

Effect Of Moderate-intensity & Resistance Exercise on Fitness & Motivation in Chronic Mental Illness Patients

Mental illness inpatient/ Exercise

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CONTENTS



介紹 & 現況分析

01 Introduction

方法及策略

02 Methods & Strategy

執行成果

03 Results

結論與建議

04 Conclusion & Suggestion

01

Introduction

介紹 & 現況分析

Addressing Accelerated Aging in Chronic Mental Illness Patients

The Drivers of Accelerated Decline



Faster Aging and Early Frailty

Patients face higher risks of early-onset sarcopenia and chronic diseases



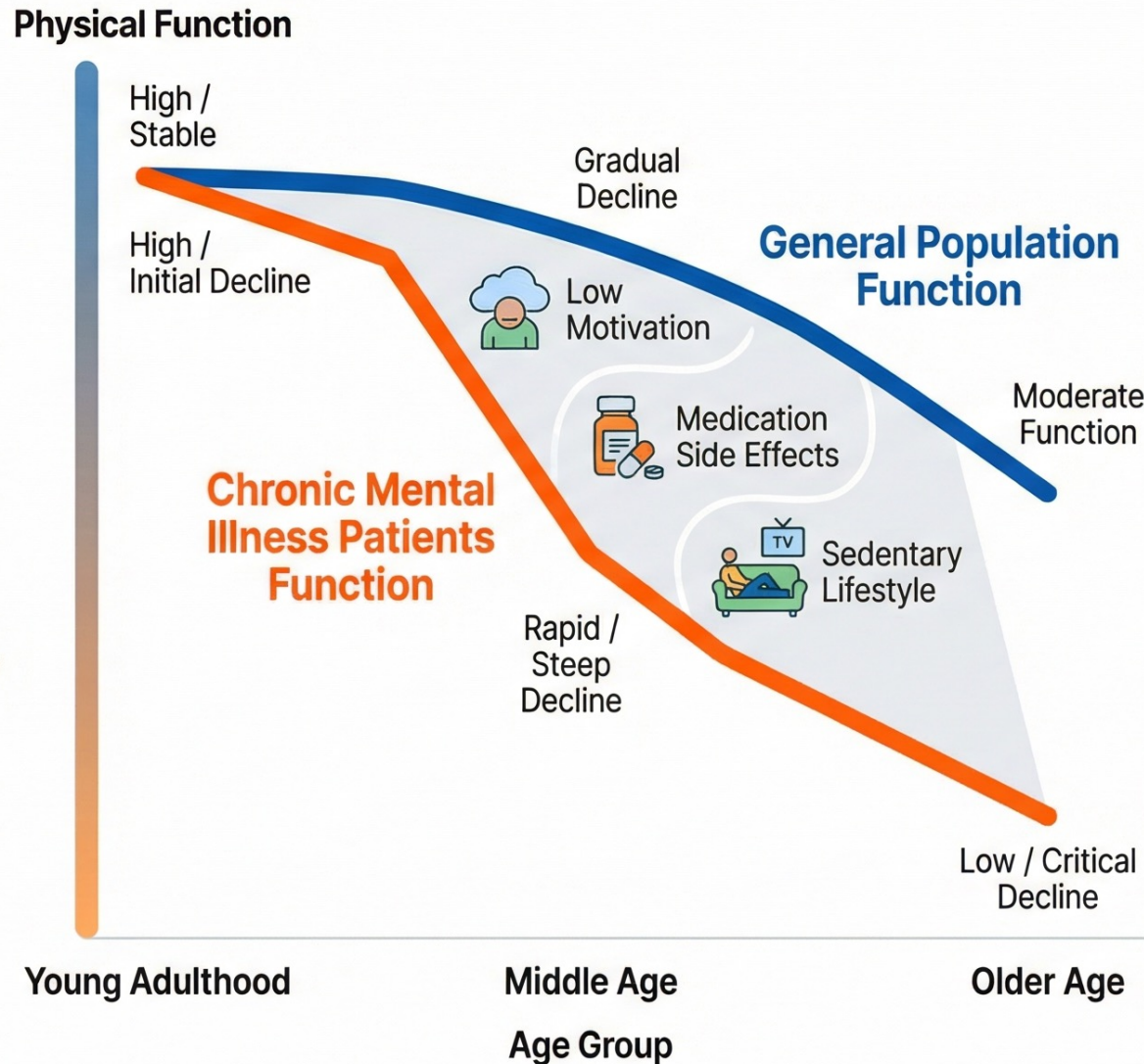
The Sedentary Cycle

Negative symptoms and medication side effects lead to chronic sedentary behavior



The Functional Gap

Physical function drops significantly faster across the aging timeline than the general population



