

Occupational performance coaching for stroke survivors delivered via telerehabilitation using a single-case experimental design

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Abstract

Introduction: Sustaining a stroke has a devastating, long-term impact on participation in everyday life. Despite the recognition of participation as a key outcome of stroke rehabilitation, there are few effective interventions that address participation. Occupational performance coaching is a promising intervention designed to improve participation among stroke survivors. Delivery of occupational performance coaching using telerehabilitation could improve access. This study examined the feasibility, acceptability and potential efficacy of telerehabilitation occupational performance coaching.

Method: A single-case experimental design was used. Six community-dwelling stroke survivors received 10 sessions of telerehabilitation occupational performance coaching over 16 weeks. We examined the feasibility and acceptability of telerehabilitation occupational performance coaching, improvement in performance and satisfaction with identified goals.

Results: Telerehabilitation occupational performance coaching was feasible and acceptable to deliver; participants who started the intervention completed it and reported high satisfaction and a strong therapeutic relationship. All participants experienced technological issues that required resolution. Goal-performance and/or satisfaction improved for five of six participants. Sixty-four percent of goals showed trends for improvement and 43% showed significant improvements.

Conclusions: Findings support the feasibility and acceptability of telerehabilitation occupational performance coaching, along with its efficacy for improving performance and satisfaction with performance of goals. Further research is needed to prove the effectiveness of telerehabilitation occupational performance coaching and to determine who may benefit most.

Keywords

Stroke, coaching, participation, telehealth, occupational therapy

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Introduction

Having a stroke can result in devastating, long-term effects on everyday life. Sixty percent of stroke survivors report needing help with everyday activities and 80% report having few meaningful activities in which they can participate (Centers for Disease Control and Prevention, 2015). The ability to engage in meaningful activities is consistent with the World Health Organization's International Classification of Disability, Functioning and Health framework definition of participation, which is defined as involvement in life situations (World Health Organization, 2002). Reduced participation is associated with decreased quality of life and increased depression (Alguren et al., 2012). While enhancing participation is a stated priority of stroke rehabilitation (Bayley et al., 2007), and is the overarching concern for occupational therapists (American Association of Occupational Therapists, 2002), evidence on best practices to improve participation is limited.

In addition to needing evidence for enhancing participation, occupational therapists need delivery methods

to address barriers with access to services related to geography, mobility and, recently, the need for physical distancing as a result of the Covid-19 pandemic. Stroke survivors face challenges in accessing services including limited access to transportation, cost and availability of services in more rural areas (Jellema et al., 2016). Few interventions targeting participation following stroke have addressed the issue of access to services (Johansson and Wild, 2011), and occupational therapists are seeking proven approaches to providing services at a distance.

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Occupational performance coaching (OPC) has been shown to be a promising approach to increasing performance and satisfaction with individual valued activity goals when delivered in person with stroke survivors (Kessler et al., 2014, 2017, 2018). OPC includes three enabling actions: connecting, using a structured process and sharing knowledge. Connecting involves the provision of emotional support and establishment of a therapeutic relationship. The therapist guides the client in a structured, goal-focused process to achieve small weekly goals, while providing emotional support and facilitating an exchange of information related to goal achievement (Graham et al., 2021). Through this process, clients develop knowledge, self-efficacy and problem-solving skills for current and future participation challenges (Kessler et al., 2018). To date, OPC has been delivered in person; the goal of the current study is to assess the feasibility and acceptability of telehealth-delivered OPC (Tele-OPC).

Literature review

Telehealth and telerehabilitation services offer a solution that addresses some of the access challenges faced by people living with stroke. Telerehabilitation interventions have typically been targeted at impairments or basic functions such as arm movement, balance and mobility, and mood (Laver et al., 2020; Sarfo et al., 2018). A recent systematic review of telerehabilitation interventions for stroke found no difference between telehealth and face-to-face interventions for activities of daily living, balance and upper extremity interventions (Laver, 2020). However, telerehabilitation interventions targeting participation following stroke are lacking (Laver et al., 2020; Sarfo et al., 2018). For example, Laver and colleagues (2020) found no studies reporting on outcomes in the categories of self-care and domestic life.

