Abstract #234

Changes in Disability during a Two-Phased Online Community-Based Exercise (CBE) Intervention Study with Adults Living with HIV: Results from the Tele-Coaching CBE Study

Kelly O'Brien[1], Kiera McDuff[1], Lisa Avery[1,2], Ahmed Bayoumi[1,3], Soo Chan Carusone[1,4], Ada Tang[1,4], **Francisco Ibáñez-Carrasco**[1], George Da Silva[1,5], Mona Loutfy[1,6], Puja Ahluwalia[1,5], Ivan Ilic[1,7], Zoran Pandovski[1,7], Annamaria Furlan[1,7], Helen Trent[1,7], Mehdi Zobeiry[1,7], Tai-Te Su[1,8], Julia Nathanson[1]
[1]University Of Toronto, Toronto, Canada, [2]University Health Network, Toronto, Canada, [3]St. Michael's Hospital, Toronto, Canada, [4]McMaster University , Hamilton, Canada, [5]Realize, Toronto, Canada, [6]Women's College Hospital, Toronto, Canada, [7]Greater Toronto YMCA, Toronto, Canada, [8]National Taiwan University, Taipei, Taiwan

Objective: To examine changes in disability among adults with HIV engaged in an online community-based exercise (CBE) intervention in Toronto, Canada.

Methods: We conducted a 12-month study with adults with HIV involving two phases: 1) Intervention: participants were asked to exercise 3 times/week, supervised biweekly with online personal coaching, and monthly online educational sessions(6-months), and 2) Follow-Up: participants were asked to continue exercising thrice weekly, independently(6-months). We measured disability bimonthly using the Episodic Disability Questionnaire(EDQ) which includes six domains: physical, cognitive, and mental-emotional symptoms; difficulties with day-to-day activities; uncertainty about future health; challenges to social inclusion. Higher scores (range:0-100) indicate greater presence, severity and episodic nature (within past week) of disability. We conducted a mixed-effects segmented regression analysis to assess changes between and within phases.

Results: Of 32 participants who initiated (69% males, median age:53 years), 22(69%) completed the intervention; and 18(56%) completed the study. Participants attended median 10/13(77%) coaching sessions. Highest EDQ scores at baseline were in the uncertainty domain for severity (34.1) and presence (64.5), and mental-emotional domain for episodic nature(27.5). At the end of the intervention, there was a significant mean decrease in EDQ uncertainty scores for severity (-5.2 points; 95%Confidence Interval(CI):-9.3,-1.0); increase in physical scores for severity (4.2; 95%CI:0.5,7.9) and episodic nature (10.3; 95%CI:0.2,20.5); and social scores for episodic (8.4; 95%CI:1.9,14.8). At the end of follow-up, there was a significant decrease (improvement) in the EDQ mental-emotional episodic scale (-14.9; 95%CI:-29.3,-0.4). During follow-up, there was an improvement for physical symptoms and reduction in benefits with uncertainty. There were no changes in EDQ presence scores.

Conclusion: Participants demonstrated an increase in severity of physical symptoms and improvement with uncertainty about future health during the online CBE intervention phase, which were diminished during follow-up. Future work should examine the clinical importance of disability changes and influence of contextual factors among persons with HIV.

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University of Toronto[1], University Health Network[2] , St. Michael's Hospital[3], McMaster University[4], Realize[5], Maple Leaf Medical Clinic[6], Central Toronto YMCA[7]

Tele-Coaching Community Based Exercise Research Study

Physical Therapy UNIVERSITY OF TORONTO

Background

- Community-based exercise (CBE) can help manage health-related challenges associated with HIV and concurrent conditions.
- Environmental, personal, and social barriers exist to exercising in gym environments.
- Online CBE may be one rehabilitation strategy to help manage disability experienced by adults living with HIV.

Purpose: To examine changes in disability among adults living with HIV engaged in an online community-based exercise (CBE) intervention in Toronto, Canada.

Methods

- Longitudinal intervention study: 6-month online CBE intervention, followed by a 6-month follow-up (independent) phase.
- **Inclusion Criteria:** Adults living with HIV in Toronto who: consider themselves medically safe to exercise as determined by the self-administered Physical Activity Readiness Questionnaire; have access to the space and technology to engage in online CBE; and are willing to exercise for 1 year.
- **Recruitment:** We recruited via community-based organizations, an HIV clinic via the Ontario HIV Treatment Network Cohort Study (OCS), and with participants who agreed to be contacted from a prior CBE study with the YMCA.

Scan for study protocol (BMJ Open, 2023)

Online Tele-Coaching CBE Intervention Phase (Months 0-6)

Online 1-on-1 exercise sessions with a personal trainer **(Bi-weekly)**

Exercise: Combination of aerobic, resistance, balance and flexibility exercise **(3x/week)**

Online group educational sessions: self-management and health **(Monthly)**

Participants were provided with:

Follow-Up Independent Exercise Phase (Months 6-12)

- Participants were encouraged to engage in independent exercise 3x/week including online group exercise classes.
- Participants continued to have access to the exercise app, wireless physical activity monitor, and home exercise equipment.