Shifting the Treatment Paradigm



Traditional Therapy is Insufficient

Standard light-intensity activities cannot effectively reverse muscle loss or frailty



Moderate-Intensity Intervention

Evidence supports weight-bearing and moderate-intensity group exercises to effectively reverse frailty

Physical Activities

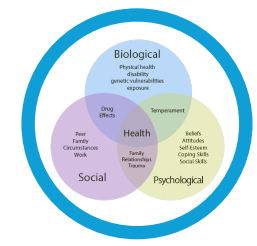
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Chronic Mental Illness p't(CMI) in Chronic Ward

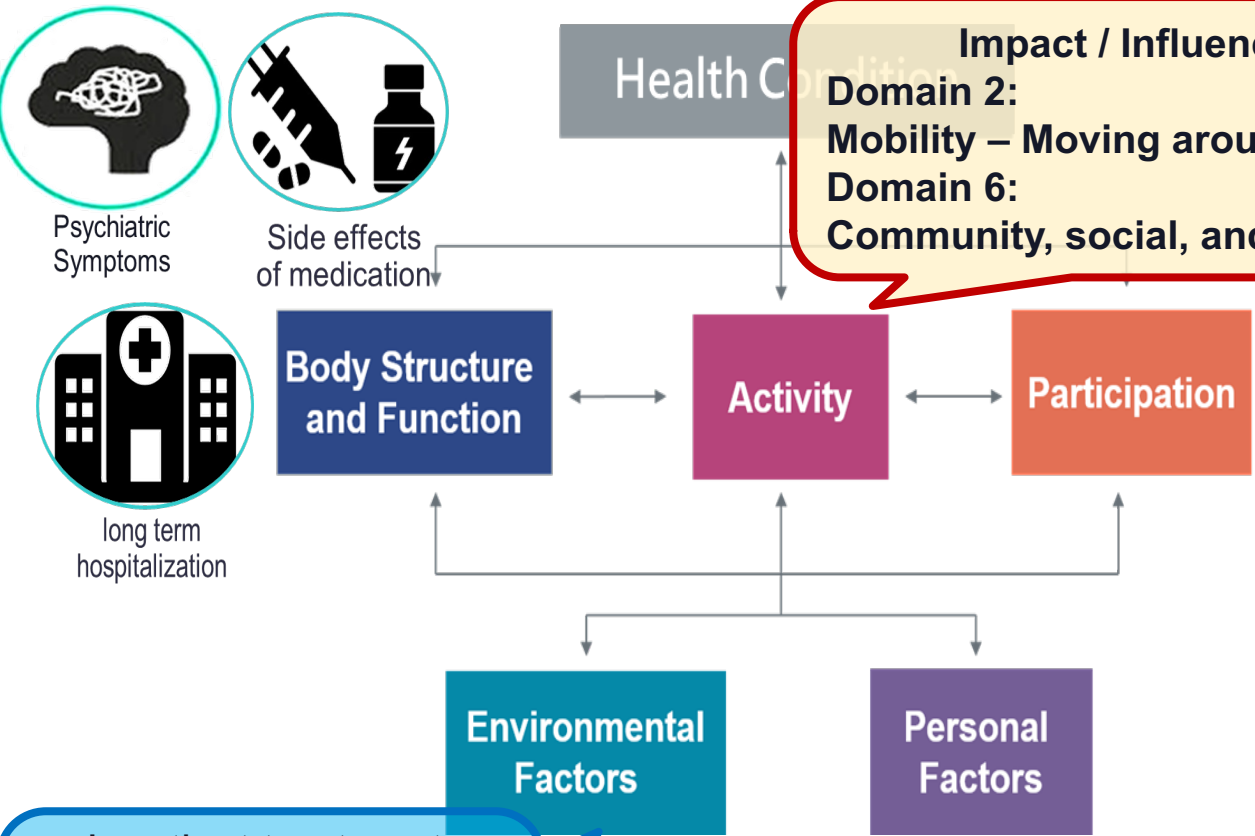
ICF Model



MOHO model



Biopsychosocial Model




- Low physical activity levels (Sedentary/Bedridden)
- Poor motor coordination
- More pronounced negative symptoms

- Greater difficulty in occupational performance (Work)
- Higher prevalence of metabolic syndrome
- Faster rate of functional decline/aging compared to the general population

