

**DESIGNING AN ACCESSIBLE GROUP YOGA CLASS
FOR ADULTS WITH APHASIA POST-STROKE
PHASE ONE: QUALITATIVE INTERVIEWS**

by

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Abstract

Background: Yoga is a community-based activity with great potential psychosocial and physical benefit to stroke survivors, one in three of whom has chronic aphasia. People with aphasia post-stroke may be unable to experience the benefits of yoga due to unique environmental factors that impact their participation; therefore, yoga classes need to be made more accessible for these individuals.

Aim: The aim of this study was to explore barriers and facilitators to participation in a group yoga class for people with aphasia post-stroke from the perspective of people with aphasia, allied health professionals, and yoga instructors.

Methods and Procedures: This study, underpinned by the critical paradigm, was the first phase of a participatory action research (PAR) project. Semi-structured qualitative interviews were conducted with 4 people with aphasia, 4 allied health professionals, and 4 yoga instructors. All participants had knowledge or experience with both aphasia and yoga. Interviews were transcribed and analyzed using qualitative content analysis. Member checking and peer debriefing were used to enhance rigour.

Results: Analysis of participant interviews revealed 44 barriers grouped into 11 categories and 56 facilitators grouped into 11 categories. Barrier categories included: lack of collaboration with key stakeholders; lack of aphasia awareness in the yoga facility; advertising strategies are not aphasia-friendly; lack of participatory support from yoga provider and social network; yoga instructor does not have the necessary knowledge, skills, and attitudes; class composition and structure is not aphasia-friendly; and complex communication requirements. Facilitator categories included: collaboration with key stakeholders; aphasia education in the yoga facility; aphasia-friendly advertising strategies; additional participatory support from yoga provider and social network; yoga instructor has the necessary knowledge, skills, and attitudes; aphasia-friendly class composition and structure; and supported communication in the yoga facility.

Conclusion: Results may guide the development of a communicatively accessible group yoga class for people with aphasia-post stroke in the future. Collaboration between the yoga provider and the specific group of yoga students with aphasia may be integral to class success and longevity. Further research investigating the validity of study results in a real-life context is indicated.

Lay Summary

Aphasia is a language disorder, most often caused by stroke. It can affect a person's understanding, speaking, reading, and writing and can have a major impact on the ability to participate in social, leisure, and community activities including pursuits such as yoga. This study aimed to identify negative environmental factors (barriers) and positive environmental factors (facilitators) that influence participation in a group yoga class for people with aphasia post-stroke. It involved semi-structured interviews with people with aphasia, allied health professionals, and yoga instructors. The findings can be used to inform the development of recommendations for a communicatively accessible group yoga class for adults with aphasia.

Preface

This thesis is the original work of the author, K. M. Ross, under the supervision of Dr. T. Howe, and co-supervision of Dr. L. Jenstad. As the author of this work, I initiated the investigation of yoga for people with aphasia post-stroke, participated in the development of the study design, developed associated documents and supportive materials, and conducted, transcribed, and analyzed the semi-structured interviews. One interview was transcribed by research assistant, K. O'Neill.

This research has been approved by the Behavioural Research Ethics Board of the University of British Columbia on July 14, 2017, under the project title “Designing an accessible group yoga class for adults with aphasia post-stroke. Phase one: qualitative interviews” [certificate # H16-03197].

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Chapter 1: Introduction

Aphasia is a communication impairment that affects the ability to use language without changing intelligence, competence, or personhood (Kagan & Simmons-Mackie, 2013). As communication forms the basis of our identity, social life, and most of our daily activities, communication impairment associated with aphasia can have a devastating impact on mental health (Kauhanen et al., 2000), personal identity (Shadden, 2005), social relationships (Lee, Lee, Choi, & Pyun, 2015), and quality of life (Lam & Woodchis, 2010). Approximately one third of stroke survivors are diagnosed with chronic aphasia; currently affecting over 100 000 Canadians (Dickey et al., 2010). This number is projected to increase by 20.5% between 2012 and 2030, affecting an additional 3.4 million people in the United States, and causing annual medical costs to triple (Benjamin et al., 2017). There is therefore an urgent need to implement viable and accessible community rehabilitation options to ensure that stroke survivors receive adequate, sustainable care (Hachinski et al., 2010).

Yoga has the potential to address the physical, physiological, social, and emotional needs of stroke survivors with and without aphasia in the community setting. It has grown exponentially in the 20th century and is currently practiced more frequently by adults with neurological conditions such as stroke than those without (Wells, Philips, & McCarthy, 2011). Non-aphasic stroke survivors reported greater sensation, feeling calmer, and increased connection with their body following a 10-week yoga intervention (Garrett, Immink, & Hillier, 2011). In typical populations, yoga is associated with physical improvements (Diamond, 2012; Oken et al., 2006), increased self-esteem (Diamond, 2012), decreased anxiety and depression (Bonura & Tenenbaum, 2014; Hayes & Chase, 2010), improved well-being and self-efficacy (Bonura & Tenenbaum, 2014), finding meaning in life, and increased connection to others (Hayes & Chase, 2010), and increased executive function (Gothe, Kramer, & McAuley, 2014). Furthermore, research indicates that 25 – 30% of strokes are secondary strokes or secondary transient ischemic attacks (Rothwell et al., 2004), and that increased physical activity and improved psychosocial status, among other factors, play a significant role in secondary stroke prevention (O'Donnell et al., 2010).

People with aphasia (PWAs) post-stroke may be unable to experience the physical and psychosocial benefits of yoga because of the unique environmental factors that could restrict

their participation in a yoga class. The focus of this thesis is to identify barriers (negative environmental factors) and facilitators (positive environmental factors) to participation in group yoga classes for adults with aphasia post-stroke. Findings will inform the development of an accessible group yoga class for PWAs post-stroke, with potential carryover to yoga classes for individuals with other language impairments, or individuals who do not speak the dominant language of their community (Desveaux, Lee, Goldstein, & Brooks, 2015).

1.1 Theoretical Context: The Life Participation Approach to Aphasia

The Life Participation Approach to Aphasia (LPAA) is a set of values put forth by prominent aphasiologists to expand the scope of aphasia rehabilitation beyond traditional approaches (language-based and clinician-driven) to encompass functional, consumer-driven goals. The five core values of the LPAA are (LPAA Project Group, 2008, p. 281):

- (1) “The explicit goal is enhancement of life participation”;
- (2) “All those affected by aphasia are entitled to service”;
- (3) “The measures of success include documented life-enhancement changes”;
- (4) “Both personal and environmental factors are targets of intervention”;
- and (5) “Emphasis is on availability of services as needed at all stages of aphasia.”

