

Effectiveness of co-creation physical literacy intervention on weight control and physical fitness among obese children: A preliminary investigation

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INTRODUCTION

- **Physical literacy (PL)** is increasingly recognized in health promotion
- PL includes motivation, physical competence, knowledge, and activity engagement
- **PL-based weight management is popular among older adults**, but evidence for children/young adults is **limited**
- Proposed: A randomized controlled trial for PL-based intervention in **obese Chinese young adults**



OBJECTIVE

- Evaluate the effectiveness of a physical literacy-based intervention in the weight management of Chinese obese teenagers (aged between 8-12 years old).



METHODS

- **Study Design: Parallel-group, multi-center, cluster randomized controlled trial**
- **Participants: Chinese children** (8–12 years) with **obesity** (BMI ≥98th percentile)
- **Program: 12 week touch rugby program** with Hong Kong schools and youth NGOs (Sep - Dec 2024)
- **Randomization:** Schools split into **intervention** and **control groups** (1:1 ratio)
 - Intervention Group: **Co-creation program** with sports science coaches, including engagement/design discussions
 - Control Group: **Standard** touch rugby instruction
- **Assessments: Questionnaires bioimpedance analysis, sprint running at baseline & week 12**

Table 1: Demographic characteristics of participants (N=82)

	Overall	Control	Intervention	p	SMD
n	82	41	41		
Male (%)	52 (66.7)	21 (55.3)	31 (77.5)	0.065	0.484
Age (mean (SD))	9.78 (1.27)	9.89 (1.35)	9.68 (1.19)	0.447	0.173
Household income (HKD, %)				0.210	1.060
HKD 0-2000	5 (8.3)	4 (13.8)	1 (3.2)		
HKD 2001 - 3999	0 (0.0)	0 (0.0)	0 (0.0)		
HKD 4000 - 5999	0 (0.0)	0 (0.0)	0 (0.0)		
HKD 6000 - 7999	2 (3.3)	2 (6.9)	0 (0.0)		
HKD 8000 - 9999	1 (1.7)	1 (3.4)	0 (0.0)		
HKD 10000 - 14999	1 (1.7)	1 (3.4)	0 (0.0)		
HKD 15000 - 19999	6 (10.0)	2 (6.9)	4 (12.9)		
HKD 20000 - 24999	8 (13.3)	4 (13.8)	4 (12.9)		
HKD 25000 - 29999	7 (11.7)	5 (17.2)	2 (6.5)		
HKD 30000 - 39999	7 (11.7)	3 (10.3)	4 (12.9)		
HKD 40000 - 59999	8 (13.3)	4 (13.8)	4 (12.9)		
HKD 60000 - 79999	5 (8.3)	1 (3.4)	4 (12.9)		
HKD > 80000	10 (16.7)	2 (6.9)	8 (25.8)		
HKID holder (%)	70 (93.3)	32 (91.4)	38 (95.0)	0.877	0.142
Number of cohabitant (mean (SD))	4.39 (1.14)	4.37 (1.19)	4.40 (1.10)	0.914	0.025
Diagnosed with attention deficit (%)	13 (17.3)	8 (22.9)	5 (12.5)	0.381	0.274
Diagnosed with hyperactivity disorder (%)	8 (10.7)	5 (14.3)	3 (7.5)	0.565	0.219
Diagnosed with autism (%)	4 (5.3)	3 (8.6)	1 (2.5)	0.514	0.268
Diagnosed with dyslexia (%)	12 (16.0)	8 (22.9)	4 (10.0)	0.230	0.352
Diagnosed with speech delay (%)	11 (14.7)	6 (17.1)	5 (12.5)	0.810	0.131
Household is food secure (%)	68 (82.9)	33 (80.5)	35 (85.4)	0.769	0.130

RESULTS

- **Participants:** 82 children (intervention: n=41; control: n=41; mean age: 9.78±1.27 years; 66.7% male)
- **Baseline BMI:** 24.04 kg/m² (intervention), 24.21 kg/m² (control)
- **Loss to follow-up:** 19 participants (23.2%)
- **Intervention group outcomes:**
 - 1) Significant improvement in 4×10m sprint (mean difference: **1.662s**; 95% CI: **0.531–2.795**)
 - 2) BMI reduction (**-0.181 kg/m²**), but no significant intergroup difference (mean difference: **0.187**; 95% CI: **-1.087–1.460**).
 - 3) Body fat percentage: No significant intergroup differences.

CONCLUSION

- Incorporating co-created physical literacy intervention **significantly enhanced physical fitness** in obese children.
- Further research needed to confirm effects on body