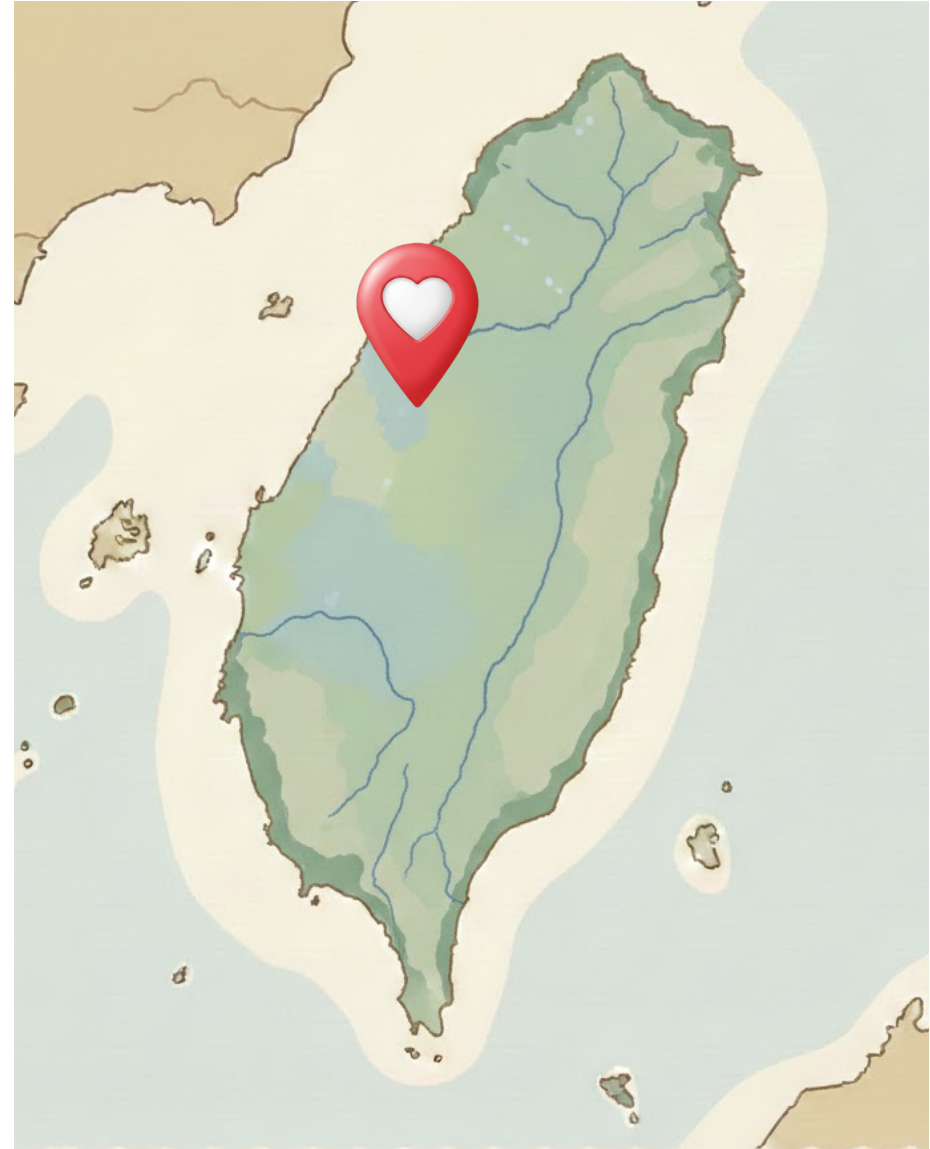
Provision of Physical activities

Inpatient treatment provides therapy & therapeutic activities, but at the same time, it also imposes limitations.

ICF Model



Tsaotun Psychiatric Center, HOHW



Tsaotun Psychiatric Center, HOHW



Core Hospital of Mental Health Network in Central Taiwan

Type	Acute Ward	Chronic Ward	Daycare Ward	Community Psychiatric Rehabilitation Institution	Half-way House	Psychiatric Nursing Home	Total
TTPC	197	800	160	307	40	187	1,721
Occupancy Rate of Nantou County	76.4%	94.1%	Age(mean, SD: 56.7 y/o (20.6-80.7))				

A total of 1,721 beds from inpatient to community psychiatric rehabilitation Institution.