By aiming to enhance life participation through provision of an accessible and ongoing service (yoga) for PWAs, including PWAs as key consultants in the design process, and focusing on environmental modifications, this research is consistent with the LPAA values.

1.2 Theoretical Context: Biopsychosocial Model of Disability and the International Classification of Functioning, Disability, and Health

The biopsychosocial model views disability and functioning as a complex interaction between a person’s health condition and their environmental and personal factors. This model forms the foundation for the International Classification of Functioning, Disability, and Health (ICF). In 2001, the World Health Organization unanimously adopted the ICF framework to

provide an approach for considering functioning and disability in relation to health that can apply to all human beings.

The release of the ICF framework precipitated greater acknowledgement of the contribution of contextual factors to creating disability, particularly in relation to identifying the environmental factors that act as barriers and facilitators to life participation for people with health conditions such as aphasia. Despite high prevalence of aphasia and high risk of social isolation (Hilari, Needle & Harrison, 2012; Lee et al., 2015), even compared to stroke survivors without aphasia (Hilari, 2011), there are few adaptations to the public sphere that are designed to facilitate the participation of people with language impairments.

This research adopts both the biopsychosocial model of disability and the ICF framework in the investigation of environmental factors that may impact the participation of PWAs in a group yoga class.

1.2.1 Key terms in the ICF framework

Key terms in the ICF framework that are important for the current research study are environmental factors, barriers, facilitators, activity limitations, and participation restrictions. Environmental factors within the ICF are defined as anything external to the individual that may affect a person's functioning. These factors include physical surroundings (e.g., signage or background noise), support provided by other people (e.g., a receptionist speaking too quickly), and social attitudes (e.g., a service provider who has negative attitudes toward people with disabilities). Environmental factors can be either positive (e.g., facilitators such as aphasia-friendly written information) or negative (e.g., barriers such as service providers who lack awareness of aphasia). Activity limitations are "difficulties an individual may have in executing activities" (World Health Organization, 2001, p.10) (e.g., a person with Broca's aphasia might have difficulty reading a yoga studio's brochure). Participation restrictions are difficulties a person may experience in relation to being involved in life situations (e.g., a person with Broca's aphasia may stop attending an exercise class because the class is not accessible for people with language difficulties).

1.3 Yoga

Yoga is a type of Mind-Body Therapy (MBT), a class of alternative and complementary therapeutic approaches that tap into the mind's ability to impact the senses and the body, with a potential subsequent impact on the person's health condition. Other MBTs include guided imagery, Mindfulness-Based Stress Reduction, Cognitive Behavioural Therapy, Tai Chi, and Qi Gong (Del-Rosso & Maddali-Bongi, 2016). Advantages of MBTs in clinical populations include low physical and/or emotional risk, relatively low cost, and promotion of more active participation in rehabilitation (Wabeh, Elsas, & Oken, 2008).

For the purposes of this research, yoga is defined as the conscious and focused practice of uniting the mind, body, and breath through simultaneous asana (posture) and pranayama (regulation of breath) under the supervision of a certified instructor for self-defined self-improvement.

Yoga originated as a practice or school of thought in India as early as 3000 BCE (Hayes & Chase, 2010). The root word *yuj* in Sanskrit can be defined as “to come together,” “to unite,” or “to attain what was previously unattainable” (Desikachar, 1999). The philosophy of yoga is to “yoke” mind, body, and spirit together through the following eight foundational pillars that form the foundation of modern practice (Hayes & Chase, 2010):

- | | |
|-----------------------------------|-----------------------------------------------------------------------------------|
| 1. Ethical controls | nonviolence, truthfulness, nonstealing, sexual discipline, and greedlessness |
| 2. Ethical observations | cleanliness, contentment, discipline, self-study, and surrender to a higher power |
| 3. Postures | asana, originally seated meditation, but now also the physical postures |
| 4. Control of vital energy | pranayama and regulation of breath |
| 5. Sense-withdrawal | minimizing external stimuli and moving inward |
| 6. Concentration | place and hold attention deliberately |
| 7. Meditation | “mental absorption yielding insight and self-knowledge” (p.33) |

8. Enlightenment

mental equilibrium, complete integration between the self and the universe, and bliss.

Yoga was introduced to North America in the late 19th and early 20th century, blossoming over time into many different styles of yoga practice, such as Anusara, Ashtanga, Iyengar, and Kundalini. By the end of the 20th century, yoga was a widely popular and ever-growing commercial industry, sought after by adults with and without medical conditions for pain management, stress reduction, physical improvements, and a variety of other therapeutic benefits. As of 2008, an estimated 15.8 million people are practicing yoga in the United States (Hayes & Chase, 2010).

Yoga is considered to be appropriate for any health condition that is susceptible to stress and psychological barriers such as depression and aphasia (Streeter, Gerbarg, Saper, Ciraulo, & Brown, 2012). While the true mechanism of change is unknown, research suggests that practicing yoga stimulates the parasympathetic division of the autonomic nervous system, promoting a state of relaxation, decreased stress, and decreased anxiety (Papp, Lindfors, Storck & Wandell, 2013; Streeter et al., 2012). As a result, the body may experience reduced blood pressure and heart rate (Barnes, Treiber, & Davis, 2001); increased vital capacity (Birkel & Edgren, 2000); and/or increased maximum oxygen uptake (Ray, Sinha, Tomer, Pathak, Dasgupta, & Selvamurthy, 2001).

1.4 Previous Research

1.4.1 Research: yoga and adults post-stroke

Yoga has the potential to rehabilitate cognitive, emotional, and physical sequelae of stroke (Thayabaranathan et al., 2017). Research to date is limited and difficult to compare due to inconsistent type, dose, targeted outcome, and reporting of yoga intervention, but the positive trends are robust. In response, empirical interest in yoga as an alternative or supplementary therapy for stroke survivors continues to increase (Lazaridou, Philbrook, & Tzika, 2013).

The first known study on yoga for stroke rehabilitation reported improvements in balance in a single subject with hemiparesis (Bastille & Gill-Body, 2004), a finding statistically confirmed by Schmid et al. (2012) in a randomized controlled trial comparing stroke survivors

and veterans in an 8-week yoga program. Schmid et al. additionally reported a reduced fear of falling as a result of yoga which stimulated a willingness to try new things. Chan, Immink, and Hiller (2012) reported clinically relevant improvements in state anxiety, trait anxiety, and depression in stroke survivors following a 6-week yoga intervention. Findings related to state and trait anxiety were replicated by Immink, Hillier, and Petkov (2014), and followed by a meta-analysis indicating yoga can be beneficial for state anxiety and depression post-stroke (Thayabaranathan et al., 2017).