Data Collection & Analysis

- Self-reported questionnaire administered electronically every 2 months (bimonthly).
- **Primary Outcome:** Disability as measured by the Episodic Disability Questionnaire (EDQ).
  - Severity, presence and episodic scales (range: 0-100).
  - Higher scores indicate greater severity, presence and episodic nature of disability.
- **Analysis:** We conducted a mixed effects segmented regression analysis to assess changes between and within phases.

EDQ

Results

Baseline characteristics of participants who initiated intervention (n=32)

Characteristic	n (%)
Median age in years (IQR)	53 (43, 60)
Gender	
Cis-Man	22 (69%)
Cis-Woman	9 (28%)
Non-binary	1 (3%)
Median number of years since HIV diagnosis (IQR)	19 (11, 30)
Currently taking antiretroviral medication	32 (100%)
Median # of comorbidities (IQR)	3 (1, 7)
Living with ≥ 2 comorbidities	23 (72%)
Common comorbidities (>30%) included:	
Cognitive decline	10 (31%)
Gastrointestinal conditions	15 (47%)
Mental health condition (e.g. depression, anxiety)	12 (38%)
Trouble sleeping (insomnia)	11 (34%)
Employment status – working full or part time	15 (47%)
Gross yearly income <$30,000 CAD	14 (44%)
Currently living alone (n=28 participants)	12 (43%)
Cigarette smoking history – currently smoke regularly/occasionally	5 (16%)
Excellent, very good or good overall perceived health	25 (78%)
# days engaged in ≥30min moderate or vigorous physical activity in past week (IQR)	3.24 (2.69, 3.79)

Retention in Study

Initiated Intervention: 32/33 (97%) → **Completed Intervention:** 22/32 (69%) → **Completed Follow-Up:** 18/32 (56%)

Engagement in Physical Activity

Engagement in Intervention

Participants attended a median of 10/13 (77%) personal coaching sessions during the intervention phase.

EDQ Severity Scores

Highest EDQ scores at baseline were in the uncertainty domain for severity (34.1) and presence (64.5), and mental-emotional domain for episodic nature (27.5).

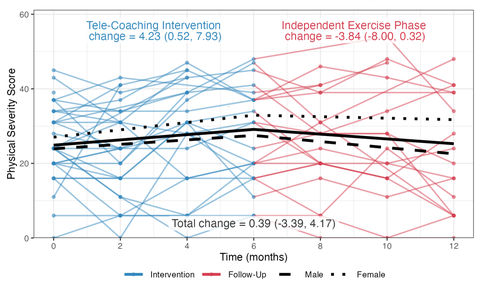
EDQ Domain Severity Scale	Baseline Mean (95% CI)	End of Telecoaching Intervention Phase (6 months) Mean (95% CI)	End of Follow-Up (Independent) Phase Mean (95% CI)	Change over 6-month Telecoaching intervention Mean Change (95% CI)	Change over 6-month follow-up (independent) Mean Change (95% CI)	Overall Change over 12-months Mean Change (95% CI)
Physical (10 items)	24.9 (20.7, 29.1)	29.1 (24.7, 33.5)	25.3 (20.5, 30.1)	**+4.2 (0.5, 7.9)***	-3.8 (-8.0, 0.3)	0.4 (-3.4, 4.2)
Cognitive (3 items)	20.9 (15.1, 26.6)	23.4 (17.4, 29.4)	18.8 (12.3, 25.3)	+2.5 (-2.3, 7.3)	-4.6 (-10.0, 0.8)	-2.1 (-7.0, 2.8)
Mental-Emotional (5 items)	28.1 (21.5, 34.8)	**31.1 (24.2, 38.0)**	27.8 (20.4, 35.3)	+ 3.0 (-2.4, 8.3)	-3.3 (-9.3, 2.7)	-0.3 (-5.8, 5.2)
Uncertainty (5 items)	**34.1 (27.6, 40.5)**	28.9 (22.3, 35.5)	**33.5 (26.6, 40.4)**	**-5.2 (-9.3, -1.0)***	4.6 (-0.01, 9.3)	-0.6 (-4.8, 3.7)
Day-to-Day Activities (5 items)	14.5 (10.5, 18.5)	11.7 (7.5, 16.0)	12.7 (7.9, 17.4)	-2.8 (-6.8, 1.2)	0.9 (-3.6, 5.4)	-1.8 (-5.9, 2.2)
Social Inclusion (7 items)	26.1 (20.4, 31.7)	23.9 (18.1, 29.8)	24.9 (18.7, 31.0)	-2.1 (-6.1, 1.8)	0.9 (-3.5, 5.4)	-1.2 (-5.2, 2.3)

EDQ Scores: Range 0 to 100: Higher scores = greater severity of disability. **Bolded Text:** Indicates highest scores across domains; * indicate significant change; green highlight indicates change in favourable direction (reduction in EDQ scores); orange indicates change in unfavourable direction (increase in EDQ scores).