Chronic Mental Illness Patients(CMI) in Chronic Ward

Since 2015, physical fitness tests have been conducted annually

Paused from 2019 to 2021

InBody

Body Composition Analysis

- Weight
- Body mass index (BMI)
- Skeletal muscle index (SMI)
- Body fat percentage

General Fitness Tests

Norm for 65-

- Sit & reach test
- 1-min. sit-ups test
- Standing long jump
- 3-min. step test

Functional Fitness Tests

Norm for 65+

- Sit-and-stand test
- Bicep curl test
- 2-min knee lift test
- Modified sit & reach test
- Scratch test
- Chair agility test
- One leg stand test

Chronic Mental Illness Patients(CMI) in Chronic Ward

Compare the test results from these years

- Few p'ts under 65 y/o were able to complete the physical fitness test
- Obesity and overweight based on BMI ↓
- Body fat percentage ↓
- Maintaining performance was the best outcome, with only a few patients showing improvement.

Measuring Physical Activity Intensity

Intensity	Instruction	Talk test	RPE	Max HR %	MET
<i>Vigorous</i>	After 10 minutes of continuous exercise, it becomes difficult to maintain a conversation while exercising. This type of activity significantly increases heart rate and breathing & induces heavy sweating.	not able to say more than a few words	14-20	>80 %	≥6
<i>Moderate</i>	After 10 minutes of continuous exercise, it is still possible to hold a conversation but unable to sing. This type of exercise slightly increases heart rate and breathing.	you can talk but not sing	12-13	70-80%	3-5.9
<i>Light</i>	With low-intensity physical activity, one is still able to comfortably speak and sing without difficulty. Breathing and heart rate remain stable with no noticeable sweating.	You can talk and sing.	6-11	60-70%	1-3
<i>Sedentary Lifestyle</i>	Spends six or more hours a day sitting or lying down (sleep or awake) increases risk of developing a range of health condition.	You can talk and sing.	<6	<60 %	<1

Guide to Resistance Exercises for Bone and Muscle Health

Weight-Bearing Activities

High-Impact Favorites



Activities like running, jumping, and dancing involve forceful ground contact to maximize bone density.

Low-Impact Alternatives



Walking, hiking, and stair climbing provide weight-bearing benefits while reducing stress on joints.

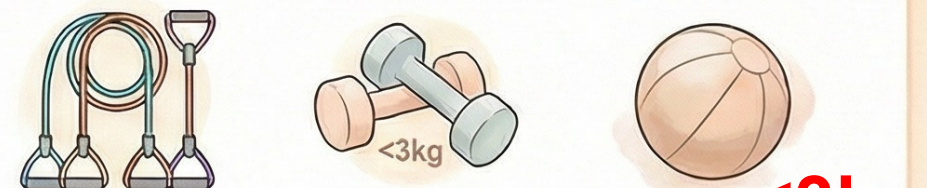
Strength & Resistance Training

Working Against Gravity



These exercises build muscle mass and bone density by resisting external forces.


Essential Training Tools



Use resistance bands or light weights, typically under 3kg, for effective training.

Purpose

Effects for moderate-intensity and resistance exercise (>3kg) exercise

	Intensity	Instruction	Talk test	RPE	Max HR %	MET
	<i>Moderate</i>	After 10 minutes of continuous exercise, it is still possible to hold a conversation but unable to sing. This type of exercise slightly increases heart rate and breathing.	you can talk but not sing	12-13	70-80%	3-5.9





02

Methods & Strategies

策略與方法

Methods & Intervention

- Research Design
 - Single-group pretest-posttest study design
- Type of Intervention:
 - moderate-intensity and resistance exercise
- Frequency: Once a week
- Duration: Aug. 2022~Jul. 2024



Methods & Intervention

- Execution Location:
 - 2 of chronic ward in a Psychiatric Hospital in Central Taiwan
- Participant Criteria and Sample Size:
 - $N=133(m=54.0 \pm 11.5 \text{ y/o})$
- Analysis:
 - the McNemar's test for paired proportions ($p<.05$)

Measuring Success: A Holistic View of Outcome Measures

A holistic approach to measuring clinical success, moving beyond pure physical ability by categorizing outcomes into two main pillars: Objective Physiological Indicators and Psychological/Motivational Indicators.