As a verbal intervention, OPC is well suited to delivery using telerehabilitation and therefore is one potential approach to improving the ability of stroke survivors to re-engage in their valued activities. Coaching interventions delivered using telehealth show promise with other populations. For example, Little and colleagues (2018) explored an occupation-based coaching approach via telehealth and reported preliminary benefits for increasing parent self-efficacy and child participation among families of children with autism spectrum disorder. Health coaching interventions are also frequently delivered using telehealth (Olsen and Nesbitt, 2010). To further research in the area of improving participation among people living with stroke, the objectives of this study were to:

1. Establish the feasibility and acceptability of OPC delivered via telerehabilitation (Tele-OPC) with stroke survivors;

2. Examine the efficacy of Tele-OPC to enhance stroke survivors' performance and satisfaction with identified goals and participation.

Methods

Design

This study used a multiple baseline single-case experimental design (SCED) (Portney and Watkins, 2009). SCED is a rigorous method for developing evidence of the efficacy of an intervention by using participants as their own controls via repeated measures (Smith, 2013). Standards for SCED recommend a minimum of three data collection points at baseline (Smith, 2013). The primary outcome was administered five times 1 week apart at baseline, five to eight times (biweekly) during the intervention phase (10–16 weeks) and then four times 1 week apart at post-test.

Participants

Participants were recruited through community support organizations, an outpatient stroke clinic and a research institute volunteer database [Rotman Research Institute, Baycrest Health Sciences volunteer database]. Participants were community-dwelling, adult stroke survivors who met the following inclusion criteria: (a) at least 3 months post stroke; (b) fluent in written and spoken English; (c) absence of dementia (as indicated by a Telephone Interview for Cognitive Status – Modified (TICS-M) score ≥ 30 ; Welsh et al., 1993); (d) no severe concurrent depression (Patient Health Questionnaire (PHQ-9) < 10 ; Williams et al., 2005); (e) absence of severe aphasia; (f) no reported concurrent substance abuse and (g) not currently receiving occupational therapy services. The TICS-M is a screening tool that measures orientation, concentration, memory, naming, comprehension, calculation, reasoning, judgment and praxis. There is some variability in suggested cut-off scores for the TICS-M. For example, Seo et al. (2011) suggest a cut-off of 28 or 29 for mild cognitive impairment (MCI), while Cook et al. (2009) suggest a score of 34. We chose a moderate cut-off score of 30 as recommended by Welsh and colleagues (1993). In addition, participants needed to identify one or more areas of participation that they wanted to improve. Participants were also required to have access to a computer or tablet with a high-speed internet connection, microphone and camera. A research assistant screened participants and obtained informed, written consent.

Intervention

Tele-OPC consisted of 10 sessions that lasted up to 1 hour, provided over a 16-week period as per the pilot randomized controlled trial (RCT) of OPC with people who had experienced stroke (Kessler et al., 2017). The intervention was administered by one of two registered

occupational therapists (DK, LTS) who were trained in OPC principles and followed the intervention manual (available on request from DK). Sessions were delivered via Adobe Connect videoconferencing software (Adobe, 2017), with use of a telephone as backup when technical difficulties could not be resolved in a timely manner. During the first session at baseline, the occupational therapist used coaching techniques to guide the participant to identify up to three highly relevant participation goals that would be addressed using OPC. Intervention sessions to work toward goal achievement started after the 5-week baseline period. At the first intervention session, the therapist reviewed the goals with the client and used a collaborative performance analysis (CPA) process to guide the participant to identify strategies and actions to achieve their goal. CPA involves guiding the participant to envision what they would like to happen, followed by discussion of what currently happens using open-ended, solution-focused questioning and sharing of information to identify bridges and barriers to success (Graham et al., 2021). Potential changes to the person, the task/activity or the environment were examined to identify potential solutions. At the end of the session, the participant had developed an action plan that they had a high probability of successfully completing. At each subsequent session, the therapist reviewed progress toward the goal with the participant and repeated the CPA and action planning process.