Yoga has been associated with significantly improved life participation, activity level, and quality of life of stroke survivors (Van Puymbroeck, Schmid, Miller, & Schalk, 2012), potentially through perceived improvements in motor function, perceived recovery, and memory-related changes (Immink et al., 2014). A systematic review revealed yoga programs to have a greater impact on health-related quality of life and exercise capacity in stroke survivors when compared to the standard care protocols and routine follow-up with a healthcare professional (Desveaux et al., 2015).

Qualitative research lends further support for the benefits of yoga post-stroke. Garrett, Immink, and Hillier (2011) reported that participants with stroke perceived greater sensation, feelings of tranquility, physical improvements, improved sense of calmness, and possibility for reconnecting and accepting a different body as a result of participating in a 10-week yoga intervention.

In the six studies on yoga and stroke reviewed above, five of the investigations used criteria that would exclude many individuals with aphasia (Bastille & Gill-Body, 2004; Chan et al., 2012; Garrett et al., 2011; Immink et al., 2014; Schmid et al., 2012). One study did not specify whether participants with language impairments were included in their research (Van Puymbroeck et al., 2012). In all six studies reported above on yoga and stroke, there was no evidence that the recruitment or informed consent processes followed recommended procedures for involving people with aphasia in research (Pearl & Cruice, 2017).

1.4.2 Research: yoga and adults with aphasia post-stroke

To date, only one quantitative study has specifically investigated yoga for PWAs post-stroke. This pilot study reported improvements in aphasia and dexterity following a 12-week

kundalini yoga intervention (Lynton, Kligler, & Shiflett, 2007). Although they specifically aimed to include PWAs in their research, Lynton et al. (2007) did not report making adaptations for aphasia in their method, and like previously reported stroke and yoga studies, excluded participants who could not follow two-step directions. The small sample size of the study (n=3) meant that no conclusions could be drawn and further research was suggested. A recent systematic review (Lazaridou et al., 2013) yielded eleven studies investigating stroke rehabilitation and components of yoga, but no further research specific to aphasia.

Two studies published in 2014 reported the use of pranayama (breathing) techniques, considered a vital branch of yogic practice, in post-stroke populations that included PWAs. Although this is not “yoga” by the operational definition used in the current study, the inclusion of PWAs warrants inclusion in this review of the literature.

Of the participants who underwent a 10-week unilateral nostril breathing (UNB) program, those with aphasia (n=5) and without aphasia (n=6) experienced significant decreases in anxiety. Participants with aphasia additionally experienced significant increases in the use of alternative communication methods, lexical retrieval, and aphasia severity. Participants reported increased ability to sleep, enter a relaxed state, and manage moods (Shisler Marshall, Basilakos, Williams, & Love-Myers, 2014). In a case study by Mohapatra, Shisler Marshall, and Laures-Gore (2014), a single subject performed alternate nostril breathing for a period of 17 weeks, resulting in increases of Aphasia Quotient, Language Quotient, and Cortical Quotient on a standardized test measure. Increases in spontaneous speech, fluency, and naming were also reported.

1.4.3 Research: accessibility of yoga for adults with aphasia post-stroke

Participating in typical group yoga classes may be inherently challenging for PWAs. Yoga teaching usually takes place in a class setting of anywhere from under ten to over forty people. Class participation requires practitioners to quickly process complex sequential verbal directions, often without being able to visualize others in the class to support comprehension (e.g., in downward facing dog or supine position). Signing waivers, reading advertisements and class schedules, planning transportation, and communicating with others in the yoga community all rely on language abilities and therefore could all be significantly affected by the presence of aphasia. To date, no research has focused on identifying barriers and facilitators that may

influence the participation of PWAs post-stroke in group yoga classes, although two studies contribute relevant findings relating to the accessibility of exercise activities.

Blonski et al. (2014) explored PWAs' perspectives on barriers and facilitators to community-based exercise programs using qualitative semi-structured interviews. Reported facilitators included: guidance, use of non-verbal communication, patience, clear, simple instructions, aphasia-specific programming, fostering a sense of community, presence of communication partner and family support, staff consistency, multiple exercise instructors, transportation, and routine. Reported barriers included: exercise instructor speaking too quickly, impatience, lack of general public awareness of aphasia, no communication partner or family support, lack of knowledge of exercise program locations, high exercise program costs, and transportation (Blonski et al., 2014). Damush, Plue, Bakas, Schmid, & Williams (2007) used focus groups to explore barriers and facilitators relating to exercise as perceived by stroke survivors. Lack of exercise options post-stroke and transportation were reported as barriers, while social support, and planned activities were reported as facilitators.

Interestingly, both Blonski et al. (2014) and Damush et al. (2007) misused the ICF terminology "barrier" and "facilitator" when analyzing and reporting their results. A key goal of the ICF is to create a universal terminology to use across health professions to describe a person's level of functioning. Barriers and facilitators refer specifically to environmental factors, including physical environment, actions of others, and social attitudes, that impact an individual's functioning. Both studies reported barriers and facilitators that should actually be categorized as personal factors within the ICF, such as high value or importance placed on exercise by the individual.

Blonski et al. (2014) further limited their results by using a topic guide that was highly leading to study participants. Instead of using more open-ended interview questions with appropriate aphasia-friendly supports, probe questions included: "Were they trained to communicate with individuals with aphasia?" and "Were you able to receive one-on-one instructions?"

Many of Blonski et al.'s (2014) findings are narrow in scope and too general to support implementation in the community. For example, the researchers found "advertise to enhance awareness of exercise programmes for adults with aphasia" (p. 372) as a strategy to improve access to community exercise programs for PWAs. These strategies are not elaborated upon and

provide little to no detail on how a person can accomplish the task effectively, and are therefore of limited value to those developing community-based programs for PWAs.

1.5 Research Aim and Rationale:

The implementation of group yoga classes for PWAs has enormous therapeutic potential to address sequelae of aphasia post-stroke, and quality of life goals as identified by PWAs, such as: social ease, acceptance, physical function, health (Worrall et al., 2011), independence, and participation in meaningful activities (Cruice, Worrall, & Hickson, 2006).