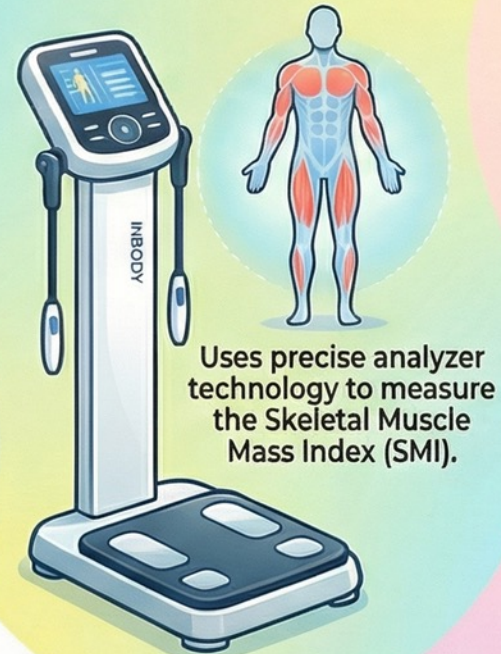
Objective Physiological Indicators

FUNCTIONAL FITNESS TEST (Physical Fitness)



Evaluates mobility and strength through a battery of seven specific functional assessments.

INBODY BODY COMPOSITION



Psychological & Motivational Indicators

VOLITION QUESTIONNAIRE (VQ)



“ THE PSYCHOLOGICAL SHIFT

Emphasizes that the willingness to perform is as critical to success as physical ability.”

OCCUPATIONAL PARTICIPATION



Bridging Fitness and Therapy: A Strategic Training Partnership



Taichung's Functional Fitness Hub



Integrates weightlifting, running, and bodyweight movements to build strength in group settings.



Specialized OT Training since 2022

Has provided educational training programs for Occupational Therapists since October 2022.



Therapeutic Training Specialists



Focuses on special populations, including the elderly and survivors of stroke or dementia.



Clinically-Led Professional Growth
Led by a Physical Therapist to provide progressive movement training for OTs.



Educational Partner since Sep. 2022
Established a dedicated training track for OTs and staff in Taipei.

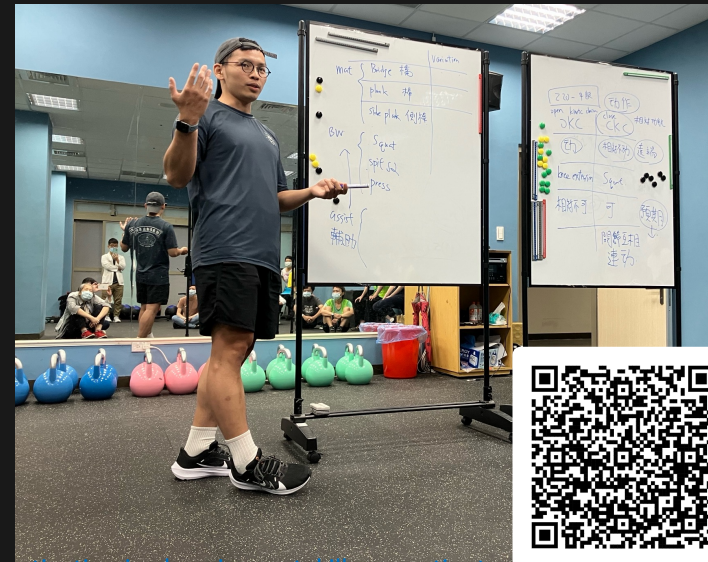


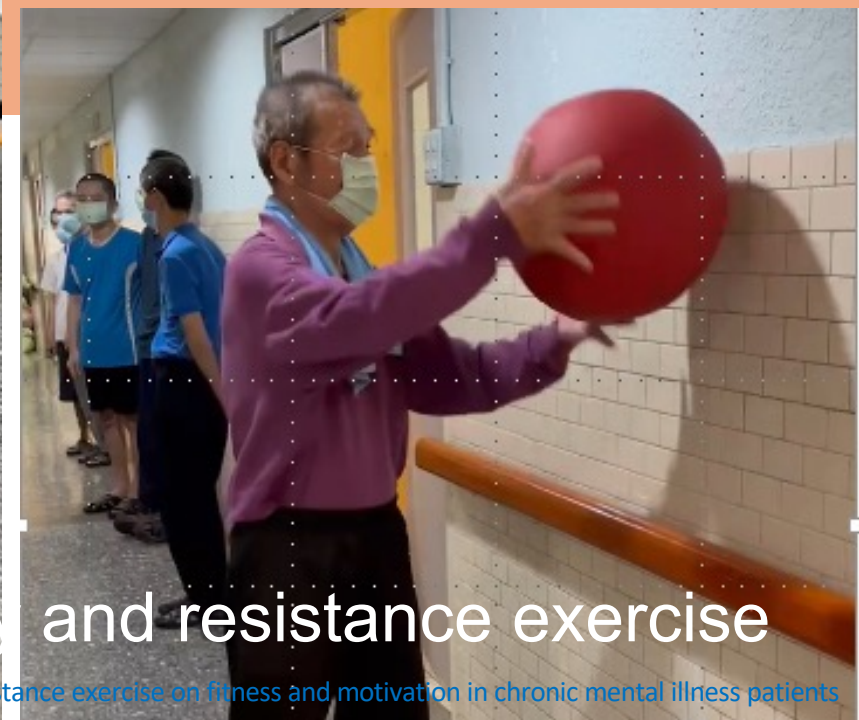
CrossFit Ultilife Coach Denny, Coach Connie, Coach Lion
Group exercise which mixes weightlifting, running, and bodyweight
exercises to improve strength and fitness.





