

Supplementary Material S2. Summary of the best evidence on physical activity for patients with mild cognitive impairment

Dimensions	Contents	Level	Intensity
Exercise Effect	1. Exercise has been shown to be safe and feasible for MCI patients and can be effective in improving cognitive function (global cognition, memory function, executive function, language, visuospatial ability) as well as physical function and quality of life in MCI patients.	Level 1a	A
Exercise Evaluation	2. When developing exercise intervention programs for patients with MCI, individualized physical activity programs should be developed, taking into account the level of physical and cardiopulmonary fitness, previous exercise habits and interests of the MCI patient.	Level 1a	A
	3. The scope and extent of the patient's cognitive impairment, the patient's own financial situation, and the medical and social resources available to the patient's family and neighborhood should be assessed before developing and implementing a specific training program.	Level 5b	A
	4. Psychiatric-behavioral symptoms (e.g., depression, anxiety, etc.) due to cognitive decline should be assessed prior to exercise intervention.	Level 1a	A
	5. Promptly assess the patient's physical condition during exercise and decide whether to take a short break.	Level 1b	B
	6. Types of exercise interventions include aerobic, resistance, physical and mental exercise, and multi-component exercise.	Level 5b	A
Exercise Content	7. Multicomponent exercise is the most effective form of exercise to prevent overall cognitive and executive function decline in MCI patients; resistance exercise has a significant effect on memory function.	Level 1a	A
	8. The more challenging the intervention (e.g., resistance exercise), the higher the adherence.	Level 1a	A
	9. Group-based physical activity programs are more effective for MCI patients, but should not be too large; group training groups of no more than 10 people are recommended.	Level 1a	A
	10. Each exercise session includes a warm-up period, a workout period and a cool-down period.	Level 1b	A
	11. Exercise cycles greater than 6 months have the best effect, and it is recommended that they should be at least greater than 3 months.	Level 1a	B
Exercise Time and Intensity	12. The total number of minutes of exercise per week is 160-300, and it is recommended that it should be at least 150 minutes.	Level 1a	A
	13. Aerobic exercise (such as walking, jogging, cycling, swimming, dancing, etc.) the best exercise time is controlled at 25-60 minutes each time; resistance exercise (such as weightlifting, dumbbells, elastic bands, etc.) the best exercise time is at least 60 minutes each time; physical and mental exercise (such as taijiquan, Ba Duan Jin, qigong, etc.) the best exercise time is controlled at 30-60 minutes each time.	Level 1a	A
	14. It is recommended to exercise at least 2 times per week, with a high frequency of spaced exercise (>4 times/week) recommended.	Level 1a	A
	15. Patients with MCI are advised to exercise at moderate intensity, which can be estimated by maximum oxygen uptake (%VO ₂ max), maximum heart rate (%HRmax) and rate of perceived exertion (RPE). Patients with MCI exercise at least 60% of maximum oxygen uptake or maximum heart rate, or feel slightly exerted	Level 1a	A

	(RPE >13). 16. For the case of excessive exercise intensity, it is recommended to respond with one-to-one guidance. In case of abnormal situation, the coach should suspend the training and deal with it according to emergency procedures.	Level 1a	B
Exercise Setting	17. The exercise environment is unrestricted, and to promote exercise compliance, exercise interventions in the patient's home or at the nearest community activity center, for example, are recommended.	Level 1a	A
Exercise Assistance	18. Exercise intervention programming under the guidance of professionals, including fitness instructors, physical therapists and occupational therapists, is recommended.	Level 1a	B
	19. Active involvement of family caregivers in exercise training can promote patient confidence in exercise participation.	Level 1a	B
	20. Exercise interventions that require specific equipment may impede ease of movement for people with MCI, and technologies such as virtual reality can be applied in some developed areas.	Level 1a	B
	21. The study before the exercise intervention and the whole process of exercise should be supervised by a professional.	Level 1a	B
	22. Psychoeducational interventions on the importance of weekly physical activity are recommended for patients and their relatives.	Level 1a	A
	23. Appropriate motivational strategies, such as motivational interviewing, setting SMART goals, and calling or reminding participants, are recommended.	Level 1a	A
Exercise Effect Judgment	24. Targeted examinations of different cognitive domains can provide insight into the specific utility of different types of exercise and provide a basis for subsequent exercise program selection, and the addition of language function examinations is recommended.	Level 1a	A
	25. It is recommended to monitor the heart rate of MCI patients in real time during exercise and make timely adjustments to the exercise intensity.	Level 1b	A
	26. The exercise test allows you to determine the effect of the exercise intervention on physical function.	Level 1a	B
	27. Laboratory tests to measure biomarkers such as tau, A β 1-42, plasma BDNF in the cerebrospinal fluid or electroencephalography (EEG) may be added if necessary.	Level 1a	B

