderly and disabled people

→ development of home care work by utilising technology



01.09.2005 - 29.02.2008

[www.piramk.fi/teknosko](http://www.piramk.fi/teknosko)

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**HYVITE**



# TeknosKo Education and Development Project

## Target group:

- Home care personnel in diverse sectors (public, private and third sector)
- Physiotherapy personnel
- Aid device and other technology enterprises and personnel in the Tampere Region

Approximately 350 social and health care professionals and 20 organisations participate



# Forms of Activity :

- Independent coping and the supporting Technology skills **education module**
  - Functioning ability of elderly and disabled people, supporting and assessing it
  - Aid devices as support for functioning ability and independent coping e.g. physically or visually handicapped, hearing-impaired people
  - Accessibility, aesthetics and safety of home and living environment
  - Diverse client groups and technological possibilities e.g dementia, neurological patients
  - Ergonomy in home care work and technology facilitating work
  - Information technology in home care
- **Piloting** of technology in home care together with aid device and technology enterprises



## **Facilities of Independent Coping: a testing and learning environment**



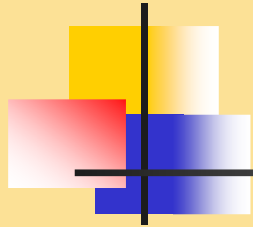
- testing by your own
- living labs, in real life settings

Education e.g. increases personnel's understanding of visually handicapped and hearing-impaired people



# Multimedia in dementia care: Ilona activity software for elderly /people for dementia





# The aims

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- to help to create meaningful and interesting time spending
- to raise memories, support memory and give impulses for communication
- to create an encouraging and positive atmosphere
- possibilities to success and pleasure
- to meet the psychosocial needs of people



**Yhteiset**



**Alma Mäkelä**



**Paavo Peltonen**



**Grammari**



**Palapelit**



**Valokuvat**



**Muistikortit**



**Ristikot**

## **Design for All Principle**

Technology and aid devices can also be beautiful, aesthetic



**Puuhuone Ars Ltd**



## Reminding Medicine Dispenser



- Intelligent reminder
- Safe and easy to use
- Remonate radio alarm
- Cost-efficient way to complement home health care service level

### **Other benefits:**

- Improve the compliance of patients to long-term medication
- Reduce the risk of an overdose
- Free efficient working time for the welfare personnel

# Mapping Home Visits in TeknosKo Project

## Assessment of elderly/disabled people's:

- functioning ability
- accessibility and safety of home and living environment (e.g. moving, falls, fire safety)
- needs for and abilities in utilising technology, aid devices
- Guidance and advice during home visits
- Testing of the **Fall Risk Assessment tool** (together with Finnish National Public Health Institute)



# Fall risk Assessment as part of the mapping home visits in TeknosKo Project

- Falling down is the most common accident and safety risk for elderly people at home and in nursing units
  - Falls can be prevented by interfering in risk factors; internal (illnesses, medication, walking difficulties, weakened muscular strength and balance, poor nutritional state, dizziness, confusion) and external (environment, lack of aid devices....
- The fall risk assessment evaluates the risk factors on a rating scale and the client`s fall risk defined to be low, average or high



## SOME RESULTS: FALL RISK

Kuusela service home (n= 14,  
8 women/6 men, average age 82.8 years)  
Mild dementia/no dementia & low need for home care

low	
average	10
high	4

Härmälä/ home care clients living at home (n=12,  
9 women/3 men, average age 77.9 years)