This study fills the gap in aphasia accessibility literature by aiming to provide a comprehensive, nuanced, and detailed description of the barriers and facilitators to participation in a group yoga class for adults with aphasia post-stroke. This study improves upon previous research by adhering to the true process of in-depth semi-structured qualitative interviews and technical terminology of the ICF, focusing on the specific topic of yoga, and including three different stakeholder perspectives on the topic of developing an accessible group yoga class. Specifically, the aims of this research study were:

1. To identify barriers that may influence group yoga class participation for adults with aphasia post-stroke from the perspective of adults with aphasia post-stroke, health professionals who have worked with adults with aphasia post-stroke, and yoga instructors.
2. To identify facilitators that may support group yoga class participation for adults with aphasia post-stroke from the perspective of adults with aphasia post-stroke, health professionals who have worked with adults with aphasia post-stroke, and yoga instructors.

Findings from this study will be used in a second investigation that will involve piloting an accessible group yoga class for individuals with aphasia. Results from both studies will be used to inform the development of an audit tool for setting up an accessible group yoga class for PWAs post-stroke.

Chapter 2: Method

2.1 Research Paradigm

A paradigm is a set of basic philosophical beliefs used to interpret reality. This research advances a critical paradigm (Higgs, 1998), interpreting reality as something constructed over time by its participants, and influenced by social, cultural, economic, and gender factors (Guba & Lincoln, 1994). This paradigm necessitates collaboration, transaction, and dialogue between investigator and participants to reveal narratives that can transform our worldview and bring about relevant and meaningful changes (Guba & Lincoln, 1994).

2.2 Study Design

This study used a Participatory Action Research (PAR) approach (Liamputtong, 2013). This qualitative interview investigation was the first phase of a two-part PAR intended to design an accessible group yoga class for PWAs. The goal of PAR is to equalize the power dynamic between researcher and participant, and to produce a result that will bring about meaningful action or change within the communities participating in the project. PAR has been used with PWA to develop aphasia-friendly technology (Galliers et al., 2012; Moffatt, McGrenere, Purves, & Klawe, 2004) and to develop an aphasia-friendly music program (Tarrant et al., 2016).

2.3 Ethics

Ethical approval was obtained from the University of British Columbia Behavioural Research Ethics Board prior to the commencement of this study.

2.4 Participants

The study involved twelve participants who met the following general inclusion criteria:

- adults with experience living with aphasia, or
- personal/professional experience with PWAs, or other language difficulties, and
- experience with/interest in yoga.

Participant-specific exclusion criteria are reported in section 2.4.1.

2.4.1 Sampling

Maximum variation sampling (Patton, 2002), a specific type of purposive sampling, was used to select information-rich participants from three different perspectives that varied widely from one other:

Lived Experience Perspective - The participants representing this perspective were adults who had aphasia for at least six months as the result of a stroke, had a self-identified interest in /or experience with yoga, and lived in the community. Participants were screened prior to beginning the interview using a picture description task from the Boston Diagnostic Aphasia Exam – 3rd Edition and Severity Rating Scale (Goodglass, Kaplan, & Barresi, 2000) to diagnose the presence of aphasia. Participants were excluded if they did not present with aphasia based on the aphasia screening task; and if, given maximal conversation support strategies, they were unable to participate in a qualitative interview.

Allied Health Professional Perspective - The participants representing this perspective were adults who, based on self-report, had worked with PWAs post-stroke as a registered allied health professional (e.g., Speech-Language Pathologist (SLP), Occupational Therapist (OT), Physiotherapist (PT), Recreational Therapist (RT)), and had self-reported personal experience with yoga.

Yoga Class Instructor Perspective – The participants representing this perspective were adults who, based on self-report, had worked as a certified yoga instructor independent of or in tandem with experience working with PWAs or other language difficulties.

2.4.2 Recruitment

In order to recruit participants with aphasia, the researcher sent an initial contact e-mail explaining the study purpose, inclusion criteria, and contact information along with an aphasia-

friendly recruitment flyer (Appendix A) to the organizers of local community aphasia groups. To recruit allied health participants, the researcher sent an initial contact e-mail and an allied health recruitment flyer (Appendix B) to the Stroke Recovery Association of BC and posted the recruitment flyer on public bulletin boards in healthcare settings.

The researcher sent an initial contact e-mail and yoga instructor recruitment flyer (Appendix C) to organizers of North American community aphasia camps and aphasia centres that had previously reported running yoga classes for people with aphasia in order to recruit yoga instructor participants. The contact e-mails asked that the research information be shared with or forwarded on to any individuals who met the specific participant criteria. Potential participants were invited to contact the researcher for further information if they were interested in participating in the study.

2.4.3 Participant demographics

Four participants with aphasia were interviewed to represent the lived experience perspective. These participants were coded as (PA#). All participants were male, with a mean age of 60 (SD = 7.8), ranging from 2.5 to 16 years post-stroke (Mean = 10.6, SD = 5.8). Only one participant (PA4) reported current mobility challenges (right hemiparesis). See Table 2.1 for further detail.

Two SLPs, an OT, and a registered nurse (RN) (n=4) were interviewed to represent the perspective of allied health professionals. These participants were coded as (PH#). One OT (PH6) and one SLP (PH8) were also certified yoga instructors, but were categorized here because experience with aphasia was considered their primary expertise. All participants were female with a mean age of 32.5 (SD = 5.8, Range = 28-41). See Table 2.2 for further detail.

Four participants represented the yoga instructor perspective. These participants were coded as (PY#). Yoga instructor participants consisted of three yoga instructors (YIs) and one yoga instructor / certified yoga therapist (CYT) who is certified to train both yoga teachers and yoga therapists (PY10). One participant (PY11) is also an SLP, but experience as a yoga instructor was considered the primary area of expertise. All participants were female with a mean age of 39 (SD = 8.64, Range = 27-47). See Table 2.3 for further detail.