Outcome measures

To address the feasibility and acceptability of delivery of OPC by telerehabilitation, we recorded participant attendance at sessions and satisfaction using the Client Satisfaction Scale (CSS) (Attkisson and Greenfield, 1994). The CSS is a standardized measure that assesses general satisfaction across a variety of health and human services. Scores can range from 8–32, with a higher number indicating higher satisfaction. We also gathered data on the number of participants who were excluded because they did not have access to the required technology or chose not to participate due to the use of technology, and tracked the number of technical issues encountered during the delivery of the intervention and sessions interrupted by technological difficulties.

We examined treatment fidelity through rating three randomly selected video recordings of sessions per participant. A research assistant, trained in OPC and not involved in the study, rated treatment fidelity using the OPC Fidelity Measure (Graham et al., 2021: 177–200). We considered a fidelity rating of 80% fidelity to be acceptable. We also measured the therapeutic relationship using the patient version of the revised Helping Alliance Questionnaire (HAQ-II) (Luborsky et al., 1996) post-intervention. The HAQ-II is a 19-item scale used to measure the therapeutic alliance or relationship. Scores can range from 9–114, with higher scores indicating a stronger therapeutic relationship.

To examine efficacy, our primary outcomes were goal-performance and satisfaction with performance, measured using the Canadian Occupational Performance Measure (COPM) (Law et al., 1998). The COPM is a reliable, valid and responsive tool (Carswell et al., 2004) for measuring performance and satisfaction with personally identified participation goals using a 10-point Likert scale. The COPM has been widely used in stroke rehabilitation research (Cup et al., 2003; Jenkinson et al., 2007), including use in SCED research (Metcalf et al., 2019). Following identification of participation goals, participants were asked to rate their performance and satisfaction with current performance using the COPM.

Data collection

The COPM was administered weekly for 5 weeks at baseline, biweekly for 10–16 weeks during the intervention phase and then weekly for 4 weeks post-intervention.

The COPM was administered by the occupational therapist delivering OPC using Adobe Connect at the beginning of the baseline period. The research assistant collected data at all subsequent timepoints via a weekly or biweekly email to participants that included their goals and the COPM rating scale, asking them to rate their performance and satisfaction with each goal. If a participant had difficulty completing and returning their COPM ratings by email, the research assistant collected these data by telephone. Sociodemographic and health status variables were collected at the first baseline data collection session by the research assistant.

Data analysis

Feasibility and acceptability outcomes were analyzed descriptively and examined for trends. COPM data were analyzed using systematic visual analysis. We examined phases (baseline, intervention, post-intervention) for trends in direction of change between phases by graphing celeration lines (Portney and Watkins, 2009). Celeration lines are drawn for each phase to estimate the trend (ascending, descending or level). The number of points in each phase is first divided into two equal halves along the x-axis by a vertical dotted line. This step is repeated for each half. Next, the median score for each half-phase is calculated and indicated by a horizontal dotted line. Finally, a solid line is drawn to join the two intersections (Portney and Watkins, 2009).

We also used the two standard deviation (SD) method to estimate size of change (Portney and Watkins, 2009). The first step in this process is to check data points in the baseline phase for autocorrelation. If no autocorrelation was found, then the mean and SD for the baseline phase were calculated. A solid line was placed at the mean and dashed lines at two SD above and below the mean. Points that fall outside of two SD indicate a noteworthy change (Portney and Watkins, 2009).

Ethical approval for this study was received from the Baycrest Research Ethics Board (REB# 16-53) and the Bruyère Research Ethics Board (#M16-17-018) in 2017.

