

Cardiopulmonary Fitness Changes across a three-phased Community-Based Exercise Intervention Study among Adults Living with HIV

Kelly K. O'Brien¹, Lisa Avery², Aileen M. Davis^{1,3}, Ahmed M. Bayoumi^{1,4}, Ada Tang⁵, Soo Chan Carusone⁶, Patty Solomon⁵, Rachel Aubry¹, Konika Nirmalanathan¹

¹. University of Toronto, Toronto, ON, Canada, ². University of Otago, Dunedin, New Zealand

³. University Health Network, Toronto, ON, Canada, ⁴. St. Michael's Hospital, Toronto, ON, Canada,

⁵. McMaster University, Hamilton, ON, Canada, ⁶. Casey House, Toronto, ON, Canada

29th Annual Canadian Conference on HIV/AIDS Research
May 1-2, 2020



CIHR IRSC

Canadian Institutes of Health Research
Institut de recherche en santé du Canada



Physical Therapy

UNIVERSITY OF TORONTO

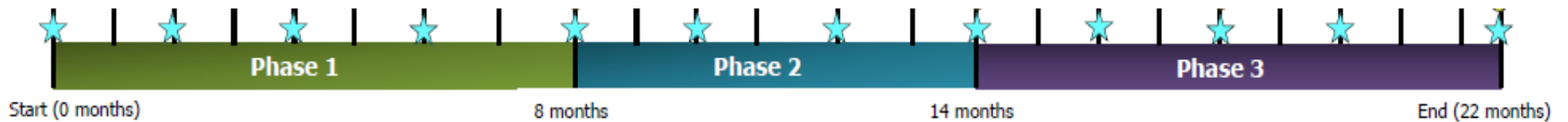
Conflict of Interest: Authors have no conflicts of interest.

Email: kelly.obrien@utoronto.ca

Funding: CIHR HIV/AIDS Community-Based Research Collaborative.

Purpose, Intervention & Data Collection

Purpose: To examine the change in cardiopulmonary fitness among adults living with HIV engaged in a community-based exercise (CBE) intervention.



Baseline Monitoring Phase

CBE Intervention

Follow-Up Monitoring Phase

YMCA Membership

Exercise 3X/week:

Combination of aerobic, resistance, flexibility, neuromotor / balance

Supervised weekly by personal coach @ YMCA

Weekly progression as tolerated

Fitbit Zip

Monthly In-Person Education Sessions

<http://j.mp/CBEStudy>

YMCA Membership

Exercise 3X/week (independent)



Fitness Assessments (YMCA)

- Cardiopulmonary Fitness (VO₂peak)
- 12 time points (every 2 months)

Analysis: Segmented regression (adjusted for baseline age and sex) to assess the change in trend (slope) between phases.

Included all participants with data for age, sex, and at least one VO₂peak measure.

Results: Participant Characteristics

Of the 108 participants who initiated the study:

- 80/108 (74%) started the CBE Intervention (Phase 2)
- 67/80 (84%) completed the CBE Intervention (Phase 2)
- 52/67 (77%) completed the follow-up monitoring phase (Phase 3)

Characteristics at Study Initiation (Phase 1)	Number (%) (n=108)
Median Age (25-75th percentile)	51 years (45, 59)
≥50 years	53 (58%)
Men	94 (87%)
Women	11 (10%)
Two-Spirited or Inter-sexed	<5 (3%)
Median # of comorbidities (25-75th percentile)	4 (2,7)
Living with ≥2 comorbidities	86 (86%)
Common Comorbidities (>40%) included:	
Mental Health (e.g. depression, anxiety)	52 (49%)
Joint Pain (e.g. arthritis)	44 (41%)
Median # Years Since HIV Diagnosis (25-75th percentile)	17 (8, 27)
Employed Full-time or Part-Time	34 (31%)
Exercise History	
I currently exercise and have done so for > 6 months	36 (33%)

CBE Adherence

Participants attended a median of 18/25 (72%) of weekly supervised sessions.