Table 2.1 Participant Demographics (People with Aphasia)

Participant ID	Gender	Age	Years Post Stroke	Aphasia Severity Rating	Physical Supports/ Disabilities	Yoga Before Stroke		Yoga After Stroke	
						Experience	Interest	Experience	Interest
PA1	M	61	16	3	•None	• Group yoga	• No rating provided (stated it was “fun”)	• Group yoga	•No rating provided (stated it was “fun”)
PA2	M	69	11	4	• None related to stroke • Cane/brace after torn thigh 5 years ago	• None	• 2/5	• Stroke group yoga • Watching wife do yoga	• 5/5
PA3	M	60	2.5	2	•None	• None	• 3/5	• None	• 5/5
PA4	M	58	13	1	• Cane (all the time) • Brace (all the time) • Right Hemiparesis	• Group yoga	• 2/5	• Stroke group yoga	• 4/5

Table 2.2 Participant Demographics (Allied Health Professionals)

Participant ID	Gender	Age	Health Profession	Experience with Language Difficulties	Experience with Yoga
PH5	F	30	SLP	<ul style="list-style-type: none"> • 6 years community setting: aphasia • 1 year with clients with autism spectrum disorder 	• 4 years in group yoga classes
PH6*	F	31	OT	• 10 years long term care/acute: aphasia, English Language Learners (ELL)	<ul style="list-style-type: none"> • 7 years in group yoga classes • 4 years yoga instructor
PH7	F	28	RN	<ul style="list-style-type: none"> • 2-4 years in work setting: aphasia • 10+ years personal experience as ELL 	• 11 years in group yoga classes
PH8*	F	41	SLP	• 12 years community/rehab/long term care/acute: aphasia, traumatic brain injury, ELL	<ul style="list-style-type: none"> • 20 years in group yoga classes • 12 years at-home yoga • 3 years Iyengar yoga instructor • Taught yoga at aphasia camp

Table 2.3 Participant Demographics (Yoga Instructors)

Participant ID	Gender	Age	Yoga Profession	Experience with Language Difficulties	Experience with Yoga (Individual experience may be simultaneous or sequential)
PY9	F	27	YI	<ul style="list-style-type: none"> • 5 years personal experience with grandparent with aphasia post-stroke 	<ul style="list-style-type: none"> • 7.5 years in group yoga classes • 7.5 years at-home yoga • 1.5 years yoga instructor
PY10	F	47	CYT YI	<ul style="list-style-type: none"> • 7 years teaching yoga/yoga therapy to PWAs in group settings • 21 years with language learning disabilities, reading difficulties 	<ul style="list-style-type: none"> • 22 years in group yoga classes • 15 years as yoga therapist • 12 years as yoga teacher trainer • 8 years as yoga therapist trainer
PY11*	F	39	YI	<ul style="list-style-type: none"> • SLP (11 years) • 1 year in practicum setting: aphasia • 12 years in school setting: including children with language disorders 	<ul style="list-style-type: none"> • 14 years at-home yoga • 13 years in group yoga classes • 8 years yoga instructor
PY12	F	43	YI	<ul style="list-style-type: none"> • 3 years volunteer communication facilitator for aphasia groups 	<ul style="list-style-type: none"> • 13 years at-home yoga • 13 years in group yoga classes • 10 years yoga instructor • 9 years teaching private lessons

Key:

*	Health professional and certified yoga instructor
SLP	Speech-Language Pathologist
OT	Occupational Therapist
RN	Registered Nurse
YI	Yoga Instructor
CYT	Certified Yoga Therapist
ELL	English Language Learner

2.5 Data Collection Method

2.5.1 Rationale for data collection method

This study used semi-structured interviews (DiCiocco-Bloom & Crabtree, 2006) to access information in-depth, build rapport with participants, and allow the exploration of areas that the researcher may not have predicted. Using neutral and open-ended questions with probes allowed the interviewees to express themselves and their concerns and perspectives while

reducing researcher bias inherent in qualitative research underpinned by a critical paradigm (Creswell & Miller, 2000).

2.5.2 Data collection

The researcher conducted interviews with the participants. Following the principles outlined by DiCiocco-Bloom and Crabtree (2006), the interview was semi-structured, with the use of open-ended questions based on a topic guide (Appendix H). The topic guide covered the individual's experience with yoga, experience with aphasia (or working with people with other language difficulties), and barriers and facilitators that the individual perceived would influence the participation of people with aphasia post-stroke in a group yoga class. A telephone interview (Sturges & Hanrahan, 2004) was conducted with the allied health participants and yoga instructor participants who did not live within the Greater Vancouver area or preferred this option, as research has shown that telephone and face-to-face qualitative interviews can yield similar data (Sturges & Hanrahan, 2004).

Interviews with the participants with aphasia were video-recorded to capture the rich non-verbal communication style often used by PWAs to compensate for their difficulties with verbal expression. During the interview, the researcher used the conversation topic to interpret non-verbal communication and then verified the intended meaning with the participant with aphasia. Further adaptations to the interview process were made as necessary to accommodate the communication needs of the participants with aphasia using strategies based on supported communication for adults with aphasia (e.g., using simple language, verifying responses, writing down key words) (Kagan, 1998). The researcher provided a resource book to participants with aphasia during the interview if they were having difficulty conveying their thoughts verbally or with gesture. The resource book contained supportive content such as key words relating to yoga, images relating to yoga, scales, maps, emotions, and numbers. When appropriate, the participant with aphasia was encouraged to peruse the resource book to find content, if any, that would support their communication of thoughts and ideas.

One interview with an allied health professional (PH6) was conducted with malfunctioning equipment and the transcript had some utterances that were difficult to interpret. The researcher referred to detailed notes to transcribe content from the audio-recording immediately after the interview.

The Boston Diagnostic Aphasia Exam – 3rd Edition Severity Rating Scale (Goodglass, Kaplan, & Barresi, 2000) was used to rate the aphasia severity of the individuals with aphasia after their interviews had been completed. Interviews with the allied health professional and yoga instructor participants were audio-recorded. The researcher was prepared with a list of appropriate, available, and affordable counseling services in the unlikely event that the participant experienced extensive distress as a result of the interview.

The length of the interviews was as follows: Participants from the lived experience perspective (Mean = 65 minutes, SD = 29.2, Range = 38-106), allied health professional participants (Mean = 51 minutes, SD = 7.1, Range = 44-59), yoga instructor participants (Mean = 65 minutes, SD = 14.5, Range = 49-80). All participants were also asked to complete a demographics form at the time of the interview either independently, or with language support from the researcher (Appendices D, E).