Results

Feasibility and acceptability

Twenty-three potential participants were identified and contacted. Of these, 10 were not interested, one was not available during the timeframe of the study and four were not eligible. Of those who were not interested or ineligible, two were for technology-related reasons. Eight people consented to participate and six completed all three phases of the study. Participants who withdrew did so during the 5-week baseline period and expressed concerns related to the burden of completing outcome measures. For those who completed the study, collection of two repeated measures were missed at baseline for two participants (P4 and P5). All other repeated measures data were collected as planned. The demographics of all participants are presented in Table 1.

All participants who started the intervention phase of the study completed the intervention and study. Participants were moderately to highly satisfied with the intervention, as indicated by the CSS scores. The mean score for satisfaction was 24.8, with a median of 25.5 and a range from 14–32.

The average number of sessions received was 8.5, with a range of 6 to 10 sessions. The duration of the intervention ranged from 11 to 15 weeks, with an average of 13.3. The average duration of sessions was 26 minutes, with a range of 10 to 60 minutes. Shorter sessions tended to be later in the intervention period. Eighteen sessions (three per participant) were rated for treatment fidelity. Treatment fidelity scores were high, ranging from 80–96.3%, with an average of 89%. Participants reported strong therapeutic relationships. The HAQ-II scores had a mean of 98.5, with a median of 95.5 and a range of 86–114.

Twelve sessions (21.1%) were interrupted, delayed or needed to be rescheduled due to technical issues. These issues included periodic problems with audio (3 participants), difficulty running the videoconferencing software (3 participants) and computer requiring repairs (1 participant). All participants required internet or computer issues to be resolved on at least one occasion.

Evidence of efficacy

Direction of change. In total, participants identified 14 goals. Four patterns of change for the COPM rating of these goals were noted based on visual analysis of the celeration lines: (a) gradual improvement over time from baseline to post-intervention; (b) marked improvement during baseline; (c) variable pattern and (d) no change. Figure 1 provides examples of these patterns.

The pattern of gradual improvement over time represents patterns of gradual increase from baseline to post-intervention, albeit with some fluctuation. Three goals fit this pattern for participation and five for satisfaction. Several participants had marked improvements during baseline. Scores generally remained stable after baseline, with slight fluctuations. Five goals fit this pattern for participation and two for satisfaction. Some goals showed a variable pattern of changing direction across the phases. Two goals fit this pattern for participation and two for satisfaction. Several participants had no change or small fluctuations during baseline, with no marked increase or decrease during the intervention or post-intervention phases. Four goals fit this pattern for participation and five for satisfaction (See Table 2).

In total, nine of the 14 goals (64%) showed a gradual improvement over time or a marked improvement in performance or satisfaction during baseline. Eight goals had improved performance and seven had improved satisfaction, with six goals having both improved performance and improved satisfaction.

Size of change. The goals set with indication of a significant change in performance and satisfaction ratings

Table 1. Participant demographic information.

Participant	Age	Education (years)	Gender	Marital status	Side of CVA	Years since stroke	Reported stroke-related deficits	PHQ-9	TICS-M
Participants who completed the intervention									
P1	50	20	F	Married	Left	3	Mild language deficits	2	40
P2	71	12	M	Common-law	Unknown	2	Fatigue	7	33
P3	58	12	M	Married	Left	8	Mild comprehension and cognitive deficits	0	32
P4	77	20	M	Married	Right	22	Decreased balance and mobility	6	30
P5	69	15	M	Widowed	Right	3	Decreased sensation left side	0	39
P6	54	22	M	Married	Left	5	Dysarthria, decreased balance and mobility	0	36
Participants who withdrew									
P7	50	16	F	Married	Unknown	1.5	No physical impairments	3	34
P8	83	15	M	Widowed	Unknown	33	Not reported	5	31

CVA: cerebrovascular accident; PHQ-9: Patient Health Questionnaire (Scores range from 0–27); TICS-M: Telephone Interview for Cognitive Status – Modified (Scores range from 0–50).

