

Piloting a novel online community-based exercise intervention with adults living with HIV

Tele-Coaching
Community Based
Exercise Research
Study



Factors influencing initial implementation

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Introduction

Community-based exercise (CBE) is a rehabilitation strategy that promotes health amongst people living with HIV. However, little is known about how online forms of CBE translate to the HIV context. To address this gap, in 2021, we began piloting the **Tele-coaching Exercise (TE_x)** study, a CBE intervention delivered entirely online.

The TE_x intervention is a year-long, pilot study that represents a new model of personalized online CBE for adults with HIV. Notably, it leverages a/synchronous communication to support physical activity. Findings from this study have the potential to inform implementation and sustainability of future online CBE in an HIV context.

Study Purpose: To study factors influencing the *initial implementation* of an online CBE intervention with adults living with HIV, in the community.

TE_x Study

The TE_x study aims to evaluate the implementation of a phased 6-month intervention/6-month follow-up CBE program, investigating health and disability outcomes of adults with HIV. For the duration, participants are asked to engage in 3 weekly exercise sessions of 60 mins each, combining aerobic, strength, balance and flexibility exercises. **Phase I** includes the following:

- 13 biweekly personal training sessions for exercise with a YMCA coach working from home (via Zoom)
- 6 monthly group self-management educational sessions (via Zoom)
- Basic home exercise and fitness testing equipment
- Access to a YMCA virtual membership (desktop and mobile apps)
- A Fitbit® Inspire 2™ (incl. Fitbit® app).

For the **Phase II** follow-up, the personal training and self-management sessions cease, while all else continues. Fitness and questionnaire assessments are administered online, bimonthly, throughout Phases I and II.

Methods

Study Design. We assessed the factors associated with initial implementation between Jul-Dec 2021. Stages of implementation included:

- Recruitment [Jul-Oct '21]
- Equipment hand-over [Oct-Nov '21]
- Baseline testing [Oct-Dec '21]
- Technology orientation [Oct-Dec '21]

Participant Inclusion Criteria.

- 18 years or older, with HIV
- Living in Toronto
- Medically stable and safe to participate in exercise as determined by the self-administered Physical Activity Readiness Questionnaire
- Access to device(s) (e.g. smart phone, tablet, laptop or desktop computer)
- Access to a Wi-Fi or data internet plan
- Access to a web-cam and willingness to activate it for group classes, fitness sessions, assessments and educational sessions
- Access to a space in the home to exercise
- Willingness to participate in one year of the online TE_x intervention, wearing the Fitbit® and syncing it weekly; and engaging in exercise 3x weekly, online YMCA group exercise weekly, 13 coaching sessions bi-weekly, 6 self-management sessions monthly.

n=33 (participants at baseline)

Implementation Team (11)

U Toronto Core Team (5):

- 1 Primary Investigator
- 1 Research Coordinator
- 1 Postdoctoral Researcher
- 1 Engagement Coordinator
- 1 Instructional Designer

Central Toronto YMCA Core Team (6):

- 3 Personal Trainers
- 1 Fitness Tester
- 1 Supervisor/Trainer/Tester
- 1 Project Manager

Factor Documentation. Methods in keeping with a systems engineering approach called Cognitive Work Analysis (Vicente, 1999).

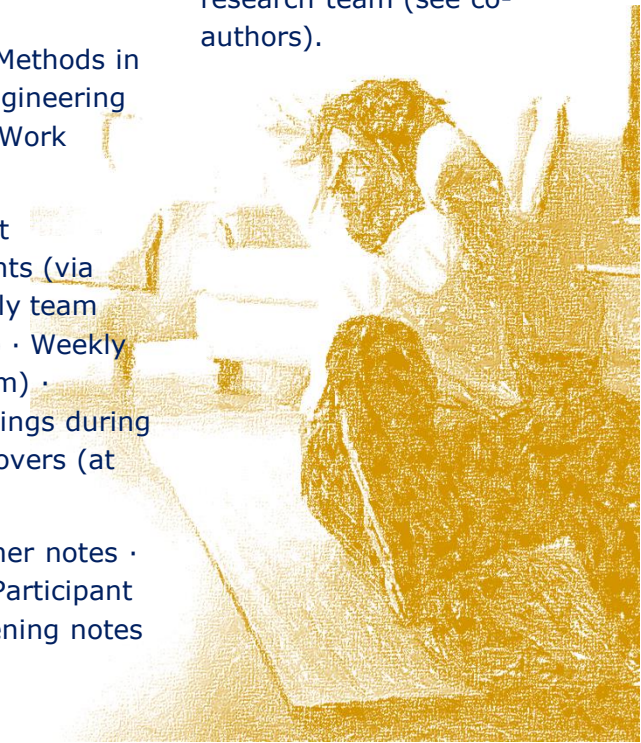
Communication.

