



Better life in the elderly- The Effectiveness of Interventional Exercise Consultation for Physical Fitness of The Elderly

Ta-Chuan Hung M.D. , E.M.B.A.

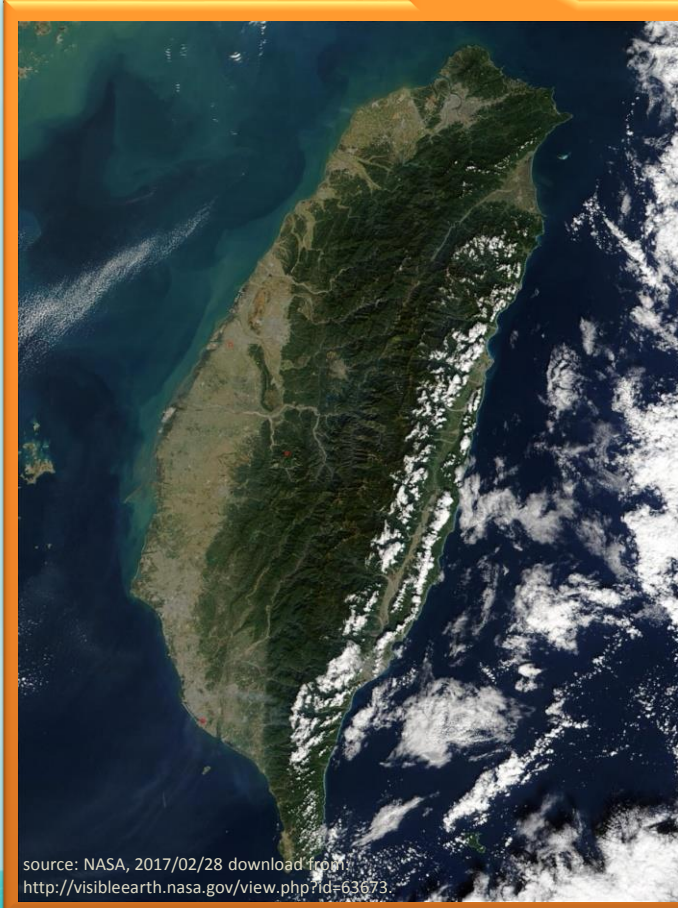
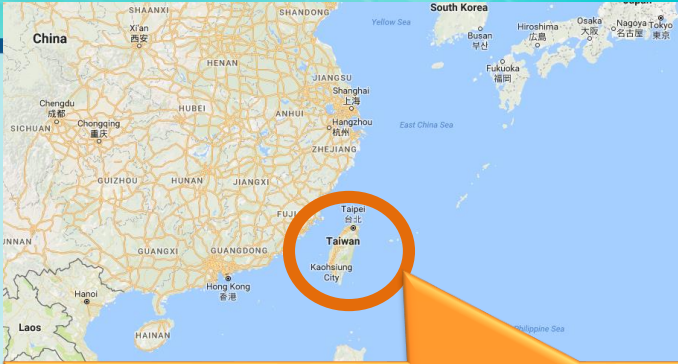
MacKay Memorial Hospital

Tamshui Branch

New Taipei City, Taiwan

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source: NASA, 2017/02/28 download from
<http://visibleearth.nasa.gov/view.php?id=63673>

- Capital: Taipei 25°02'N 121°38'E
- Population: 2016 estimate 23,519,518
- GDP (PPP): 2016 estimate Total \$1.147 trillion, Per capita \$48,703
- GDP (nominal): 2016 estimate Total \$588.334 billion, Per capita \$24,985
- HDI (2014) Increase 0.882, very high 25th
- Area Total 36,193 km2 (13,974 sq mi) (136th)



- Taipei and Danshui together qualify as a Medical Center with the longest history in Taiwan
- A health network through northern, western and eastern of Taiwan
- Intradepartmental cooperation to provide integrated, comprehensive care.
- dedicated to conducting innovative research for practical clinical application
- upholds a mission to train future medical professionals.