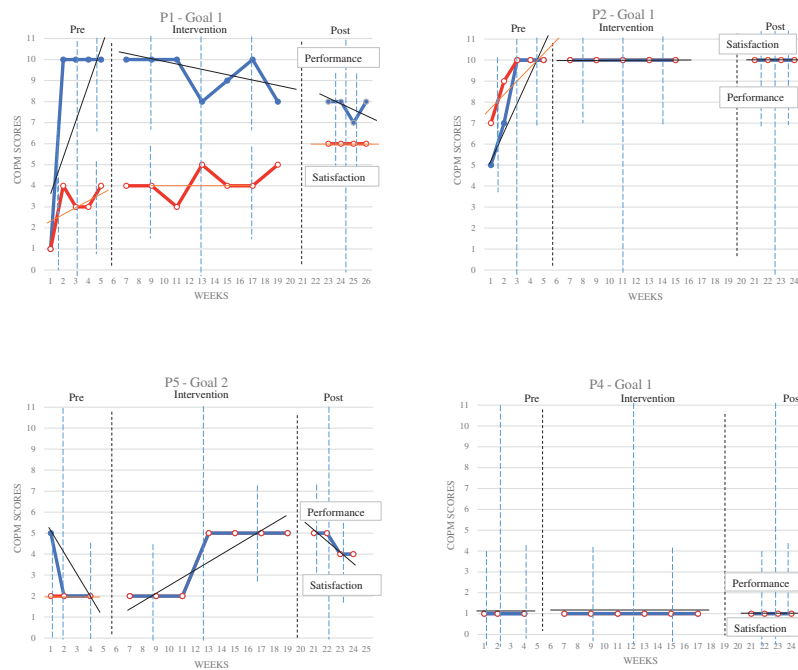


Figure 1. Patterns of COPM performance and satisfaction change.
 1. Gradual increase over time (Satisfaction).
 2. Marked increase during pre-test (Performance and Satisfaction).
 3. Variable pattern (Performance and Satisfaction).
 4. No change (Performance and Satisfaction).
 COPM: Canadian Occupational Performance Measure.

Table 2. Size and pattern of change in performance and satisfaction with performance.

Participant	Goal	Performance change >2SD; pattern	Satisfaction change >2SD; pattern
P1	1. Add a cardio component to exercise routine	No; pre-test improvement - then variable	Yes; gradual improvement
	2. Improve ability to communicate numbers during conversations	No; no change	Yes; variable
	3. Initiate and carry out conversations with someone who is less familiar	Yes; gradual improvement	Yes; gradual improvement
P2	1. Walk 2000 steps 3 times a week	No; pre-test improvement	No; pre-test improvement
P3	1. Remain engaged in and contribute to conversations	Yes; gradual improvement	No; gradual improvement
P4	1. Walk to synagogue with confidence	No; no change	No; no change
	2. Find an internet-based job	No; no change	No; no change
	3. Fasten a tie	No; no change	No; no change
P5	1. Improve touch sensitivity such as for carrying plates	No; variable	No; variable
	2. Go to the gym regularly	No; variable	Yes; gradual improvement
	3. Go for walks regularly	Yes; gradual improvement	Yes; gradual improvement
P6	1. Practice walking around the house	No; pre-test improvement	No; no change
	2. Maintain current level of pain	No; pre-test improvement	No; no change
	3. Maintain/increase balance	No; pre-test improvement	No; pre-test improvement

based on the 2SD method are shown in Table 2. Of the 14 goals identified, improved performance or satisfaction were noted for six goals (43%). Three goals had improved performance and five had improved satisfaction, with two goals having both improved performance and satisfaction. Data and graphs for all goals can be found in the supplementary material (see online supplementary material).

Discussion and implications

This is the first study to examine the feasibility, acceptability and potential efficacy of Tele-OPC. Findings support that Tele-OPC is feasible to deliver, is deemed acceptable and shows promise for improving goal-performance or satisfaction. We will discuss each of these below.

