

Translating data and innovation to policy and practice

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Targets of Discussion

- How to develop and harness innovative new technologies to improve the lives of older adults.
- How technology can be translated and transferred into meaningful products and services to promote healthy aging

Which ones are needed by older people?

Unique Features of older patients

R-A-M-P-S

- Reduced body reserve
- Atypical presentation (Geriatric syndrome)
- Multiple pathology
- Polypharmacy
- Social adversity

Geriatric syndrome

- **Instability (Fall)**
- **Immobility**
- **Intellectual impairment**
- **Incontinence**
- **Inanition (malnutrition)**
- **Insomnia**
- **Iatrogenesis**
- **Sarcopenia, Frailty**

What is “Geriatric Medicine” ?

“....that branch of general medicine concerned with the

- ☯ clinical (physical & mental)
- ☯ rehabilitative
- ☯ social
- ☯ preventive

aspects of illness and health in the elderly”

New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)					
Immobility					
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

* C- clinical, R – rehabilitation, S – social , P – health promotion and prevention

New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Exoskeletal _{(R)*} Computer software _{(C, R,)*}				
Immobility					
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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Space Walker







Riablo Fall-Risk-Prevention Test and Functional Training System Brand: Euleria

New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation _{(C)*}				
Immobility					
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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Easy to Swallow Foods for the Elderly



New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation _{(C)*}	Sway sensor and remote sensor _{(C, R)*}			
Immobility					
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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Sensors in Shoes



When MobiHealthNews looked at this space back in 2009, two of the most promising new developments were sensor-embedded shoes. AT&T was working on a prototype of "smart slippers" using technology from startup 24Eight. These shoes would be equipped with sensors that could detect slight changes from a patient's ordinary foot movement and transmit a warning to a doctor or caregiver.



Active Protective, a Philadelphia startup



New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation	Sway sensor and remote sensor _{(C, R)*}	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application _{(P)*}	Environment _{(R, S, P)*} Live alone
Immobility					
Incontinence					
Intellectual impairment					
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New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation	Sway sensor and remote sensor _{(C, R)*}	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Immobility	Vehicle design _{(C, R, P)*} Smart wheelchair				
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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buses are permitted within the walls of the town...t
ean there aren't other (FUN) ways of getting around



New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation	Sway sensor and remote sensor _{(C, R)*}	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Immobility	Gait _{(C, R, P)*} Smart wheelchair	Prevent immobility syndrome _{(C, R, P)*}			
Incontinence					
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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New Technologies are needed in these areas

	R	A	M	P	S
Instability (Fall)	Sarcopenia _{(C, R)*} Gait _{(C, R, P)*} Food innovation	Sway sensor and remote sensor _{(C, R)*}	Holistic care _{(C, R)*}	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Immobility	Gait _{(C, R, P)*} Smart wheelchair Exoskeletal	Prevent immobility syndrome _{(C, R, P)*}	Holistic care _{(C, R)*} Telemedicine _{(C)*} Connectivity _{(C)*}	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Incontinence	Kegel exercise				
Intellectual impairment					
Inanition (anorexia)					

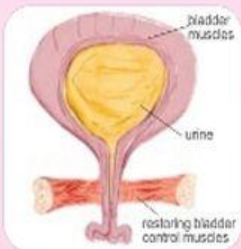
* C- clinical, R – rehabilitation, S – social , P – health promotion and prevention

Insomnia

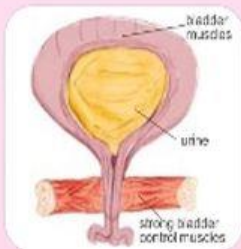
Comparison of effects



Pelvic muscle is flabby, urinary incontinence.

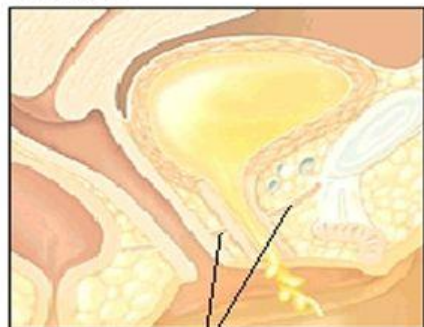


Get exercise and gradually recovered.