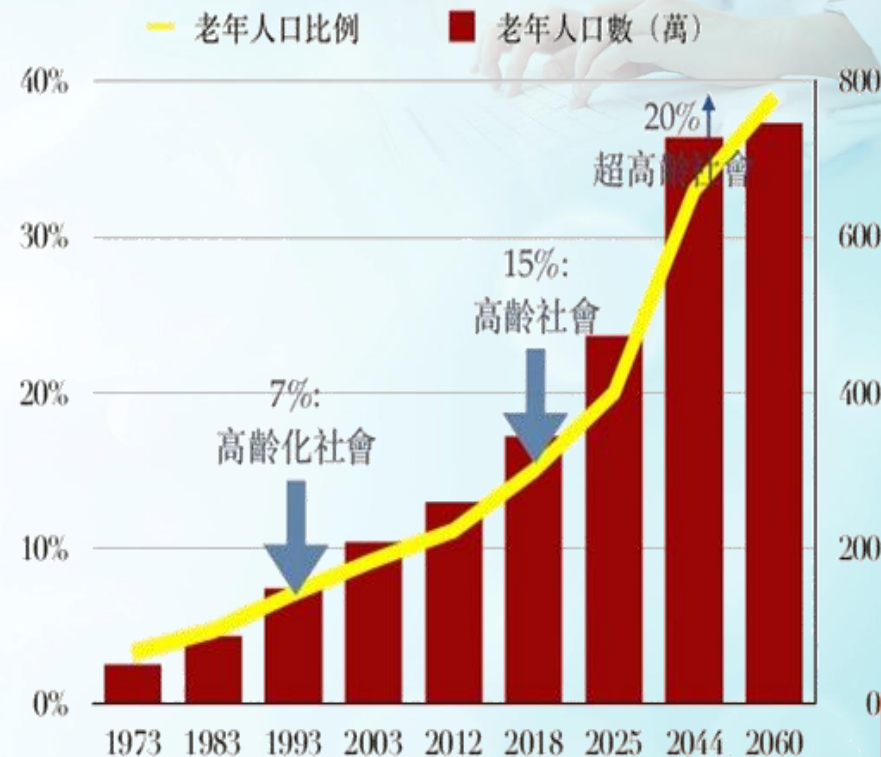
Introduction

■ Population ageing in Taiwan

- The population over the age of 65 has reached 14.5% and it has reached an ageing society(2018)
- Aging causes chronic diseases, physical dysfunction and falls, resulting in increased family and medical burden

■ Long-term care policy

- In 2017, a long-term care policy was established to promote the prevention muscle weakness or sarcopenia of the elderly



