Exercise for healthy body and healthy mind

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Department of Social Work and Social Administration, HKU
Sau Po Centre on Ageing, HKU

Jun 15, 2015
Longest life expectancy in the world

<table>
<thead>
<tr>
<th>Country name</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong SAR, China</td>
<td>83</td>
<td>83</td>
<td>84</td>
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<tr>
<td>Japan</td>
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<tr>
<td>Switzerland</td>
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<td>Italy</td>
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<td>Singapore</td>
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<td>France</td>
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<td>Liechtenstein</td>
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<td>Australia</td>
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<td>Luxembourg</td>
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</tr>
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<td>Korea, Rep.</td>
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<tr>
<td>Israel</td>
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<td>Iceland</td>
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<td>Canada</td>
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<tr>
<td>Sweden</td>
<td>82</td>
<td>82</td>
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</tr>
</tbody>
</table>

Sources: the World Bank
Older Adults will Make Up 1/3 of HK’s Population by 2041

Median age: 44
Life expectancy: 81 (M) 88 (F)

Median age: 52
Life expectancy: 84 (M) 91 (F)

Demand & Supply of Eldercare in Hong Kong

- Demand side: ageing of the aged, high institutionalization rate (6.8%)
- Supply side: rapidly shrinking eldercare workforce (import of foreign domestic helpers)

## Hong Kong’s Ranking in Global AgeWatch Index 2014

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Country/Territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Norway</td>
</tr>
<tr>
<td>2</td>
<td>Sweden</td>
</tr>
<tr>
<td>3</td>
<td>Switzerland</td>
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<td>4</td>
<td>Canada</td>
</tr>
<tr>
<td>5</td>
<td>Germany</td>
</tr>
<tr>
<td>22</td>
<td>Chile</td>
</tr>
<tr>
<td>23</td>
<td>Hungary</td>
</tr>
<tr>
<td>24</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>25</td>
<td>Panama</td>
</tr>
<tr>
<td>26</td>
<td>Czech Republic</td>
</tr>
<tr>
<td>93</td>
<td>Tanzania, United Republic of</td>
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<tr>
<td>94</td>
<td>Malawi</td>
</tr>
<tr>
<td>95</td>
<td>West Bank and Gaza</td>
</tr>
<tr>
<td>96</td>
<td>Mozambique</td>
</tr>
<tr>
<td>97</td>
<td>Afghanistan</td>
</tr>
</tbody>
</table>

Hong Kong’s elders Ranked very low in psychological wellbeing

Frailty Screening

1. Fatigue
2. Resistance
3. Ambulation
4. Illnesses
5. Weight Loss

Frailty in Hong Kong

Lum & Wong, unpublished data (n=1,892)

Cadenza Hub 2015 (n=816)
## Frailty & Ageing-in-Place Intention

### Frailty status and current ageing-in-place intention

<table>
<thead>
<tr>
<th>Considering moving into elderly home</th>
<th>Frailty status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Robust</td>
</tr>
<tr>
<td>No</td>
<td>91.5%</td>
</tr>
<tr>
<td>Yes</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

$\chi^2=37.3, p<0.001$

### Frailty status and ageing-in-place intention if health deteriorates

<table>
<thead>
<tr>
<th>Considering moving into elderly home</th>
<th>Frailty status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Robust</td>
</tr>
<tr>
<td>No</td>
<td>77.7%</td>
</tr>
<tr>
<td>Yes</td>
<td>22.3%</td>
</tr>
</tbody>
</table>

$\chi^2=9.3, p=0.009$
The “Problem” of Population Ageing

Old Age can be Full of Life
Health in Old Age

Every Older Person is Different

Some have the level of functioning of a 30 year old.

Some require full time assistance for basic everyday tasks.
Health in Old Age

[Diagram showing the relationship between individual factors (Age-related changes, Behaviours, Genetics, Disease) and environmental factors (Housing, Assistive technologies, Social facilities, Transport) that affect health in old age.]
How to Tackle the Problem of Frailty in the Context of Population Ageing and Shrinking Workforce?

Preventive Lifestyle Behaviour
Sedentary Lifestyle in HK Older Adults

- % who know that exercising is good for health: 66%
- % who do sports: 21%
- Self-reported barriers to exercise: Space, facilities, difficulty memorizing
- Most common activities: Watching TV, listening to radio

Cheng YH, et al. Patterns of physical exercise and contributing factors among Hong Kong older adults. 2007;13(Suppl 4):7-12. (n=1,065)
Exercising as Medicine for Frailty

“The exercise programs that optimize the health of frail older adults seem to be different from those recommended for healthy older adults. There was a paucity of evidence to characterize the most beneficial exercise program for this population.... In conclusion, structured exercise training seems to have a positive impact on frail older adults and may be used for the management of frailty.”