At End of Follow-Up Phase (12 months):
No overall significant change in EDQ severity scores.

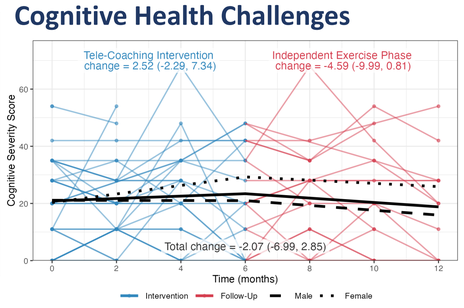
Disability Severity

Physical Health Challenges

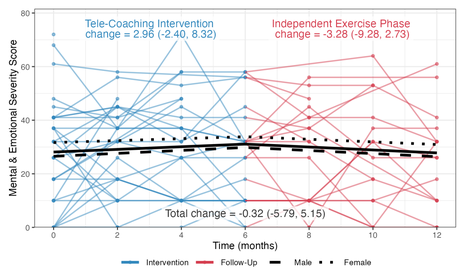


Rate of Change Physical Severity
During Intervention: Monthly rate of change (slope) significant **(+ 0.7 points/month; 95%CI: 0.1, 1.3)** followed by **During the Follow-Up Phase:** Significant reduction (improvement) **(-1.3 points/month; 95%CI: -2.5, -0.2)**

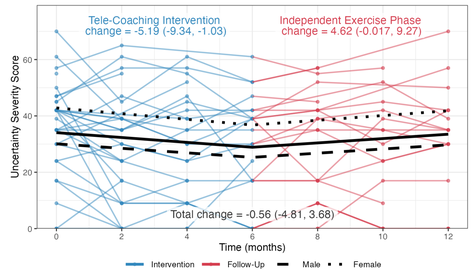
Cognitive Health Challenges



Mental-Emotional Health Challenges

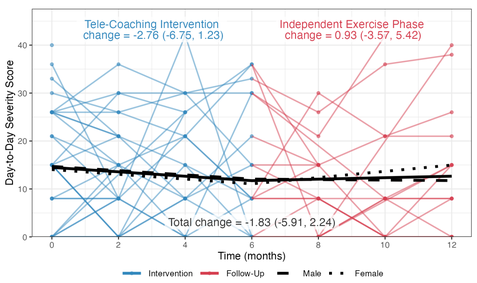


Uncertainty

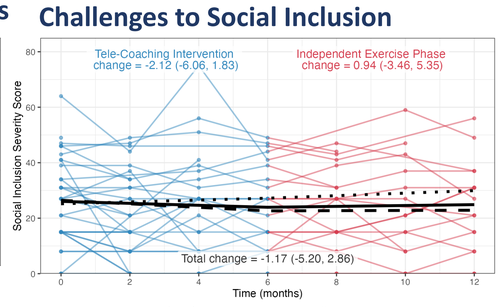


Rate of Change Uncertainty
During Intervention: Monthly rate of change (slope) significant reduction (improvement) **(-0.9 points/month; 95%CI: -1.6, -0.2)** followed by **During the Follow-Up Phase:** Significant increase (deterioration) **(1.6 points/month; 95%CI: 0.4, 2.9)**

Difficulties with Day-to-Day Activities



Challenges to Social Inclusion



Disability Presence - EDQ Presence Scores

No changes in EDQ presence scores (not shown).

Episodic Disability (daily fluctuations) - EDQ Episodic Scores

At the end of the Intervention (6 months):
Significant mean increase in episodic scores for physical domain (+10.3; 95%CI:0.2, 20.5); and social inclusion domain (+8.4; 95%CI: 1.9, 14.8).
Rate of Change: Monthly rate of change (slope) was significant for physical domain (+1.72 points/month: 95%CI: 0.03, 3.4)
At End of Follow-Up Phase (12 months):
Significant decrease (improvement) for mental-emotional domain (-14.9; 95%CI:-29.3, -0.4).

Discussion

- **Disability Severity**
  - Small steady improvements were observed in **uncertainty**, that were subsequently lost in the follow-up phase.
  - Increase in **physical health challenges** during the intervention (may be attributed to engagement in exercise) was diminished during the follow-up phase.
- **Episodic Disability**
  - Increase in physical health fluctuations observed the past week during the intervention (may be attributed to exercise).
- **Limitations**: Small sample size; clinical importance of outcomes less clear given measurement error of EDQ (~10-15 points).

Conclusions

Participants who remained in the study demonstrated increases in physical symptoms and improvements in uncertainty about future health during the online CBE phase, which were diminished during the follow-up independent phase.
Future research should examine the clinical importance of disability changes and influence of contextual factors on engagement in physical activity among persons living with HIV.

CIHRRC Canadian International HIV and Rehabilitation Research Collaboration

Scan for more info

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ONTARIO HIV TREATMENT NETWORK

OCS OHTN Cohort Study