The fate of the long-term care plan cannot be avoided

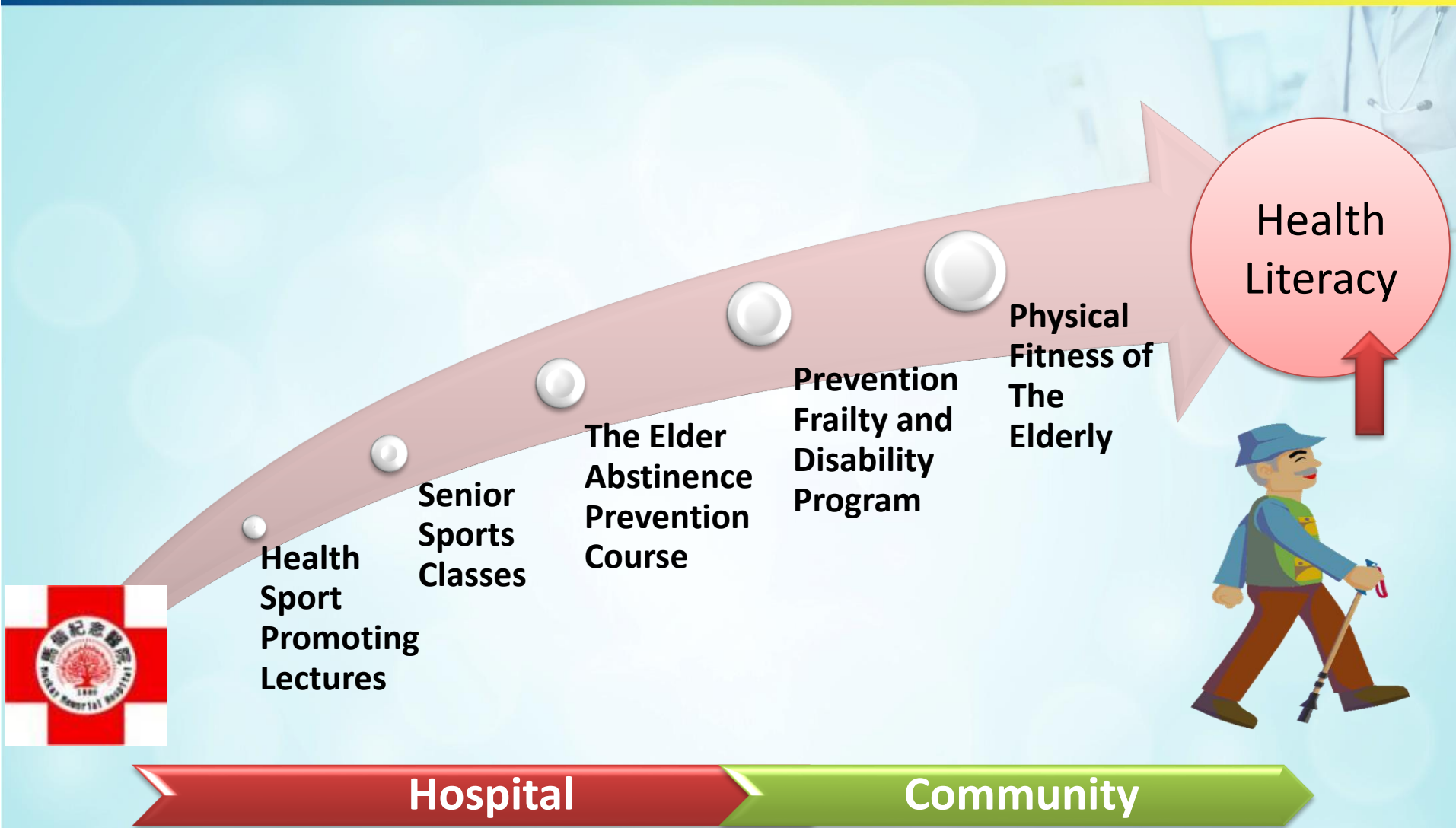


- The second cause of death in elderly accidents is "falling down." (Ministry of Health and Welfare)



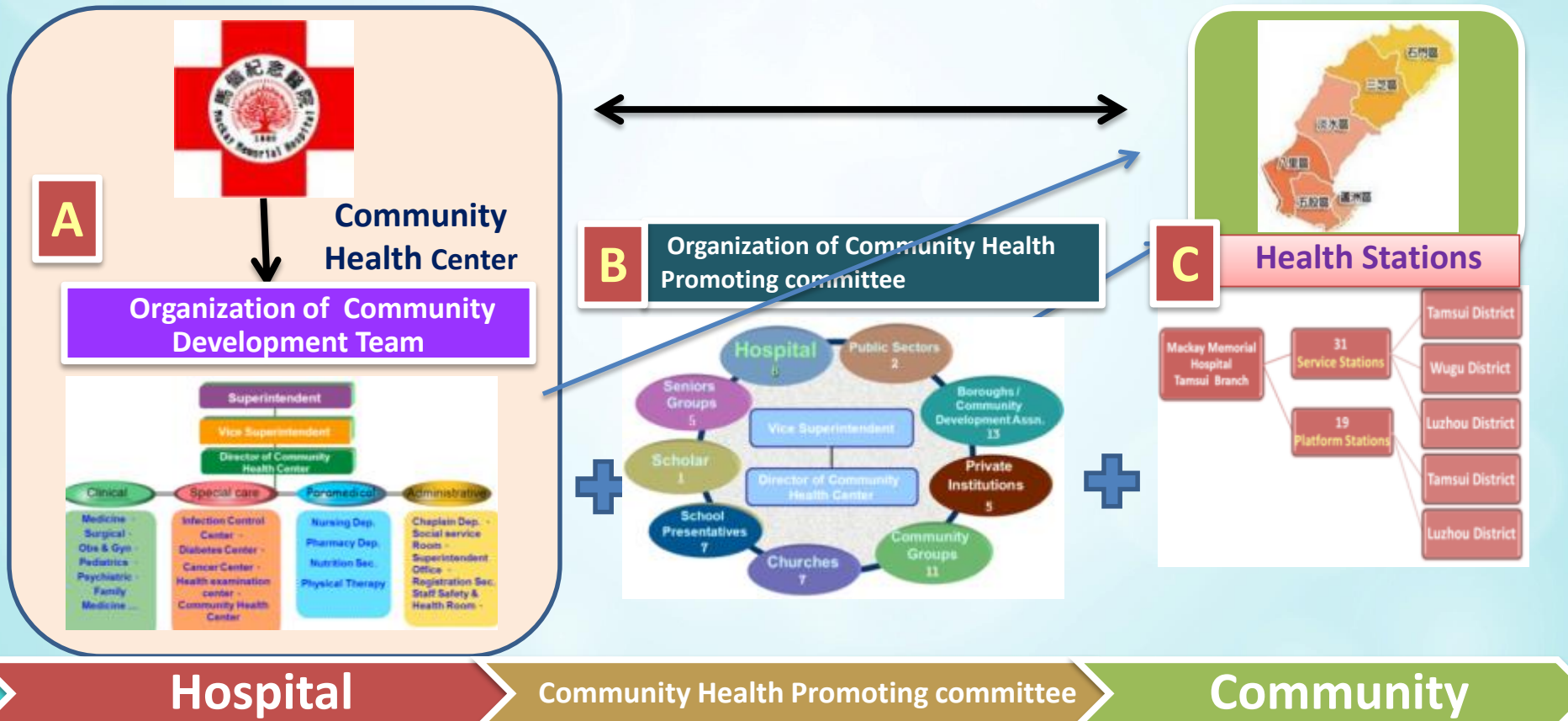
- Study indicates that exercise intervention can effectively improve muscle endurance and reduce risk of falls.





