



Investigation of a Virtual Concussion Assessment: a Feasibility Study

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Background

- People who sustain a concussion and live in remote areas can experience challenges to accessing needed specialized assessments and care¹
- Although virtual approaches to assessment increase accessibility, the reliability and validity of these approaches relative to in-person assessments is not clear^{1,2,3}

Objectives

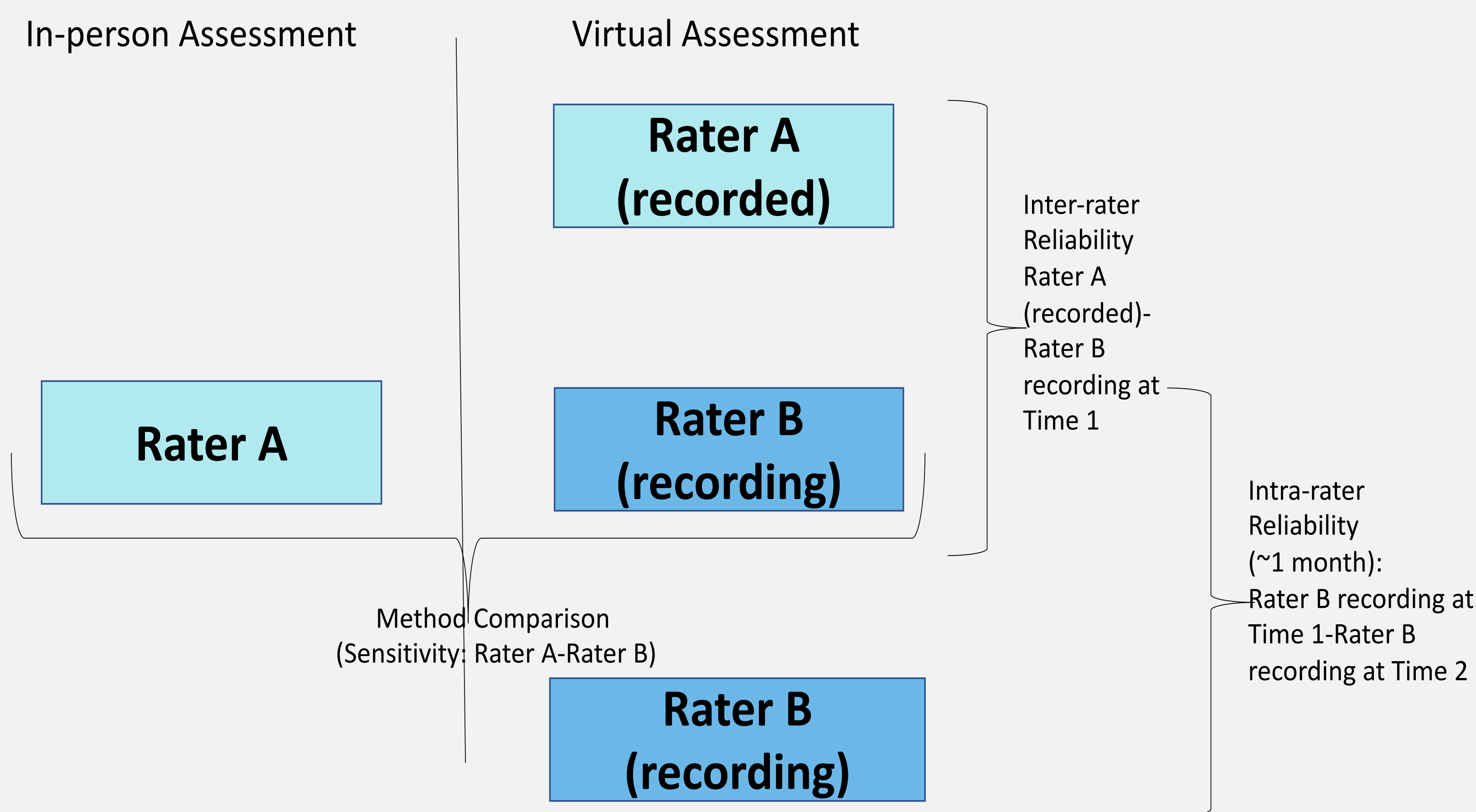
- Recruitment capability
- Time required to complete assessments
- Acceptability of the virtual assessment
- Document preliminary information regarding sensitivity of the virtual assessment compared to the in-person assessment
- Document preliminary information regarding inter-rater/intra-rater reliability of the virtual assessment