- Frequent interactions with participants (via email, Zoom, phone)
- Daily team communication (via email)
- Weekly team discussions (via Zoom)
- Occasional in-person meetings during exercise equipment hand-overs (at Central Toronto YMCA)

Documentation.

- Researcher notes
- Meeting minutes
- Team / Participant emails
- Recruitment screening notes
- Enrollment spreadsheets

Process-based verification of initial implementation factors. Factors raised and documented by core team members were verified during weekly meetings amongst U Toronto researchers; classified using sociotechnical system domains, in accordance with Cognitive Work Analysis (see reference above); and later, presented to the broader TE_x research team (see co-authors).



Results. Factors influencing initial implementation I

Four Domains

Items reported by participants and team members spanned four sociotechnical domains.

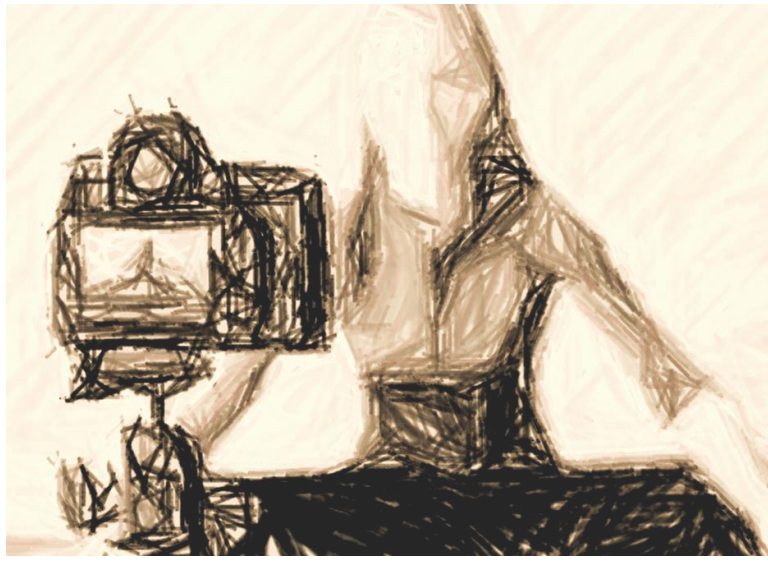
**Bracketed items are documented examples*

Personal: Primarily concerning individual participants, but also implementation team members (e.g. e-literacy of personal trainers)

Environmental: Concerning physical and digital spaces

Organizational: Concerning U Toronto and YMCA sites

Societal: Concerning COVID-19 threats and restrictions (in the context of Jul-Dec 2021 and pandemic uncertainties)



Personal Domain*

Health

- mental health (depression, social anxiety, grief, stress, seasonal affective disorder)
- physical health co-morbidity (CVD, musculoskeletal issues, diabetes, COPD, celiac disease, sciatica)
- episodic disability (fatigue, pain, headache)
- events (surgery)

Disposition (preferences, behaviour, etc.)

- communication preferences (email, phone, Zoom)
- health status disclosure (private)
- motivation re. physical activity
- commitment to TEx study
- tech preferences, e-literacy, comfort

External Constraints

- time (work demands)
- money (limits to procuring webcam)

Interdependencies

- digital – dispositional preferences (tech acceptance)
- digital feedback – mental health, i.e. effect of dashboard info on user mental health (lower weekly Fitbit® reports of active zone minutes negatively affecting thoughts & feelings, stress-inducing)
- YMCA trainer – Participant: training session scheduling

Environmental Domain*

Physical Environment

- privacy (Zoom tech set-up)
- home exercise space
- away-from-home setting (travel)

Social Environment

- responsibilities (children, parents, partners)
- supports (children, friends)

Digital Environment

- device access/procurement
- device release date (obsolescence)
- software release date (outdated)
- app usability (YMCA app, Fitbit app)
- app management (lost zoom urls)
- password management (forgotten pwd)
- syncing issues (Fitbit® device/app)
- device preference (Apple Watch, scale)
- staff home tech set-up (zoom, remote desktop access, apps, settings)

Interdependencies

- digital (device/app interoperability)
- physical – digital (device/space fit)

Results: Factors influencing initial implementation II

Organizational Domain*

U of Toronto & Central Toronto YMCA

Equipment Acquisition / Hand overs

- equipment procurement, delivery & assembly (wood plyo box for fitness assessments)
- equipment storage & security (YMCA space)
- equipment pick-up scheduling

Admin & Logistics

- file-sharing coordination
- scheduling (baseline fitness assessments)

Information Dissemination

- communication planning, content development & scheduling
- staff training (knowledge translation sessions for YMCA trainers)

Interdependency

- personal communication preference – organizational communication planning (message length, timing)