LKK Wellness Coach Yu-Shao Cheng (Physical therapist)
Educational training for staff.
Demonstrate weight training and strength training to patients.





Moderate-intensity and resistance exercise

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Moderate-intensity and resistance exercise





Moderate-intensity and resistance exercise

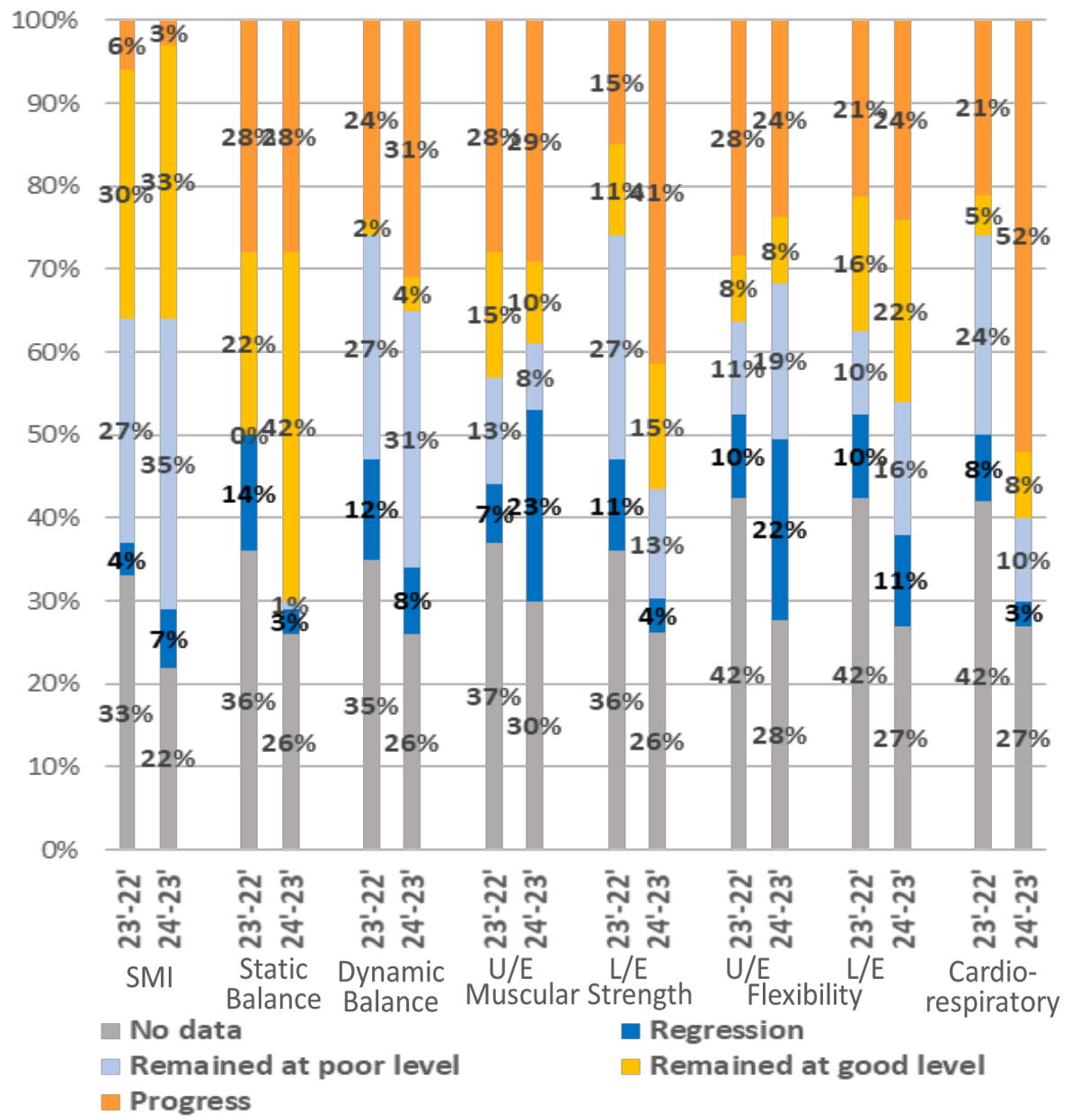




Demographic Data

item	Demographic Data(n=133)	
	number(n)	(%)
Gerner		
Male	102	76.7%
Female	31	23.3%
Diagnosis		
Schizophrenia	122	91.7%