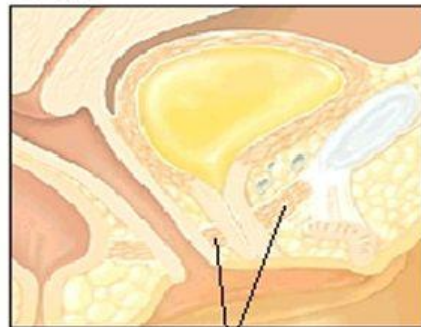
Get recover, break out of urinary incontinence.

Before



Weak pelvic floor muscles

After



Strong pelvic floor muscles

6

exercises to strengthen the muscles of the pelvic floor

1



2



3



4



5



6



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Immobility	Gait _{(C, R, P)*} Smart wheelchair Exoskeletal	Prevent immobility syndrome _{(C, R, P)*}	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Incontinence	Kegel exercise _{(C, R)*}	Diaper with humid sensor _{(C,P)*}			
Intellectual impairment					
Inanition (anorexia)					
Insomnia					

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Diaper dermatitis in older adults



Sometimes more serious : Urinary tract infection

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Immobility	Gait (C, R, P)* Smart wheelchair Exoskeletal	Prevent immobility syndrome (C,, P)*	Holistic care (C, R)* Telemedicine Connectivity	Drug alert system (C, S)* Drug interaction application	Environment (R, S, P)* Live alone
Incontinence	Kegel exercise	Diaper with humid sensor	Holistic care (C, R)* Telemedicine Connectivity	Drug alert system (C, S)* Drug interaction application	Environment (R, S, P)* Live alone
Intellectual impairment	Cognitive training: smart phone, VR, gamification				
Inanition (anorexia)					

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Cognitive Training Enhances Innovative Thinking and Brain Networks in Older Adults

Featured

Neuroscience

Open Neuroscience Articles

· November 14, 2017

Summary: For healthy adults over 55, cognitive training can improve innovative thinking, researchers report.

Source: Center For Brainhealth.

Researchers at the Center for BrainHealth at UT Dallas have demonstrated in a pilot study that cognitive training improves innovative thinking, along with corresponding positive brain changes, in healthy adults over the age of 55.

The study, published recently in *Frontiers in Aging Neuroscience*, reveals that a specific strategic cognitive training program enhanced innovation in healthy adults. Performance was measured by an individual's ability to synthesize complex information and generate a multitude of high-level interpretations.

"Middle-age to older adults should feel empowered that, in many circumstances, they can reverse decline and improve innovative thinking," said Dr. Sandra Bond Chapman, Center for BrainHealth founder and chief director and lead author of the study. "Innovative



Three's a Crowd:
The Interaction Between RSV,
Immune Responses, and Frailty

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Quirky ▾

Science News

from research organizations

Cognitive training enhanced innovative thinking and brain networks in older adults

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Mind & Brain

- > Intelligence
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FULL STORY

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"Middle-age to older adults should feel empowered that, in many



Rendever, a startup out of the
Massachusetts Institute of Technology (MIT)