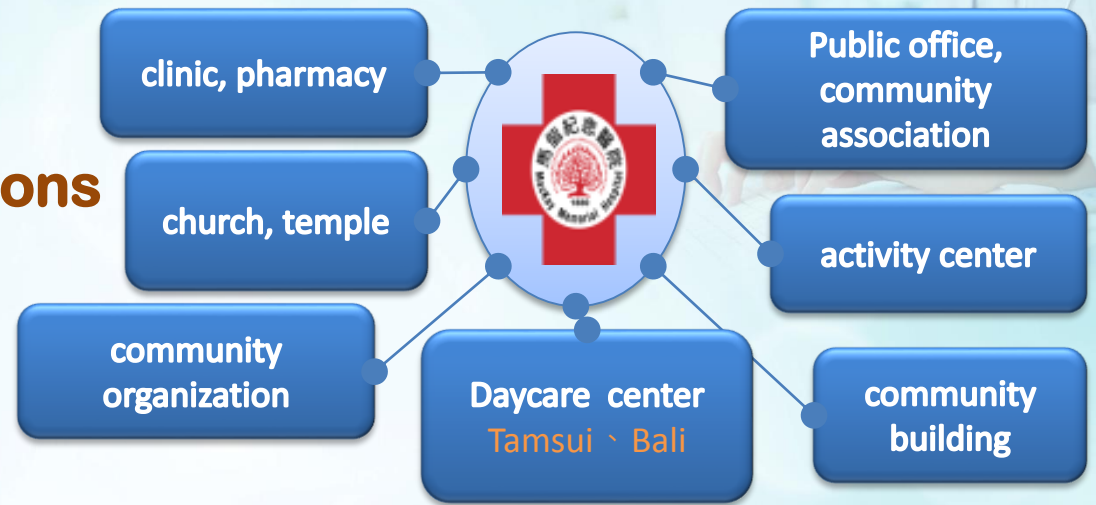
The platform of network for community health promotion

- To connect multiple sources and community network.
- To plan for physical fitness and sports health promotion programs.
- To provide health education for community residents.
- Goal to achieve health literacy.



The platform of network for Health Station

- **Distributed in 5 districts**
- **Setting up 71 health stations**



- Sanzhi District - service 2 (cloud 1) 、 platform 1**
- Tamsui District - service 29 (cloud 9) 、 platform 22**
- Bali District - service 6 (cloud 2)**
- Luzhou District – service 5 (cloud 4)**
- Wugu District - service 6 (cloud 1)**



Health Station Service Project

- Volunteers ~ measuring BMI, blood pressure, waist circumference
- Health promoting lectures
- Physical Health program in community



Health Station Service Project

◆ **Six types** of medical professionals provide consultation for residents

□ **1. Community Nurse** : (1) Check blood sugar and cholesterol
(2) Health counseling and referrals

□ **2. Cancer screening Case Manager** : Cancer screening promotion

□ **3. Psychological consultant** :
mental examination, health education consulting, dementia screening