2.6 Data Analysis

Interviews were transcribed verbatim based on the conventions of Poland (1995). The transcripts were analyzed using qualitative content analysis (Graneheim & Lundman, 2004) to identify perceived barriers and facilitators. This process began with the researcher immersing herself in the data by reading and rereading the transcripts while listening to the interview recordings. The researcher identified content areas for analysis based on the two research aims (one content area relating to perceived barriers and one content area relating to perceived facilitators). Data outside these two content areas were assigned to a category labelled “Other Content Area” and were not analyzed further. The researcher then identified meaning units (i.e., aspects of the text that relate to each other through their content and context) in each transcript within each of these two content areas (e.g., *Is it inviting to come to class* was identified as a facilitator). The meaning units were then condensed, while still preserving their core meaning, and assigned a potential code (e.g., creating a setting for the yoga class that is inviting to people with aphasia). Potential codes that were similar across transcripts were amalgamated and assigned a revised code (e.g., codes such as: setting that is inviting; cozy, warm space; and person with aphasia feels welcomed, were grouped together and assigned a single code “serene and inviting atmosphere”). Similar codes were then grouped together to form categories of

barriers and categories of facilitators (e.g., “serene and inviting atmosphere” fell in a category called: physical set-up of the yoga facility is aphasia-friendly).

2.7 Rigour

Member checking, peer debriefing, and triangulation of data sources were implemented in order to enhance the rigour of the investigation (Curtin & Fossey, 2007).

2.7.1 Member checking

To conduct member checking (Creswell & Miller, 2000), study participants were provided with a preliminary analysis of de-identified results from all the interviews, and asked to provide general and/or specific comments about the preliminary analysis. Each participant reviewed identical content.

For individuals with aphasia, member checking involved holding face-to-face meetings with the participants in a quiet room. Supported conversation techniques and aphasia-friendly visual supports of the results were used to facilitate feedback from the participants. Field notes were used to document the participants’ comments about the preliminary analysis.

The researcher sent the allied health and yoga instructor participants a written version of the preliminary analysis of de-identified results from all the interviews via mail. These participants were asked to write their general and/or specific comments about the preliminary analysis of the results on the document and to return it to the researcher by mail within three weeks of receiving it.

Eight of twelve participants completed the member checking process including all four participants with aphasia. Feedback obtained from member checking generally confirmed category areas and codes. The barrier code ‘Service providers are unaware of community services (e.g., yoga for PWAs)’ was added to barrier category three: advertising strategies are not aphasia-friendly. The facilitator codes ‘Aphasia-friendly templates available for yoga studios to adapt (e.g., for registration, waivers/consent, schedule, and samples of poses)’ and ‘Connecting with stroke organizations and local community centres for reduced space rental fees’ were added to facilitator category nine: logistical facilitators. The member checking process revealed a point of contention related to using mirrors in the yoga facility, as they are beneficial for helping a

person follow directions and confirm their body alignment, but may be challenging to face as someone post-stroke who is working to accept a different self.

2.7.2 Peer debriefing

Peer debriefing involved the researcher reviewing and justifying the initial analyses with the primary research supervisor in order to reach a consensus about the findings.

2.7.3 Triangulation of data sources

The rigour of the study was also enhanced through the use of triangulation of data sources (i.e., the study included the perspective of adults with aphasia post-stroke, allied health professionals, and yoga instructors).

2.8 Reflexivity

Reflexivity is important in critical paradigm research in order to reduce the influence of researcher bias (Creswell & Miller, 2000). For this study, the researcher kept a reflexive journal to identify any personal biases that may influence the analysis and results of the study (Curtin & Fossey, 2007).

At this time, the researcher has a background as an SLP student and been a practitioner of yoga for five years. The researcher has had previous experience teaching basic yoga to PWAs at an aphasia camp. The researcher is not a yoga instructor. The researcher believes firmly in the transformative power of yoga. The ultimate desire of the researcher in initiating this project is to create or facilitate the creation of community programs for PWAs so that those who are interested can regularly access the benefits of yoga.

Chapter 3: Results

Qualitative content analysis of semi-structured participant interviews revealed 44 barriers in 11 categories and 56 facilitators in 11 categories that were perceived to influence participation in a group yoga class for people with aphasia post-stroke. The perceived barriers relative to these categories are presented first, followed by perceived facilitators. Participant quotations will be interspersed throughout these two sections to further demonstrate findings.

3.1 Barriers

Barriers to participation in a group yoga class for PWAs post-stroke as noted from all participants in the study are presented in Table 3.1. Analysis revealed a total of 44 barrier codes, grouped into the following 11 barrier categories: lack of collaboration with key stakeholders; lack of aphasia awareness in the yoga facility; advertising strategies are not aphasia friendly; lack of participatory support from yoga provider and social network; yoga instructor does not have the necessary knowledge, skills, and attitudes; class composition and structure is not aphasia-friendly; complex communication requirements; physical set up of yoga facility is not aphasia-friendly; logistical barriers; PWAs having limited access to technology; and no modifications for physical and/or sensory needs. The following sections provide detail on each barrier category. The term “yoga provider” henceforth represents the person, instructor, or company who is responsible for organizing the aphasia-friendly yoga class.

Table 3.1 Barriers to Participation in a Group Yoga Class for PWA Post-Stroke

Category:	<i>Lack of collaboration with key stakeholders</i>
Codes:	No collaboration between yoga provider and PWAs on class development (e.g., no opportunity offered for PWAs to share their needs) No collaboration between yoga provider and healthcare community (e.g., some hospital policies do not support partnership with community programs)
Category:	<i>Lack of aphasia awareness in the yoga facility</i>
Codes:	Yoga instructor has no experience or training about PWAs Yoga studio staff has no experience or training about PWAs (e.g., causing impatient attitude, staff talking to support person instead of directly to PWA) General population has no experience or training about PWAs