The strength of the therapeutic relationship or alliance is critical for the efficacy and effectiveness of OPC (Kessler et al., 2018). A frequent concern when considering the use of telerehabilitation is whether the therapist will be able to establish a strong therapeutic relationship (Norwood et al., 2018). In this study, participants rated the strength of the therapeutic relationship as high. Findings of a strong therapeutic relationship are consistent with other studies where psychotherapists were able to establish a strong therapeutic relationship when delivering therapy using videoconferencing (Jenkins-Guarnieri et al., 2015; Simpson and Reid, 2015). In a review that compared videoconference with face-to-face psychotherapy (Norwood et al., 2018), no differences in outcomes were noted. However, the rating of the therapeutic relationship for videoconferencing, although still strong, was inferior to face-to-face interventions. The authors posited that outcomes may have been equivalent due to different power relationships when the client was not in the room with the therapist, resulting in the client feeling more empowered. This enhanced empowerment may lead to similar outcomes even if the therapeutic relationship is rated lower (Norwood et al., 2018). Norwood and colleagues (2018) examined the therapeutic relationship in psychotherapy interventions; more research is needed to examine these differences in rehabilitation interventions, including the difference between OPC delivered in person versus via videoconferencing.

As well as strong ratings for the therapeutic relationship, fidelity ratings for Tele-OPC were high, thereby demonstrating that OPC can be implemented using videoconferencing. Despite high fidelity ratings, a deviation from fidelity was noted related to the type of goals set in a few cases. OPC is designed to address participation-level goals; that is, an activity performed in a specific context. While most goals fit this description, three of the goals set were at the impairment level (pain, balance, touch sensitivity). Selection of impairment-level goals may reflect the time and skill required to elicit participation-level goals (Plant et al., 2016). When setting goals using videoconferencing, the therapist may need to allow more time for relationship-building and exploration to assist clients to identify meaningful participation goals. An examination of goal-setting during in-person OPC with stroke survivors found that therapists need to be attuned to power dynamics during goal-setting and to actively listen to and clarify meanings associated with goals (Kessler et al., 2019). Attention to these factors may be more important during Tele-OPC.

While Tele-OPC was feasible to deliver, technology and study design issues were identified that should be addressed for future studies. Technological issues were frequent, and two people declined study participation due to the online format. Although staff were trained and supports were available, not all issues could be resolved in a timely manner. Concerns regarding technology use and internet connectivity have been identified in other telerehabilitation studies (Tyagi et al., 2018). Attention to the complexity and reliability of

videoconferencing software is important, as is awareness of bandwidth requirements (Steele and Lo, 2013). Use of the telephone to deliver the intervention was acceptable to participants when technological issues could not be resolved immediately. Telephone delivery may be a low-tech method for delivery that would increase access. Consideration could also be given to non-synchronous options or use of mobile applications to supplement interactions (Steele and Lo, 2013).

A factor influencing feasibility of recruitment and retention was study design. Although participants were informed during the consent process about the study requirements, the time commitment did not appear to be evident to them until they started completing the repeated measures. Two people subsequently withdrew. While those who started the intervention completed the study, several participants commented during coaching sessions that they found the repeated testing to be onerous. One of the participants who withdrew was in his 80s, which may have affected his desire to commit to the ongoing testing. SCED is a rigorous method to develop evidence of efficacy and effectiveness; however, data collection plans need to carefully consider participant burden while maintaining rigor. A pilot RCT, while requiring more participants, would be an alternative design that would reduce participant burden related to outcome measure completion.

Acceptability of Tele-OPC is supported by the fact that participants who started the intervention completed it. Overall, participants rated satisfaction with the intervention as high. This finding is consistent with other findings of telerehabilitation in stroke, where satisfaction with the interventions was comparable to the face-to-face or other comparator interventions provided (Laver et al., 2020).

Based on the two methods of analysis, Tele-OPC appeared to be helpful for improving goal-performance or satisfaction for five out of six participants. Forty-eight percent of goals improved for performance or satisfaction according to the 2SD method. It is important to keep in mind that this number does not include the five goals that improved markedly for performance or satisfaction during baseline. The marked increase after initial goal-setting may reflect the therapeutic value of goal-setting by itself, given that a coaching approach was used to identify goals. Other studies have noted that the act of setting a goal with a therapist appeared to be beneficial (Brock et al., 2009; Kessler et al., 2017).