□ **4. Dietician** : Nutrition counseling

□ **5. Pharmacist** : Drugs counseling

□ **6. Sports manager** : Sports counseling

Community Nurse



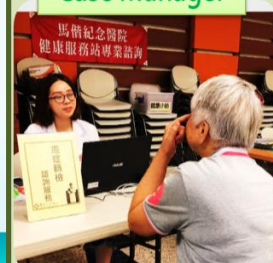
Dietician



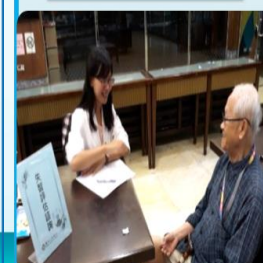
Pharmacist



Ca. screening Case Manager



Psychological consultant



Sports Manager



Physical Health programs

■ Since 2007~

- Health sport promoting lectures
- Senior sports classes
- The elderly health fitness class

■ Locations

- 1. In Hospital : Mackay Health Day
- 2. At Health Stations



In Hospital ~ Health Day

- Health Day in MMH(Every year from April to December)
- Activity projects –Area1-Physical evaluating stations
–Area2-Health promoting lectures
- Providing a variety of educative advocacy, testing and consulting services for the elderly.

Sports manager
teaching sports skills.



The Health Experience Area



In Hospital~ Prevention Frailty and Disability Program

- **Target:** The elderly receive medical examinations and assessments of the pre-frailty
- **Doctor gives exercise prescription**
- **The pre-frailty elderly were referred to Senior Fitness Sports Class**
- **Lecturer : Sports manager**
- **12 lessons, 161 participants**

運動處方 007014

衰弱評估前測

建議改善事項

加強運動項目

注意事項



Health Station

Health sport promoting lectures

Sports manager provides lectures to increase physical function, healthy diet and fitness exercises



Health Station

Senior sports classes

- **Subject : Better life in the elderly ~
Exercise together**
- **Location : Ganzhen Village Office**
- **Lecturer : Sports manager**
- **6 lessons, 161 participants**



Health Station

Prevention Frailty and Disability Program~1

- **Subject : Self-healing classroom ~
Everyone comes together**
- **Lecturer : Yangsheng Foundation Seed lecturer**
- **Location :**
 1. Youjyu Village Office~ 434 participants
 2. Guanhai-jipin Community~ 397 participants



12 lessons



Health Station Prevention Frailty and Disability Program~2

- Subject : The wonderful muscles of the elderly
~ Happy to do exercise
- Lecturer : Sports manager
- Location : Dakan Village Office
- 12 lessons, 361 participants



Health Station

Rehabilitation assessment and physical fitness

- **Subject** : The elderly receive rehabilitation assessments and physical fitness assessments
- **Time** : In June and November every year
- **Location** : Public day care center



Functional therapist assesses muscle strength



sports teacher leads the fitness rehabilitation exercise



Method

Physical Fitness of The Elderly

■ Location selection :

To select 5 health stations with a high proportion of the elderly and high willingness to cooperate

■ **81 participants joined in the test**

■ Process :

1. Physical Fitness Assessment Pre-test
2. Sports manager provides suggestions
3. Community nurses regularly follow up
4. After 5 months of physical fitness training post-test was performed
5. Pre- and post-test comparisons and recommendations provided by sports manager



Method

Physical Fitness Testing Project

Test item	Detection purpose
1.Power Grip	Upper limb muscle strength
2.Back Scratch Test	Upper body flexibility
3.30 seconds Chair Stand	Lower limb muscle strength and endurance
4.Chair Sit- and Reach Test	Low body flexibility
5.Single Leg Stand Test	Static balance
6.8-foot Seated Up- and- Go Test	Coordination and agility
7.2-minutes Step Test	Cardiopulmonary endurance



Upper limb muscle strength

Power Grip

◆ Measuring grip power with grip



Upper body flexibility

Back Scratch Test

1. To check with standing position
2. To place the right hand behind the shoulder on the same side first, palm toward the back, fingers straight down
3. Left hand moves in accordance with the same instruction
4. Measuring the distance between fingers



Lower limb muscle strength and endurance

30 seconds Chair Stand

1. Sitting in the center of the chair
2. Feet flat on the ground
3. Hands crossed on the chest
4. Measuring number of sit-down and stand-up in 30 sec.