GAMIFICATION

Gamification: How to Take it to the Next Level



ACHIEVEMENT



USER ENGAGEMENT



REWARD



MOTIVATION



LEARNING



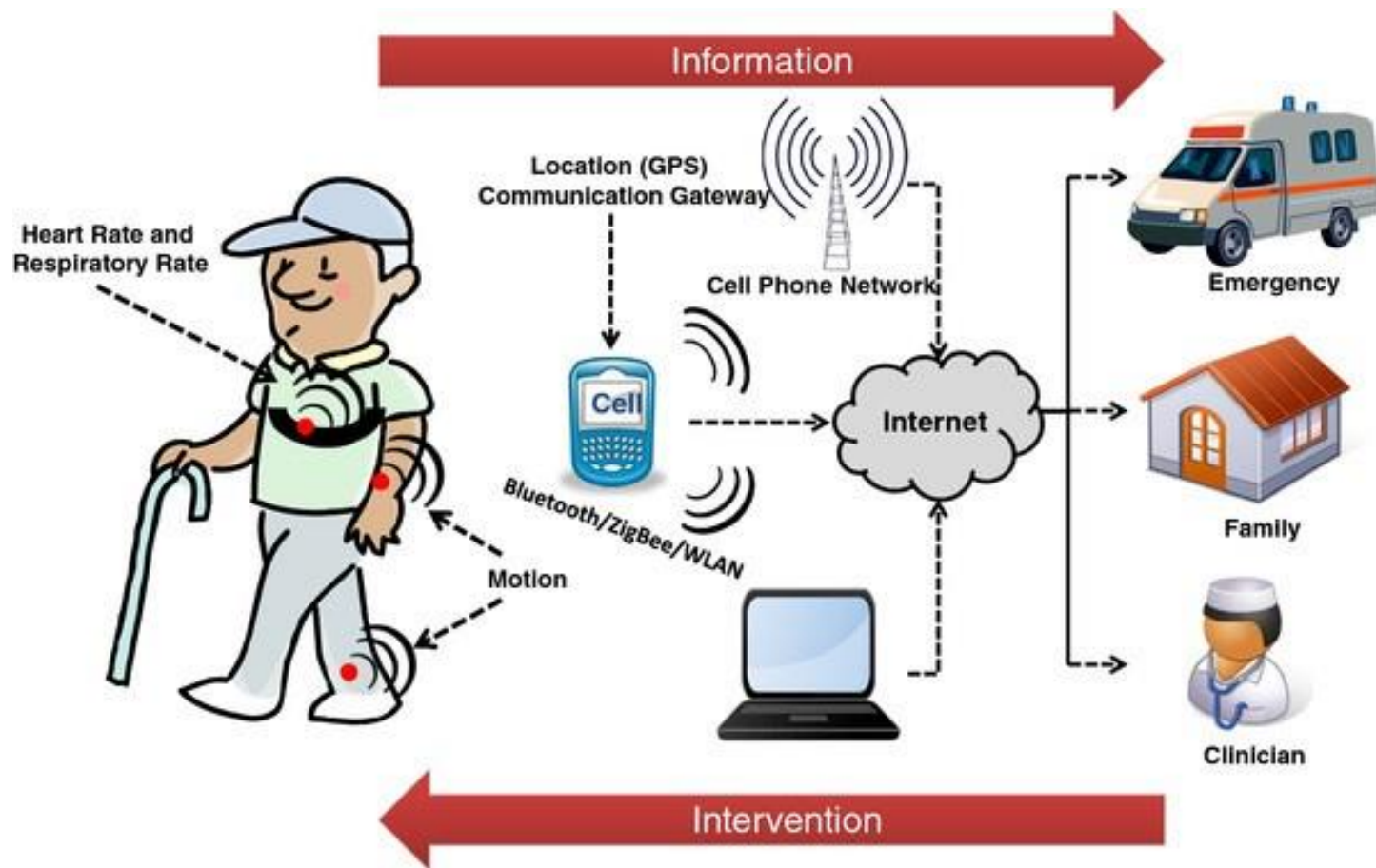
CHALLENGE



New Technologies are needed in these areas

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Immobility	Gait _{(C, R, P)*} Smart wheelchair Exoskeletal	Prevent immobility syndrome _{(C, R, P)*}	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Incontinence	Kegel exercise	Diaper with humid sensor	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Environment _{(R, S, P)*} Live alone
Intellectual impairment	Cognitive training: smart phone, VR, gamification _{(C,R,P)*}	Depression: remote CCTV for family Wearable device			
Inanition (anorexia)					
Insomnia					

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Intellectual impairment	Cognitive training: smart phone, VR, gamification	Depression: remote CCTV for family Wearable device	AI dementia Dx Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Light adaptation & delirium
Inanition (anorexia)	Food innovation	Alarming system of weight loss	Holistic care _{(C, R)*} Telemedicine Connectivity	Drug alert system _{(C, S)*} Drug interaction application	Virtual meal with remote family
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Insomnia	Sleep promoter	Sleep apnea Wearable device			

Can Wearables Detect Sleep Apnea?



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Insomnia	Sleep promoter	Sleep apnea Wearable device	Holistic care _{(C, R)*} Telemedicine	Drug alert system _{(C, S)*}	Light adaptation : amber light

ASEAN Center for Active Aging and Innovation (ACAI)

❖ ACAI as the “**change agent**”

- ✓ skill and power to stimulate, facilitate, and coordinate the change effort.
- ✓ Sense of belonging

❖ Health and social personnel network :

- ✓ ASEAN Aging Index : (Health, Income & Security, Enabling environment, Capacity building & Employment, Policy & Legislation)
- ✓ Cross-cultural research as a starting point
GERONTONET (European Geriatric Research Network)
- ✓ Joint projects with same interests

❖ Public Private Partnership : Age-friendly merchandises