Exercising Habit In HK Older Adults

<table>
<thead>
<tr>
<th>Exercise Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strength/power training</td>
<td>12%</td>
</tr>
<tr>
<td>Balance and mobility activities (e.g., walking)</td>
<td>42%</td>
</tr>
<tr>
<td>Cardiorespiratory activities (e.g., swimming, brisk walk)</td>
<td>29%</td>
</tr>
<tr>
<td>Flexibility (e.g., stretching)</td>
<td>37%</td>
</tr>
<tr>
<td>None of the above</td>
<td>29%</td>
</tr>
</tbody>
</table>

Lum & Wong, unpublished data.
Physical Frailty Project GrandMove

Organizers:

NGO Partners:

Sponsor

Simon K.Y. Lee
Elderly Fund
年老≠體弱！耆力無窮
Project GrandMove
Design Background

• Resistant and multicomponent exercise is effective intervention for frailty
• Hong Kong older adults understand the benefits of exercising but most have a sedentary lifestyle
  • 66% knows that exercising is good
  • Barriers: space, facilities, difficulty memorizing, inflexible; 88% reported few barriers
  • TV watching, walking, listening to radio, visiting elderly social centre; sports in only 21%

Exercising
*Best Medicine for Frailty*

<table>
<thead>
<tr>
<th>Type</th>
<th>Duration</th>
<th>Frequency</th>
<th>No. of Sessions</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>At least 5 months</td>
<td>3 times per week</td>
<td>30-45 mins</td>
<td>71-90 years</td>
</tr>
<tr>
<td>Multi-component</td>
<td></td>
<td></td>
<td></td>
<td>Both genders</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Community</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Long-term care facilities</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-frail / frail</td>
</tr>
</tbody>
</table>

The Challenge
Sedentary Lifestyle
In HK Elders

Cheng YH, et al. Patterns of physical exercise and contributing factors among Hong Kong older adults 2007;13(Suppl 4):7-12. (n=1,065)

Cognitive/personal factors
- Knowledge
- Expectations
- Attitudes

66% knows that exercising is good

Environmental factors
- Social norms
- Access
- Ability to change own environment

Barriers: space, facilities, difficulty memorizing, inflexible; 88% reported few barriers

Exercising behaviour

Behavioural factors
- Skills
- Practice
- Self-efficacy

TV watching, walking, listening to radio, visiting elderly social centre; sports in only 21%

Shaping Exercising Behaviours in HK Elders

Cognitive/personal factors
- Knowledge
- Expectations
- Attitudes

Managed through peer coaching

Exercising behaviour

Environmental factors
- Social norms
- Access
- Ability to change own environment

Managed through group practice, peer coaching, exercises that can be carried out at home, and reward in mass exercise day

Behavioural factors
- Skills
- Practice
- Self-efficacy

Managed through group and individual practice with support from coach and programme with progressive levels
A Sustainable Model for Frailty Intervention

- Multidisciplinary Expert Empowerment
- Productive Ageing
- Healthy Ageing
Our Goal

To develop a feasible and sustainable model to address the issue of frailty in the ageing society of Hong Kong

1. To increase physical fitness of older people through resistance and aerobic exercises to prevent or improve frailty (exercise intervention).
2. To promote lifestyle change for older people to adopt resistance and aerobic exercises as their regular exercise routine through applying the principle of social learning theory (lifestyle intervention).
3. To facilitate older persons in engaging in productive ageing activities through training them as exercise coaches and provide employment opportunity for them to use the new skills in work or volunteer activities (train-the-trainer ambassador programme).
Our Objectives

1. To develop a structured exercise training tailored for elders in Hong Kong.
2. To develop a train-the-trainer ambassador programme to engage older adults in productive activity as personal coaches for healthy ageing.
3. To empower elders in taking control of their health by improving their health literacy through involving as trainee or coach.
4. To generate evidence of the effectiveness of the aerobic and resistance training protocols in preventing and intervening in frailty among Hong Kong Chinese.
5. To generate evidence of behavioural change and habit formation through a model that combine social gerontological theories in healthy and productive ageing and psychological principle of social learning theory.
1. Empowerment by Multidisciplinary Experts
   - A team of HKU scholars with multidisciplinary background in gerontology, sports and human performance, geriatric medicine, nursing, and statistics to design and test the effectiveness of an exercise habit formation programme
   - A train-the-trainer programme conducted by exercise specialists to provide the knowledge and skills, jointly offered by HKU and PolyU to provide recognition of the exercise coach qualification