Low body flexibility

Chair Sit- and Reach Test

1. Sitting on the chair
2. To bend down forward, tiptoe up, heel down
3. To bend down forward and use middle finger to touch the toes
4. Measuring the distance between middle finger and toes



Static balance

Single Leg Stand Test

1. Standing on one foot
2. To record standing time of left and right foot
3. Measuring 30 sec.



Coordination and agility

8-foot Seated Up- and- Go Test

1. Sitting on chairs
2. To get up and walk 2.44 meters, then back to the chair and sit down
3. To calculate the time of walking



Cardiopulmonary endurance

2-minutes Step Test

1. To measure the 1/2 distance between the midpoint of the patella and the iliac crest
2. To mark the height of the knee on the wall
3. To record the number of steps in 2 minutes



Method

Sports manager providing suggestions

- To assess the physical activity of the elderly
- To evaluate pre-test results
- To provide exercise programs, exercise strength and exercise frequency according to the physical activity of the elderly
- The sports manager teaches sports skills
- To encourage and affirm the elderly during the interaction



六、前測_專家指導建議：

檢測異常項目	建議改善類別	建議運動項目
<input checked="" type="checkbox"/> 30秒椅子坐站	下肢肌耐力	有氧運動類型 <input type="checkbox"/> 輕度 <input checked="" type="checkbox"/> 中度 <input type="checkbox"/> 重度 強度運動 每週 7 次；每次 10-20 分鐘 運動項目 <u>快走</u>
<input type="checkbox"/> 測握力	上肢肌力	肌耐力運動類型 <input type="checkbox"/> 輕度 <input checked="" type="checkbox"/> 中度 <input type="checkbox"/> 重度 強度運動 每週 5-7 次；每次 10-20 分鐘 運動項目 <u>椅子坐站</u>
<input type="checkbox"/> 坐椅體前彎	下肢柔軟度	柔軟度運動類型 <input type="checkbox"/> 輕度 <input type="checkbox"/> 中度 <input type="checkbox"/> 重度 強度運動 每週 7 次；每次 5-10 分鐘 運動項目 <u>抓背</u>
<input checked="" type="checkbox"/> 抓背測驗	上肢柔軟度	柔軟度運動類型 <input type="checkbox"/> 輕度 <input type="checkbox"/> 中度 <input type="checkbox"/> 重度 強度運動 每週 7 次；每次 5-10 分鐘 運動項目 <u>抓背</u>
<input type="checkbox"/> 單腳站立	靜態平衡	說明： 輕度運動 不太費力的輕度身體活動。 中度運動 持續從事 10 分鐘以上還能順暢地對話，但無法唱歌。這類活動會讓人覺得有點累，呼吸及心跳比平常快一些，也會流一些汗。 重度運動 持續從事 10 分鐘以上時，無法邊活動，邊跟人輕鬆說話。這類活動會讓身體感覺很累，呼吸和心跳比平常快很多，也會流很多汗。
<input checked="" type="checkbox"/> 8 英尺起身繞行	敏捷性、動態平衡	
<input type="checkbox"/> 2 分鐘屈膝抬腿	心肺耐力	

Method

Community nurses regularly follow up

- According to the sports manager's suggestions, the community nurse will follow the elderly once/month for 5 months.
- According to the condition of the elderly, community nurse encourages elderly and strengthens exercise programs.



Method

After 5 months of physical fitness training post-test was performed



- Pre- and post-test comparisons and recommendations provided by sport manager



Result

- 81 participants joined in the test
- 22 participants completed pre & post test.