One participant (P4) did not appear to gain any benefit from Tele-OPC. P4 scored at the cut-off of 30 for this study on the TICS-M, suggesting he may have had mild cognitive impairment. Participants with different preferences and abilities may respond differently to Tele-OPC. In particular, people with MCI may need more structure and support to benefit from Tele-OPC. Other studies have shown that cognitive rehabilitation can be delivered using videoconferencing with older adults with subjective and objective memory impairment (Burton and O'Connell, 2018) and people who have

experienced traumatic brain injury (Ng et al., 2013). These interventions used a more directive approach or were adapted to offer more structure. Adaptations to OPC may be needed to provide more structure and scaffolding of support to be efficacious for people with cognitive impairment.

While the COPM has been found to be valid and reliable among people who have experienced stroke (Carswell et al., 2004), there was variability in scores over time for several participants. This variability could be explained by actual fluctuations in performance or satisfaction with performance from week to week given changes in life demands and environmental factors (for example taking a vacation or weather conditions). While we were not able to uncover clear factors that contributed to the variability of scores, unknown factors could influence a person's perception of their performance (for example fatigue, death of a family member). It can also be expected that, during the coaching process, participants will have varying degrees of success with their weekly plans, which could be reflected in their COPM scores. While the desired outcome of the CPA process in OPC is that participants will have a plan to overcome barriers, it is recognized that life does not always go as planned. When this happens, the focus of OPC is on lessons learned to inform solutions for the future instead of dwelling on lack of success (Graham et al., 2021). Future research could explore reasons for the variability in scores through the use of qualitative methods such as participant interviews or weekly diaries.

Limitations

Two main limitations are noted for this study. First, this study used SCED with six participants only. Findings from this study cannot be generalized broadly to people who have experienced stroke. In particular, those who do not have access to or are not comfortable using videoconferencing technology are not represented. Second, in SCED it is recommended to gather data during baseline until there is stability (Smith, 2013). This was not consistently achieved in this study as several participants appeared to start to work on their goals and made gains during baseline data collection. Delaying actual goal-setting until the start of the intervention period may address this limitation. The COPM could be used to identify problems without setting goals at the start of baseline.

Conclusions

OPC appears to be feasible and acceptable to deliver via videoconferencing. However, the technology used should be chosen carefully and technical support should be available to support delivery. Technology is advancing quickly with increased ease of use and reliability. Further research could also examine delivery by lower tech options such as the telephone. Findings support that a therapeutic relationship can be

established during Tele-OPC. This could inform other telerehabilitation interventions. This study lends support to the efficacy of Tele-OPC for performance and satisfaction with performance of selected goals with some participants and to goal-setting as a stand-alone intervention for some participants. A full-scale RCT is needed to prove the effectiveness of Tele-OPC and to determine who benefits most from OPC.

Key findings

- Tele-OPC was feasible to deliver and acceptable to participants.
- A strong therapeutic relationship was established using Tele-OPC.
- Tele-OPC may be a useful to promote participation post stroke.

What the study has added

This study has demonstrated that OPC can be delivered using telerehabilitation. In particular, it was possible to establish a strong therapeutic relationship via videoconferencing.

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Research ethics

Ethical approval for this study was received from the Baycrest Research Ethics Board (REB# 16-53) and the Bruyère Research Ethics Board (# M16-17-018) in 2017. All participants provided written informed consent.

Consent

All authors have made substantial contributions to all of the following: (1) conception and design of the study, acquisition of data, or analysis and interpretation of data, (2) drafting article or revising it critically for important intellectual content, (3) final approval version to be submitted. All authors approval of the final version of the manuscript being submitted.


Declaration of conflicting interests

The authors confirm that there is no conflict of interest.

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Supplemental material

Supplemental material for this article is available online.

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