Category:	<i>Advertising strategies are not aphasia-friendly</i>
Codes:	<p>Publicity materials for yoga classes are not communicatively accessible</p> <ul style="list-style-type: none"> Publicity materials for yoga classes are not available in a variety of formats <p>Publicity materials for yoga classes are not readily available at key locations (e.g., healthcare settings, stroke recovery centres, social media)</p> <p>Service providers are unaware of community services (e.g., yoga for PWAs)</p> <p>Content of publicity materials for yoga classes is unsuitable</p> <ul style="list-style-type: none"> Publicity materials for yoga classes do not educate PWAs about yoga Publicity materials for yoga classes use images of flexible young women
Category:	<i>Lack of participatory support from yoga provider and social network</i>
Codes:	<p>No resources offered to prepare PWAs for the group yoga class</p> <p>No support person available to help with the registration process</p> <p>Yoga provider does not supply/welcome additional helpers for PWAs during the yoga class</p> <p>No supports in place to help PWAs continue yoga at home</p> <p>Perspectives of community/people surrounding PWAs that don't support yoga</p>
Category:	<i>Yoga instructor does not have the necessary knowledge, skills, and attitudes</i>
Codes:	<p>Yoga instructor cannot lead a communicatively accessible and physically safe yoga class for PWAs</p> <ul style="list-style-type: none"> Yoga instructor lacks skills to help PWAs to share their needs <p>Yoga instructor cannot manage a complex yoga class (e.g., lack of skills in directing the group, managing assistants, and/or offering modifications)</p> <p>Yoga instructor disempowers PWAs (e.g., acts in a demeaning manner towards PWAs, coddles PWAs in the yoga class)</p>
Category:	<i>Class composition and structure is not aphasia-friendly</i>
Codes:	<p>Yoga class is open to the public (e.g., young female demographic)</p> <p>All language/physical abilities combined in one yoga class</p> <ul style="list-style-type: none"> Combining ability levels in a yoga class makes following directions confusing Combining ability levels in a yoga class is more challenging for the yoga instructor to manage effectively Combining ability levels in a yoga class may make PWAs feel like they don't fit in Aphasia not caused by stroke might have different needs <p>Overpopulated yoga class</p> <ul style="list-style-type: none"> High volume of people may cause some PWAs to feel overwhelmed High volume of people may increase communication pressure <p>Yoga classes are too high-level for PWAs (e.g., yoga instructor teaching too many poses in one class)</p>
Category:	<i>Complex communication requirements in the yoga facility</i>
Codes:	<p>Registration process (including informed consent) is not aphasia-friendly</p> <ul style="list-style-type: none"> Registration modality is not communicatively accessible Registration is available in a single modality only (e.g., written form, over the phone, online) <p>Sign-in process for each yoga class is not aphasia-friendly</p> <p>Complex verbal cues for postures, breath work, and meditation</p> <ul style="list-style-type: none"> Yoga class that is fast-paced and verbally cued may cause the PWA to feel lost or experience stress Yoga instructor using complex and abstract verbal cues may cause the PWA to feel lost and unable to experience the benefits of yoga PWAs unable to visualize others to help comprehend verbal cues (e.g., eyes closed during meditation, supine position, forward fold)

Yoga instructors using too many cue modalities at one time
 Fast pace creates time pressure for PWAs to communicate (e.g., before, after, or during the yoga class)
 No opportunities for PWAs to ask questions during the yoga class
 No supports in place to facilitate spontaneous interactions

Category: *Physical set-up of yoga facility is not aphasia-friendly*
Codes: Setting for the yoga class is not inviting

- Too much sensory stimulation at yoga facility (e.g., presence of background noise/music/too many other people may overstimulate, distract, and/or challenge PWAs' ability to follow directions)

 Yoga class held in a room with no privacy
 PWAs positioned in the room so that they are unable to visualize others/the yoga instructor

Category: *Logistical barriers*
Codes: Yoga class held at a location that is challenging to find or travel to
 Accessible transportation is not available to PWAs (e.g., unreliable disability transportation service, expensive transportation, lack of support)
 Drop-in class structure requires limited commitment on behalf of yoga instructor and PWAs
 High fees (e.g., yoga classes, clothing, equipment)
 Scheduling conflicts

- No consideration of other weekly aphasia groups
- Yoga class is not piggybacked on a pre-existing aphasia group (e.g., causing additional planning and travel time)
- No consideration of the time of day/season that class is offered

Category: *PWAs having limited access to technology*
Codes: Some PWAs do not have a device to access yoga apps and/or websites

Category: *No modifications for physical and/or sensory needs*
Codes: Physically inaccessible location
 Physical requirements of yoga postures and sequences
 No physical modifications for postures available
 Hot yoga may be dangerous for post-stroke population
 Transportation is more challenging with physical disabilities
 No consideration of safe evacuation of PWAs with physical disabilities in case of emergency
 No additional modifications for sensory concerns (e.g., hearing, vision)

- Misconceptions of yoga provider around accommodating sensory difficulties (e.g., using amplification)

3.1.1 Lack of collaboration with key stakeholders

Participants highlighted that developing a yoga class for PWAs without any collaboration with key stakeholders would be a barrier. Within this category, participants commented on reduced opportunities for PWAs to share their participation needs. “So we

often say... where are you injured? But we don't say how do we communicate best with you" (PH8).

3.1.2 Lack of aphasia awareness in the yoga facility

Participants commented the barriers posed by lack of aphasia awareness within those involved in the yoga process. Noted barriers included a lack of training for yoga instructors, other staff in the yoga facility, and the other yoga students (provided the yoga class included people without aphasia). As one yoga instructor stated: *"... right now I wouldn't feel equipped really to teach because I'm not educated enough of what's going on [with people with aphasia]" (PY9).* Another participant commented: *"... I don't think [yoga] teacher training programs address [aphasia] at all" (PH8).* A participant with aphasia additionally described the lack of aphasia awareness in the community, and the lack of response to the need for change: *"... aphasia wasn't just happened the last ten years ago. It's been going on for thousands of years... But I mean uh, but we're still having that same problem. So it's a, it's a communication gap" (PA2).*

3.1.3 Advertising strategies are not aphasia-friendly

Participants commented on the barriers posed by inaccessible information about yoga classes including inaccessible language and formatting, and a lack of exposure to the promotional materials, as illustrated by the following participant statements:

"So, there's not always aphasia-friendly language or... supports in order to know, without someone to help you, what is available" (PH8).

"What kind of website materials do they have? Again, how can somebody with aphasia access that necessarily..." (PH5).

"... if the information isn't provided to healthcare workers, or the people that the people with aphasia are coming into contact with don't know about it then the people with aphasia might not know about it if they're also not on the internet searching for it, right? Maybe they don't know to search for it" (PY11).

Failure at this level of could seriously impact the success and longevity of running a group yoga class for PWAs post-stroke, as noted by one participant: “[group yoga classes for people with aphasia] *just stopped happening... [why] aren’t people going? Maybe they’re not hearing about it, right?*” (PH6).

Promotional materials that do not accurately both represent yoga and educate PWAs about the requirements and types yoga may also pose barriers to PWAs. One participant described the current image of yoga as “*uniform*” and as, “*healthy, 20, 30-year-old, fit, strong, in shape*” (PY12). Using these types of images may create a barrier for PWAs because, “*if you don’t fit that idea, you might feel that yoga is not very much for me. Because I certainly don’t look like that or I can’t do that. How would other people think if I came to class?*” (PY12).