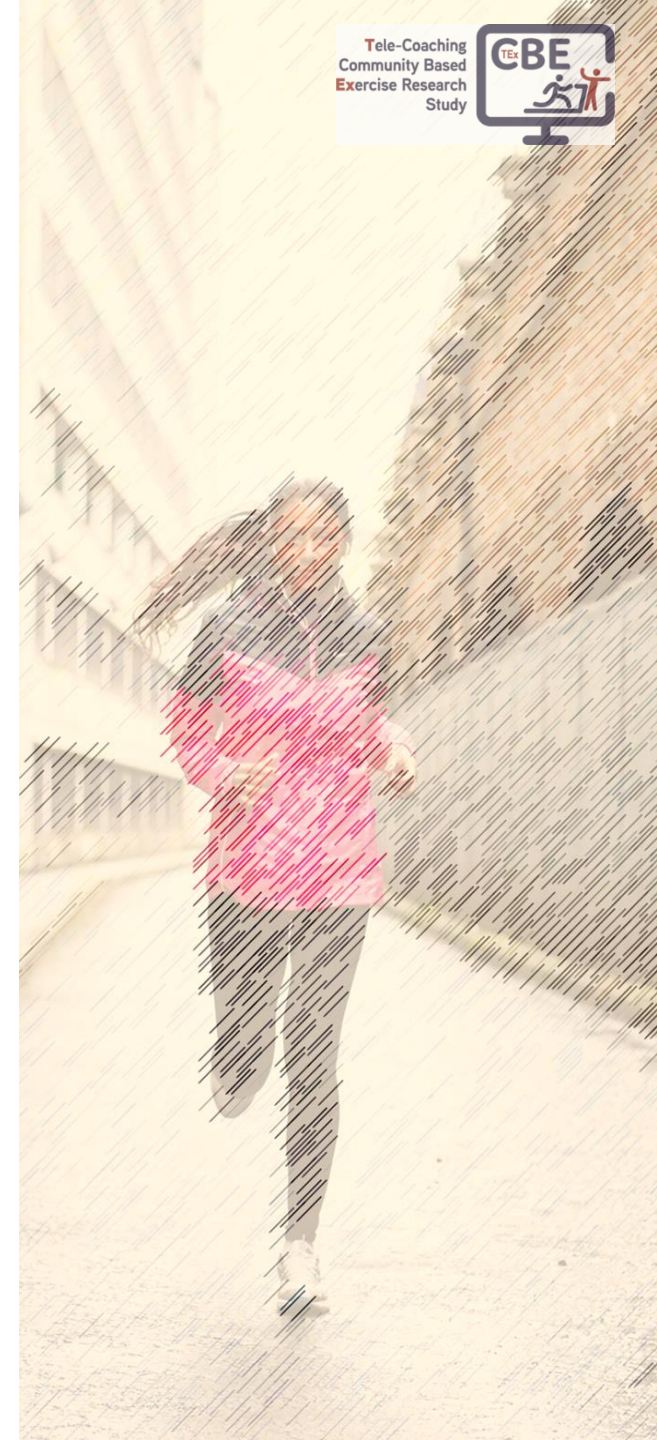
Skills

- participant engagement
 - tech support, training and instructional design
 - expertise in health and rehabilitation
 - research ethics, project management, etc.
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Societal Domain*

Pandemic-related Interdependencies

- COVID-19 risk on public transit, impacting equipment hand-overs
 - vaccine mandates at YMCA site, impacting equipment hand-overs
 - pandemic impact on mental health (feelings of isolation, fear of going out, stress re. exposure to gatherings)
 - Pandemic gym booking changes, impacting participants keen to continue with in-person gym/pool training (causing inconvenience, disinterest, disruptions to typical routines)
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Concluding Remarks

We limited this presentation to the factors for which we found evidence during the *initial TEx study implementation*. These findings are not to suggest other factors were not present.

Process: The process of identifying factors is intended to be pragmatic, rather than normative, in accordance with Cognitive Work Analysis modeling (Vicente, 1999). Agreement on factors is often by consensus, since every system can be parsed differently.

Findings:

- Factors spanned four domains: Personal, Environmental, Organizational and Societal
- Interdependencies between domains were evident (such as the effect of information on an app dashboard influencing a participant's mental health).
- Factors in all four domains related to both implementation and to research. However, it appeared that factors *most relevant* to CBE implementation concerned those in the Personal and Environmental Domains, while factors *most relevant* to research activities concerned those within the Personal and Organizational Domains. Factors in the Societal Domain affected both implementation and research.

Implications: While these factors are particular to the TEx study and its time and place, it is conceivable that several factors may transfer to similar interventions, implemented under comparable conditions.

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Numerous factors spanning multiple domains signal the complexities of this online CBE launch. Initial implementation required a multi-stakeholder team with a diversity of expertise and skills spanning research, technology, rehabilitation, and physical activity. **Given the global uncertainties and challenges that lie ahead, advanced implementation planning for similar online CBE interventions is recommended.**

Future work includes systematically mapping these and other implementation factors through the remainder of the TEx study to visualize and inform future scale-up.