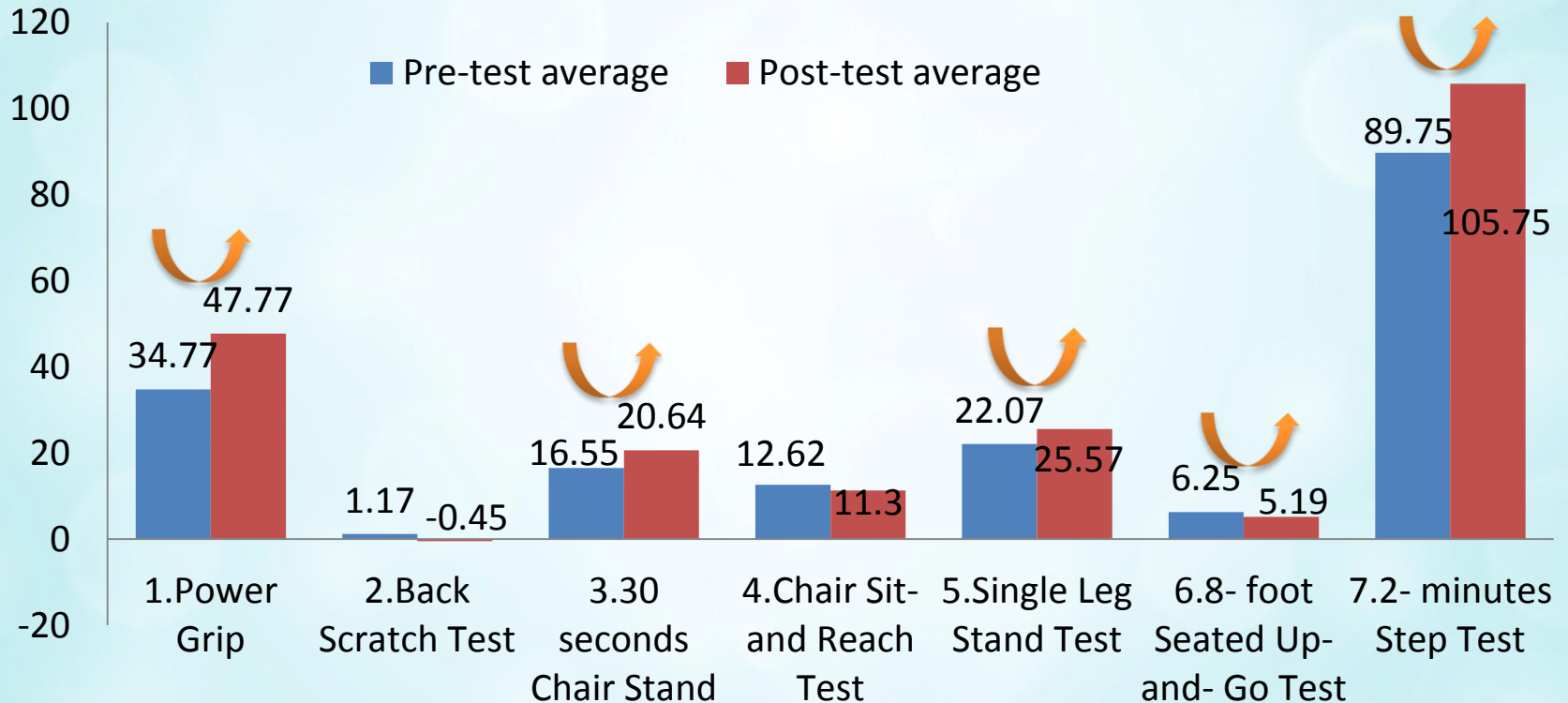
Test item	Pre-test average	Post-test average	Improvement rate
1.Power Grip(Kg)	34.77	47.77	+ 37.4%
2.Back Scratch Test(cm)	1.17	-0.45	-138.5%
3.30 seconds Chair Stand(times)	16.55	20.64	+ 24.7%
4.Chair Sit- and Reach Test(cm)	12.62	11.3	-10.5%
5.Single Leg Stand Test (s)	22.07	25.57	+ 15.9%
6.8-foot Seated Up- and- Go Test(s)	6.25	5.19	+ 17.0%
7.2-minutes Step Test(times)	89.75	105.75	+ 17.8%