Methods

- Participants**
 - Twenty people living with brain injuries attended two assessments (one in-person and one virtually over Microsoft Teams)
- Clinical Measures Used in Assessments**
 - The following measures were administered: finger-to-nose test, Vestibular/Ocular Motor Screening, balance testing (feet together, single leg stance test, tandem stance), saccades, cervical spine range of motion, evaluation of effort

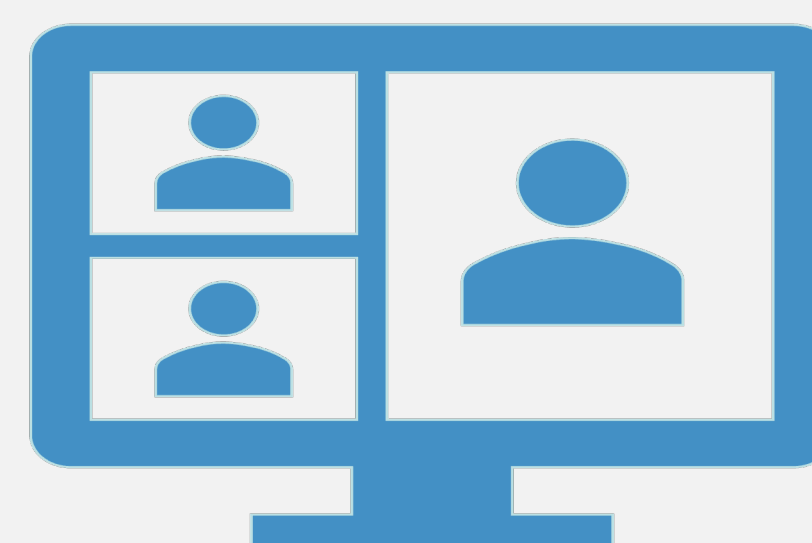
Methods Cont.

- Assessments**
 - Both study assessments were completed at the Ottawa Hospital Rehabilitation Centre by a physician or physician assistant
 - A different clinician viewed and documented findings on the recordings of the virtual assessment



Feasibility Results

- Rate of recruitment/length of sessions/challenges**
 - On average, we can recruit one patient-participant per week
 - Length of time required to complete the virtual and in-person assessment procedures averages 13 and 9 minutes, respectively
 - Clinician and patient-participants are generally confident in the findings on both assessment methods
 - Feedback obtained revolved around lighting and set-up of the participant on the screen
 - Some concerns were expressed regarding fatigue of the patient-participant during second assessment

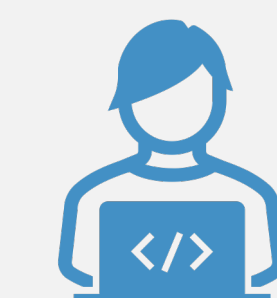


Preliminary Information on Psychometric Properties (N=20)

Measure	Inter-rater reliability	Intra-rater reliability	Sensitivity
Cervical Spine			
ROM	0.47	0.69	0.333
Balance			
Eyes open and closed: feet together, single leg stance, tandem stance	0.38	0.61	0.941
VOMS			
Change in symptoms	1.0	0.89	0.917
NPC	0.67	0.76	1.0
Coordination			
Finger-to-nose	*	*	1.0
Oculomotor			
Saccades	0.49	0.44	0.50
Effort			
Optimal effort	*	*	1.0

*Statistic could not be computed as the values documented by the second clinician-assessor are constant for these measures
N, number; NPC, near point convergence; ROM, range of motion; VOMS, Vestibular/Ocular Motor Screening

Conclusions



- The results of this feasibility study indicate that components of the virtual physical concussion assessment are feasible and acceptable to both people living with brain injuries and clinicians
- We are currently recruiting 60 participants to document specific psychometric properties associated with virtual administration of concussion measures

References

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