Other	11	8.3%
Age(M±SD)	54.0(±11.5)	
Onset age(M±SD)	29.2(±10.1)	
Duration of Illness(M±SD)	25.4(±12.3)	

Outcome analysis



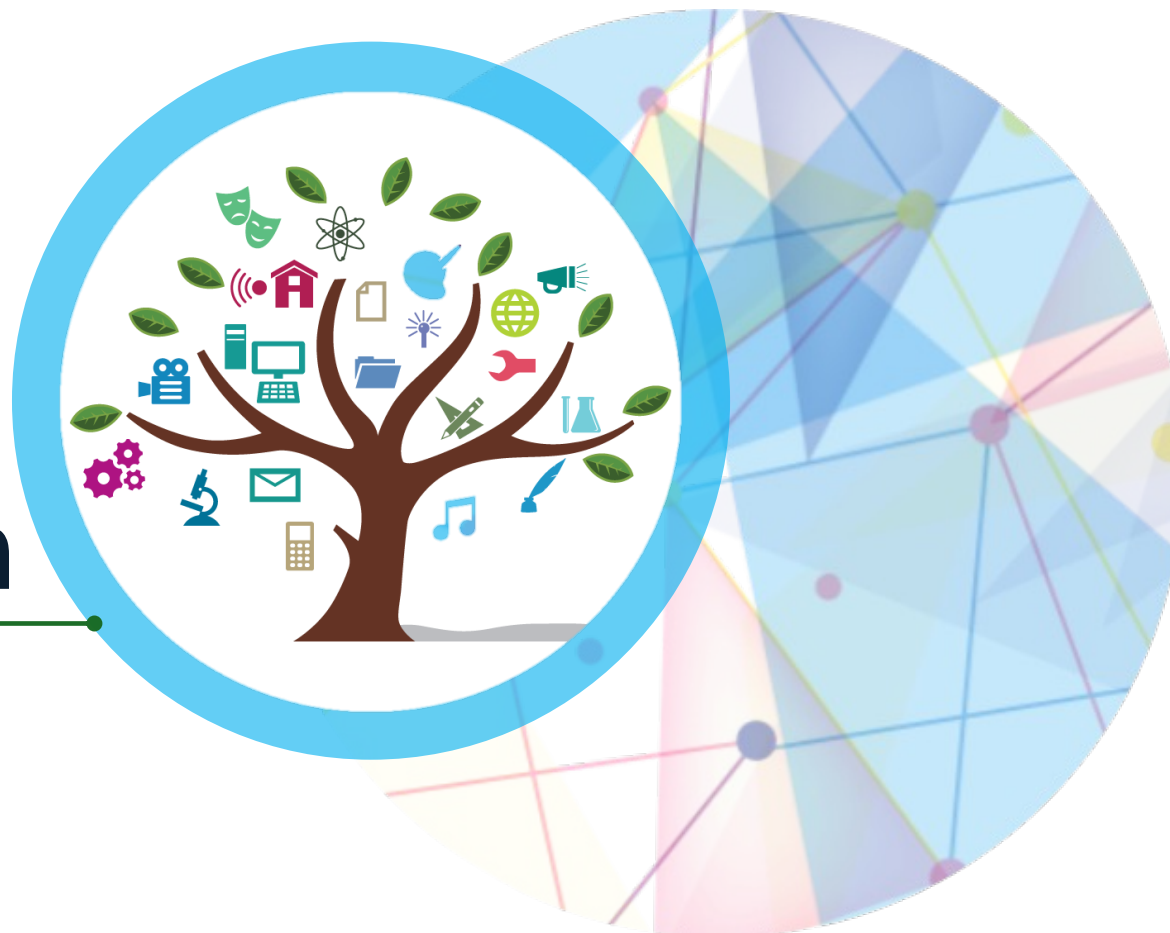
Outcome analysis

	23'-22'	24'-23'
Skeletal muscle index (SMI)	0.40	1.65
Functional Fitness Tests		
Static balance	4.67*	19.79*
Dynamic balance	4.00*	13.13*
U/E muscular strength	12.60*	0.74
L/E muscular strength	0.62	30.37*
U/E flexibility	8.05*	0.09
L/E flexibility	3.44	4.37*
Cardiorespiratory function	5.30*	42.97*
Volitional Questionnaire	9.09*	0.93