Result

The results of the pre-test and post-test physical fitness

■ Five in seven items got improvement



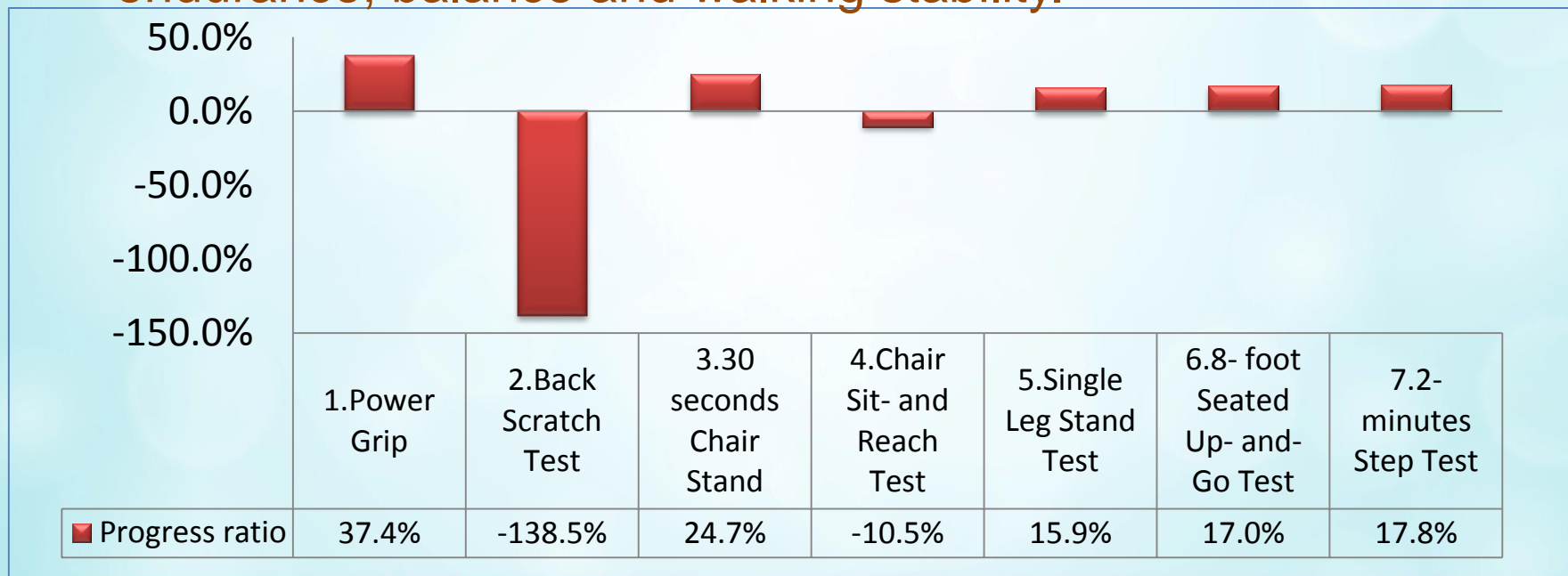
Result

The results of fitness tests for the elderly

■ Five in seven items got improvement:

+37.4% in Power Grip, +24.7% in 30 seconds Chair Stand, +17.8% in 2-minutes Step Test, +17.0% in 8-foot Seated Up-and-Go Test and +15.9% in Single Leg Stand Test.

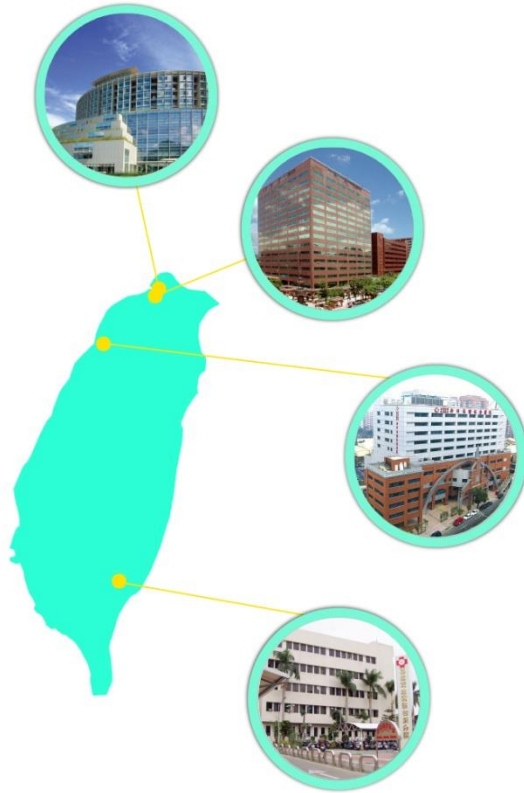
■ These trainings can enhance upper limbs, lower limbs muscle endurance, balance and walking stability.



Conclusions

- Progressive and regular exercise counseling can increase physical activity and limb muscle endurance of the elderly which may reduce falling down.
- It will reduce not only the burden of family and society but also the consumption of medical resources.
- Flexibility is hard to be improved for the elderly within 5 months of training.





Thank you for your attention