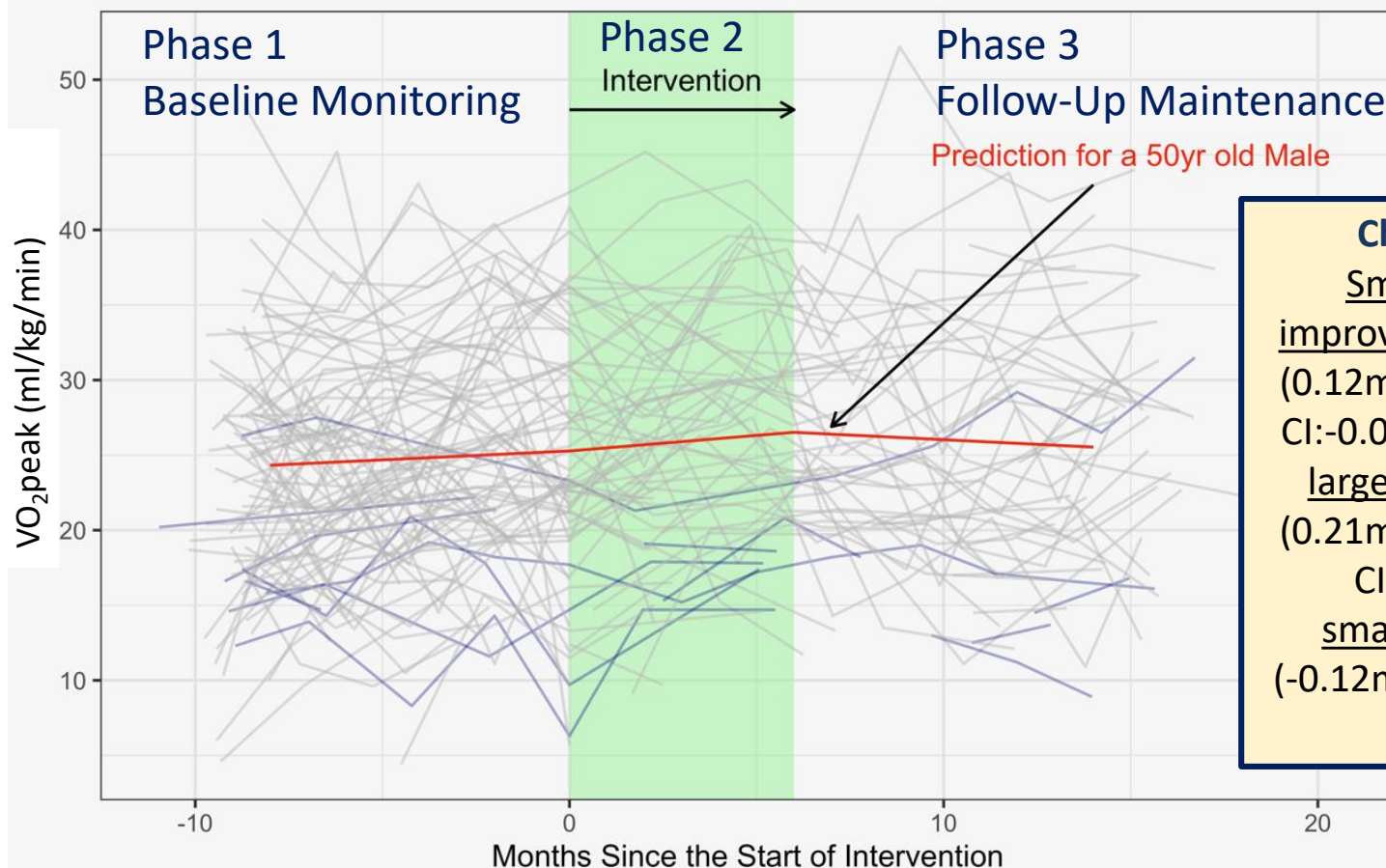
Results

VO₂peak at Start of Phase 2 (mean; sd)*

Males: 24.1 (7.96) ml/kg/min (n=88)

Females: 16.7 (4.1) ml/kg/min (n=10)

Rate of change (increase / improvement) in VO₂peak in Phase 2: Not significantly different from Phase 1 (p=0.195) or Phase 3 (p=0.056)



Change in VO₂peak
Small non-significant improvement during Phase 1 (0.12ml/kg/min/month; 95% CI: -0.04, 0.28), followed by a larger increase in Phase 2 (0.21ml/kg/min/month; 95% CI: 0.00, 0.41) and a small decline in Phase 3 (-0.12ml/kg/min/month; 95% CI: -0.52, 0.27)

Sex — Females (n=10) — Males (n=88)

n=98 participants

Results: Change in VO₂peak

- Overall increase in VO₂peak during the intervention (Phase 2) was 1.24ml/kg/min (males) and 1.25ml/kg/min (females) - not clinically important;
- **There was considerable variation of VO₂peak within individuals over time.**

Conclusions

- Little to no change in VO₂peak occurred across the three phases.
- This may be attributed to difficulty eliciting peak VO₂, or because the intervention dose was not high enough to affect a change.
- While a common outcome measure of cardiopulmonary fitness, other outcomes may better capture the impact of CBE in adults living with HIV.

Acknowledgements: Thank you to the CBE study participants, and YMCA staff.

CBE Study Team: Kelly O'Brien, Patty Solomon, Ahmed Bayoumi, Aileen Davis, Soo Chan Carusone, Ada Tang, Mehdi Zobeiry, Ken King, Chris Godi, James Murray, Kate Murzin;

Collaborator Organizations: Toronto YMCA, Casey House, Toronto PWA; *Realize*.