2. Productive Ageing
   - Employment opportunity as exercise coaches tailored for young-olds with flexible arrangement, learning opportunity, good fit with their roles (peer) and life experience (coaching), and create meaning by helping other elders
   - Competitive compensation provided by prestigious employer (HKU through the support of SKY Lee Foundation) to recognize the economic value and status of the job

3. Healthy Ageing
   - Guided initiation of a healthy exercising habit with the help from a peer coach and social support from a peer group in the community
   - Learning of exercise in the correct dosage for preventing and intervening frailty
   - A simple yet progressive exercise programme with 2 protocols (5 levels each) for easy adoption at home/in the community while providing motivation
   - A mass exercise day to introduce the concept of robustness in old age as a social norm
Exercising Intervention
GrandMove Protocols

**Resistance Exercise**
- Can be carried out at home any time
- Linked with daily routine or environmental cue in the home or community centre settings
- Techniques that are easy to learn with low risk and high potential for improvement
- Progression from stable support of bilateral to unilateral strength and balancing

**Aerobic Exercise**
- Can be carried out at home any time
- Linked with daily routine or environmental cue in the home or community centre settings
- Continuous exercise that allow elevation of heart rate to a level determined by perceived exertion
- Techniques for self-monitoring and keeping records of perceived exertion and exercise completed
Project GrandMove
Empowerment & Productive Ageing

Coach Certificate

HKU

PolyU

Frailty & ageing process
Exercise physiology
First aid
Motivation & coaching skills
PE guidelines for older adults
Resistance exercise protocol
Aerobic exercise protocol

Empowerment & Productive Ageing
Shaping Exercising Behaviour in Frail Older Adults

2. Progressive Levels

<table>
<thead>
<tr>
<th>Features</th>
<th>Resistance Exercise Protocol</th>
<th>Aerobic Exercise Protocol</th>
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</thead>
<tbody>
<tr>
<td>• Can be carried out at home any time</td>
<td>• Can be carried out at home any time</td>
<td>• Can be carried out at home any time</td>
</tr>
<tr>
<td>• Linked with daily routine or environmental cue in the home or community centre settings</td>
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<tr>
<td>• Techniques that are easy to learn with low risk and high potential for improvement</td>
<td>• Continuous exercise that allow elevation of heart rate to a level determined by perceived exertion*</td>
<td>• Techniques for self-monitoring and keeping records of perceived exertion and exercise completed</td>
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<tr>
<td>• Progression from stable support of bilateral to unilateral strength and balancing</td>
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<table>
<thead>
<tr>
<th>Levels</th>
<th>Basic</th>
<th>Bronze</th>
<th>Silver</th>
<th>Gold</th>
<th>Platinum elite</th>
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## Habit Formation Intervention Design

<table>
<thead>
<tr>
<th>Months</th>
<th>Group Practice</th>
<th>Home Visit</th>
<th>Phone Call</th>
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<tbody>
<tr>
<td>1</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
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<td>✓</td>
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<tr>
<td>4</td>
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<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>6 (weaning)</td>
<td>-</td>
<td>-</td>
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Project GrandMove
Promoting Physical Robustness as a Social Movement
Sustainability & Scalability

1. An established train-the-trainer scheme
2. A pool of trained coaches with experience for continued programme delivery
3. A structured exercise training programme
4. A pool GrandMove ambassadors who can be mobilized for continued community impact
5. A field-tested model of healthy and productive ageing ready for further rollout
Thank You

Project Sponsor:

Simon K.Y. Lee Elderly Fund

Training Organizers:

Sau Po Centre on Ageing
The University of Hong Kong

The Hong Kong Polytechnic University
Institute of Active Ageing

Investigators:
Terry YS Lum (PI)
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Hao Luo
Jennifer YM Tang
Michael Tse
Teresa BK Tsien Wong

Project Team:
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Chi Wah Lau
Dora Lau
Mandy Lau
Jessica Law
Annie Tai

NGO Partners:

Christian Family Service Centre

Aging Support

Aaging Support

Housing Society

Aging Support

Aging Support