low	1
average	5
high	6



## SUMMARY: Kuusela Service home n=14/ Härmälä n= 12

Fall risk assessment form				
Risk factors	Arviointiasteikko			
	0	1	2	3
Fall history	Ei kaatumisia edellisten 12 kk aikana <b>7/6</b>	Yksi kaatuminen edellisten 6 kk aikana <b>1/4</b>	Yksi kaatuminen edellisten 3 kk <b>0/0</b>	Yksi kaatuminen edellisen kk aikana tai useita kaatumisia edellisten 12 kk aikana <b>6/2</b>
Age	0-19 vuotta <b>0/0</b>	20-59 vuotta <b>0/0</b>	60-70 vuotta <b>2/2</b>	> 70 vuotta <b>12/10</b>
Medication	Ei käytä keskushermoston tai sydän- ja verenkiertoelimistön toimintaan vaikuttavaa lääkitystä <b>0/1</b>	Käyttää sydän- ja verenkiertoelimistön toimintaan vaikuttavaa lääkitystä <b>3/3</b>	Käyttää keskushermoston toimintaan vaikuttavaa lääkitystä <b>0/0</b>	Käyttää sekä keskushermoston että sydän- ja verenkiertoelimistön toimintaan vaikuttavaa lääkitystä tai käytössä ? 4 lääkettä <b>1/8</b>
Balance, muscular strength and walking ability SPPB	10 - 12 pistettä SPPB -testistä <b>0/0</b>	7-9 pistettä SPPB -testistä <b>3/5</b>	4-6 pistettä SPPB -testistä <b>7/2</b>	0-3 pistettä SPPB -testistä <b>4/5</b>
Mental health MMSE	25-30 pistettä MMSE -testistä <b>8/5</b>	18-24 pistettä MMSE -testistä <b>5/7</b>	12-17 pistettä MMSE -testistä <b>2/0</b>	0-11 pistettä MMSE -testistä <b>0/0</b>
Environment	Asuu yhdessä muiden kanssa. Ei tarvetta ympäristön muutostöille. <b>0/0</b>	Asuu yksin. Ei tarvetta ympäristön muutostöille. <b>9/3</b>	Asuu yhdessä muiden kanssa. Tarvetta ympäristön muutostöille. <b>2/3</b>	Asuu yksin. Tarvetta ympäristön muutostöille. <b>3/6</b>
Nutrition, cardiovascular system	Hyvä ravitsemustila. Normaali unirythmi. <b>8/4</b>	Vähentynyt ruokahalu ja/tai ongelmia unirytmisä. <b>3/7</b>	Alipainoinen ja /tai vakavia ongelmia unirytmisä. <b>1/0</b>	Huomattava alipainoisuus ja/tai tarkoitukseton painonlasku ja/tai ortostaattinen hypotensio <b>2/1</b>
Eyesight	Normaali <b>4/2</b>	Käyttää silmälaseja <b>4/2</b>	Sumentunut näkö, kaihi, makulopatia tai silmänpainetauti <b>4/8</b>	Vaikea näköhäiriö tai sokeus <b>2/0</b>
Incontinence	Ei <b>6/2</b>	Lisääntynyt WC:ssä käynti <b>7/8</b>	Yökastelua tai ponnistusinkontinenssi <b>1/1</b>	Pakkoinkontinenssi <b>0/1</b>
Feet and shoes	Ei alaraajakipuja ja/tai hyvin istuvat, matalakantaiset (<2,5 cm) ja tukevapohjaiset kengät <b>5/2</b>	Ei alaraajakipuja ja/tai käyttää satunnaisesti kannasta auki olevia tai huonosti istuvia kenkiä <b>0/0</b>	Alaraajakipuja, jotka eivät häiritse liikkumista ja/tai käyttää usein liikkeessa kannasta auki olevia tai huonosti istuvia kenkiä <b>0/1</b>	Alaraajakipuja, jotka häiritsevät liikkumista <b>9/9</b>
Communication	Normaali <b>11/8</b>	Puhevaikeuksia, mutta ymmärrettävä <b>2/1</b>	Dysfasia tai kieli-/kommunikaatioeste <b>2/3</b>	Vakava puheongelma / kommunikaatioeste <b>0/0</b>
Cronic illnesses	Ei kroonisia sairauksia <b>0/1</b>	1 krooninen sairaus <b>1/2</b>	> 1 kroonista sairautta <b>8/4</b>	Useita kroonisia sairauksia ja/tai akuutti sairaus <b>5/5</b>



# Mapping home visits:

## Conclusions Related to Elderly People

### Situation

- Hearing impairment
- Vision impairment
  
- Impairment of balance
- Difficulties in dressing
- Difficulties in cooking
  
- Loneliness

### Proposals for action

- Hearing aid, flashing light connected to door bell and telephone
- Vision acuity test, unnecessary glasses replaced by proper ones, magnifying glasses, reading device etc.
  
- Moving aids, support rails
- Sock and stocking aid, shoehorn
- Small aid devices, e.g. rubber can opener, cutlery and knives
  
- Day activity, voluntary work



# Mapping home visits:

## Conclusions Related to Home / Living Environment

### Situation

### Proposals for action

#### **Kitchen**

- Use of oven and stove (memory and balance difficulties)
- High location of upper kitchen cabinets
- Missing cabinet handles

- Stove guard, support rail at the edge of table
- Adjustability, gripping tongs, things to lower shelves
- Handles to doors

#### **Bedroom**

- Narrow, low bed
- Moving in dark

- Raising of bed legs, new broader and higher bed
- Leaving light to corridors/  
WC, night light by the bed and switch within reach

# Technology Is Not a Solution as Such...

## Difficulties in using technology:

- enough attention has not been paid on usability
- incorrect beliefs, prejudices
- aid device is provided "too late" to the use of elderly people ← learning problems
- technical, ethical problems
- engineer- and technology-oriented planning, ignorance of the everyday life of elderly and disabled people

→ joint planning, education, guidance





*Combining Technology and  
Humanity*

TECHNOLOGY SKILLS TO  
HOME CARE SERVICES



## **Cooperation possibilities: Planned Projects :**

- Active aging in Tampere Region / Keep your balance in Tampere Region
  - E.g. fall risk assessment and prediction (cooperation with Tampere University of Technology, fall risk sensor; also with potential international dimension and co-operation)
- Demented people 's wellbeing and quality of life as a challenge to develop nursing and technology
- Functional (smart) textiles as support for the functioning ability and safety of elderly and disabled people
- **Benchmarking, good practices in both Wien/Schwechat and Tampere Region**



# Danke schön !

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