04

Conclusion & Suggestion

結論與建議



Summary of Current Findings

- Functional Progress
 - Significantly improved balance, muscular strength, and cardiorespiratory function; however, the Skeletal Muscle Index (SMI) showed no significant improvement.
- Motivational Performance
 - Initial gains in volition (VQ) were significant, but follow-up testing in 2024 showed that these improvements were not sustained.

Future Directions and Research Recommendations

Shifting focus toward **Muscle Health** & enhancing

Social Participation through interdisciplinary sports programs.

AWGS 2025 (Asian Working Group for Sarcopenia)

Future Directions and Research Recommendations

- Addressing Functional & Motivational Gaps
 - **Optimizing Physical Adaptation:**

Given that functional gains were achieved without significant SMI changes, future interventions will focus on **caloric intake monitoring** and **progressive resistance load**.
 - **Sustaining Volition:**

To address the lack of significant improvement in the 2024 VQ re-test, we will transition from standardized exercises to **diversified sports-based interventions**.

Future Directions and Research Recommendations

- New Implementation for 2025: Diversified Sports Programs
 - **Recovery Football:** Integrating team-based sports to enhance anaerobic capacity, agility, and social cohesion.
 - **Woodball:** Utilizing this specialized sport to improve focus, fine motor control, and outdoor community participation.



Recovery Football Football Q-League (Chiayi City New Friends of Recovery Association) Coach Tsai Kun-Tang, Chang Chao-Hsiang, OTR



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Woodball

Coach Hung, Ming-Tse, Li, Cheng-Yu, OTR



Moving Toward Recovery: Exercise Options for Psychiatric Rehabilitation in Taiwan

Different exercise modalities offer unique therapeutic benefits for psychiatric patients in Taiwan, categorized into individual strength and social interaction focus areas to help match the right exercise to a patient's specific rehabilitation goals.

Individualized Strength & Physical Mastery



Combatting Medication Side Effects

Targeted weight training counters muscle atrophy and metabolic issues caused by psychiatric medications.



Building Self-Efficacy Through Data

Quantifiable progress in individual training helps patients manage stress and rebuild self-confidence.



Highly Personalized Care

One-on-one fitness sessions allow for precise monitoring of heart rate and medication-related fatigue.

Social Integration & Skill-Based Play



Enhancing Group Belonging

Team sports like Soccer and Woodball foster non-verbal communication and reduce social isolation.



Strategy & Focus










Activities like Bouldering and Woodball improve hand-eye coordination, cognitive planning, and patience.



Non-Verbal Expression

Dance provides a safe outlet for emotional release and improves interpersonal synchronization through movement.

Comparison of Low-Threshold vs. High-Intensity Social Exercises

 Exercise Type	 Primary Benefit	 Skill Level
 Woodball	Low stress, easy to learn, high social accessibility	 Low
 Soccer	Intense cardio, high teamwork, and social interaction	 Medium
 Bouldering	High cognitive focus and individual problem-solving	 Medium-High

Future Directions and Research Recommendations

- Strengthening Interdisciplinary Collaboration
 - Expansion of the "OT + Professional Coach" model.
 - Interdisciplinary training in collaboration with diverse professional associations.

Exercise & Physical activity

- May help **slow down** or **reverse** mental health disorder with
 - High prevalence of chronic diseases
 - Lower average life expectancy.
- How can such interventions be provided safely and effectively?

Recommendations for further research

- Include more participants in future studies to enhance the reliability of the results
 - Other chronic ward in the hospital
 - Other CMI in different institution
- Include more outcome measure
 - Clinical Symptom Evaluation
 - Motivation and **Social Interaction** indicators
 - Physiological indicators
 - Other performance outcome

In Grateful Recognition & Memory of Our Founder



**Fitness Center, Tsaotun Psychiatric Center
TTPC Health Hub – Falling in Love with Wellness**

With deepest gratitude for a lasting legacy of care and dedication.

Special Acknowledgments



Thanks for your attention!

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