

APRU Global Health Conference 2021

GLOBAL URBAN HEALTH

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The University of Hong Kong, Pokfulam, Hong Kong

Abstract No.

Abstract Title

87

Older Adults Who Exercise Habitually are Less Susceptible to False Memory Than Their Sedentary Counterparts: Ancillary Study of a Pilot Randomized Trial

Theme

C. Environment, health & active lifestyle

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Purpose / Background:

- Previous studies in younger adults have shown that acute, moderate-intensity, aerobic exercise can enhance episodic memory function and thus minimize memory distortions, as measured by the Deese-Roediger-McDermott (DRM) false memory paradigm.
- The present study aimed to extend this line of research to older adults.

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Methods:

- Volunteers from our pilot study, older adults with mild cognitive impairment who...
 - had received a 24-week brisk walking and muscle conditioning exercise intervention (n=6, 3 females, mean age and SD: 64.2, 7.8), and
 - passive controls (n=6, 6 females, mean age and SD: 66.3, 4.5),
 - completed memory assessments using their mobile devices,
 - once before and once after a 60-minute bout of supervised exercise and no intervention, respectively.
- We assessed memory performance with...
 - 18 DRM word lists (12 studied, six included in tests for 'control words'),
 - computerized old/new recognition tests that we developed (see Figure 1).
- We analyzed memory performance with...
 - unpaired *t*-tests and generalized estimating equations to compare pre- and post-performance across groups,
 - signal detection analysis (sensitivity and response criterion indices),
 - SPSS (version 26), statistical significance set at $P < 0.05$.

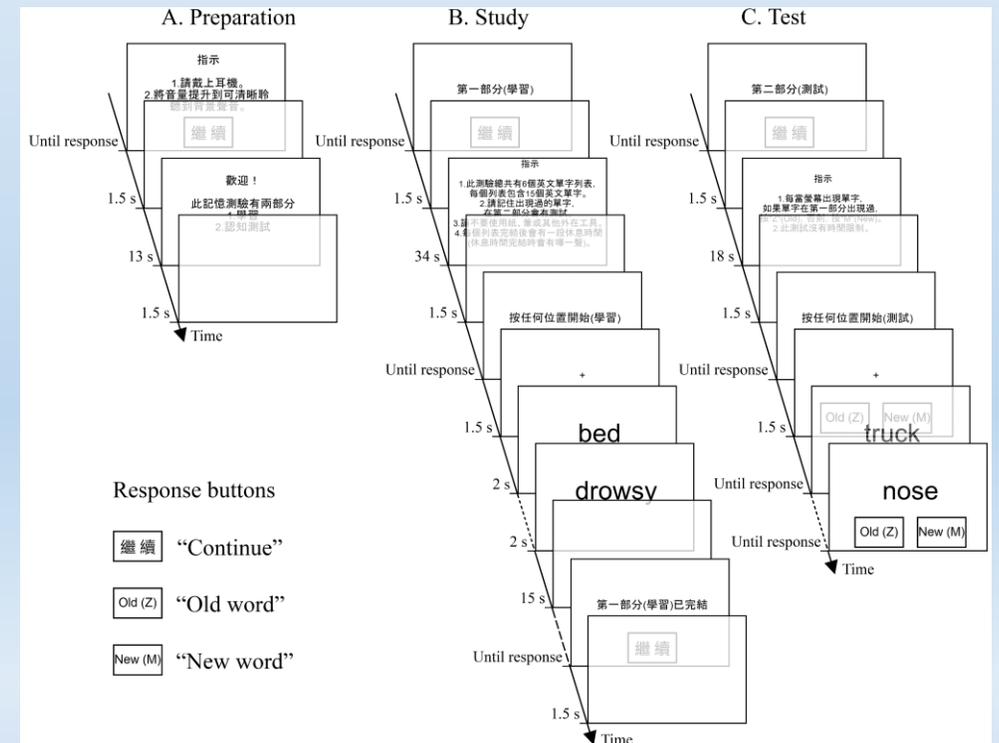


Figure 1. Schematic illustrating the timeline of the memory test

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Results & Conclusions:

- There were no significant differences in false positives to related lures (RL) and true positives (SLW) between groups at either time points. (*i.e., false recognition and accurate recognition*)
- Compared with the control group, the exercise group made less false positives to list word controls (LWC) at baseline ($p=0.049$) and less false positives to unrelated lures (UL) at both time points ($p<0.001$). (*i.e., baseline false alarm rates*)
- Compared with the exercise group, the control group's recognition accuracy was just below chance level at baseline ($p=0.056$) and they adopted a more liberal response bias for critical lures at both time points ($p<0.001$). (*not shown in Table 1*)

Conclusions

Although false recognition of related lures prevailed in both groups, participants' physical activity status may explain the observed differences in memory performance. Randomized studies with comparable samples in older adults are needed to verify these findings.

Table 1. Mean proportions of “old” responses for studied words and non-studied words in older adults at baseline and postintervention

Word	Exercise Group ($n = 6$)		Control Group ($n = 6$)		<i>P</i>		
	Before	After	Before	After	Interaction Effect	Group Effect	Time Effect
List							
SLW	0.78 ± 0.21	0.69 ± 0.18*	0.85 ± 0.15	0.74 ± 0.23*	0.723	0.865	0.013
LWC	0.09 ± 0.18†	0.07 ± 0.09	0.41 ± 0.30	0.28 ± 0.23	0.375	0.298	0.236
Lures							
RL	0.64 ± 0.34	0.56 ± 0.36	0.64 ± 0.34	0.44 ± 0.20	0.507	0.403	0.097
UL	0.06 ± 0.14†	0.00 ± 0.00†	0.44 ± 0.40	0.33 ± 0.30	0.814	<0.001	0.481

Values are mean ± SD

SLW, studied list words; LWC, list word controls; RL, related lures; UL, unrelated lures

*Significant change from baseline within each group

†Significant difference from Control Group at that time point (all $P < 0.05$)