3.1.4 Lack participatory of support from yoga provider and social network

Barriers identified by participants in this category included: no resources offered to prepare PWAs for the group yoga class, no support person available to help with the registration process, yoga provider does not supply/welcome additional helpers for PWAs during the yoga class, no supports offered to help PWAs continue yoga at home, and perspectives of community/people surrounding PWAs that don’t support yoga.

Participants described how a typical yoga studio would not support someone with communication challenges, especially one who has never tried yoga before.

“... you walk into a studio, you just kind of go in, you lay your mat, you’re not really guided” (PH7).

“Participate during a class, a yoga class? You can’t find out, travel, and register in a yoga class all by himself with a whole bunch of people [points to picture of people in a yoga class]. No” (PA1).

“... so that’s always scary for people to try something new to begin with. And then, feeling like they have additional barriers could be that much more... preventing them from accessing it” (PH8).

Participants also described perspectives that do not support yoga as barriers to PWAs.

“...it depends the city that you’re in. You know, yoga is not recognized as much in other towns” (PY9).

“Her mom was concerned that by doing yoga I was letting the devil in...” (PY11).

3.1.5 Yoga instructor does not have the necessary knowledge, skills, and attitudes

Participants considered a yoga instructor a barrier to PWAs if they did not have the skills to offer a communicatively accessible and physically safe yoga class, either through training or personal skills and experience. *“... I don’t think everyone... can handle that level of complexity in a class... it’s a lot to manage. Can be a bit overwhelming for a newer teacher I think” (PY10).*

Participants said that the personality and attitude of the yoga instructor could be a barrier if the yoga instructor was *“demeaning in [their] behavior” (PY10)*, or the personality of the instructor was not a match with that of the group of students. A yoga instructor who could not make a long-term commitment to the aphasia-friendly yoga class was considered a barrier by participants, as well as a yoga instructor who coddles PWAs because of their disability. *“I think that’s a real mistake in yoga therapy is... coddling, or... creating fragility. It’s not necessary... I don’t think serves anyone... it’s certainly not part of the yoga tradition” (PY10).*

3.1.6 Class composition and structure is not aphasia-friendly

Participants identified that a public yoga class would pose a barrier to PWAs because of the younger demographic that is culturally associated with yoga. *“[Points to picture of young women sitting in front of a mirror]. Not good. Young, young, girl, girls, right? Not good... Same, there’s 60 plus years old here at... aphasia group. With young people, no way. Right?” (PA1).*

Participants also commented that combining all levels of language and physical ability into one class would be “hard” (PY9) because “everybody’s doing a different thing” (PH7), “you end up tailoring the class to the slowest person” (PY11), and PWAs may feel “like... they don’t fit in” (PH8). As one participant noted, “it tends not to be an enjoyable experience and people won’t come back” (PY11).

Overpopulated yoga classes (10+ PWAs) were considered a barrier by participants both in terms of potentially overwhelming a PWA, and creating a pressure situation that negatively impacts communication exchanges. Participants highlighted that certain class levels and styles may not be appropriate for some PWAs. “... normal class sometimes they, they do so much things I, I know that to, [quickly moves arms up and down]. I everything so is hard for, for people to do it in there right now” (PA3).

3.1.7 Complex communication requirements in the yoga facility

Participants identified a wide variety of barriers relating to complex communication requirements in a yoga environment. With respect to class registration and sign-in, participants commented that offering registration in a single modality only (e.g., written form), and offering a registration modality that is not communicatively accessible (e.g., densely written form with small print, telephone call with untrained staff member) would pose barriers to PWAs. Requiring that PWAs repeat a communication task (e.g., writing their name) to sign into a yoga class was also seen as a barrier to class participation.

Participants noted that fast-paced, complex, or abstract verbal cues from the yoga instructor may place undue stress on PWAs to comprehend the instructions. As one participant with aphasia described: “And then uh, they said, do this and do that, and then I can’t do anything at all. See because they moving so fast and then I can’t do it” (PA3).

This may cause a “stressful” (PH8) or “discouraging” (PH7) environment where PWAs aren’t “gaining the benefits of what yoga really is because they can’t get into the posture and they’re not really understanding what the instructor is trying to tell them” (PH7), effectively “defeat[ing] the purpose of yoga” (PH8). One participant noted that providing too many cues in too many modalities simultaneously could have a similarly

overwhelming effect. Meditation was identified as challenging to adapt and therefore a potential barrier for PWAs because *“it’s very wordy typically”* (PH6).

Participants identified fast pacing in the yoga studio as an adverse communicative environment because it adds time pressure on PWAs to communicate. *“Of course there’s the opportunity to talk with somebody ahead of the class, but again that’s not always possible if classes are back-to-back-to-back-to-back-to-back”* (PH5). Silent yoga classrooms were also identified as barriers because they prohibit the asking of questions.

One participant commented that a lack of communication supports in the yoga facility would pose a barrier to spontaneous interactions. *“[pre-prepared] materials... obviously don’t help with any spontaneous conversations... to connect with other people with aphasia, connect with the instructor, connect with other people in the class”* (PH5).

3.1.8 Physical set up of yoga facility is not aphasia-friendly

Participants highlighted that the physical set up of the yoga studio could be a barrier to PWAs. Within this category, participants commented on an uninviting atmosphere (e.g., rec centre), a surplus of sensory stimulation (e.g., background noise, music, other people), a yoga room with *“huge windows that look out to streets”* (PY12), and PWAs *“standing in the back row”* (PH6) so they cannot see the instructor. One participant commented that although an inviting class would be desirable, it would not be an essential factor if it added significantly to the cost of the class.

3.1.9 Logistical barriers

Participants identified location and transportation, drop-in class structure, high fees (e.g., class, clothes, and equipment), and scheduling conflicts as logistical barriers to organizing a group yoga class for PWAs. Holding the yoga class in a location that was challenging to find or travel to, a lack of accessible transportation (e.g., unreliable/time consuming disability transportation services, expensive transportation options) were identified barriers to PWAs, as illustrated by the following participant quotations:

*“I’m not going to go all the way say from here to [name of university] to do a ga-
a class here... it’s, it’s, it’s, it’s a long way back and forth to go, you know...”*
(PA2).

*“But I would have students who had ordered [a disability transportation service]
and then they wouldn’t come. I had one student who had to stop coming because
she just couldn’t get it to work out properly and it was endlessly frustrating... it’s
infinitely unreliable...”* (PY10).

One participant noted that using a drop-in structure for the yoga class would pose a barrier to group rapport building, consistent attendance, commitment of yoga instructor to continue the class, and the overall longevity of the endeavor. *“... structurally I know it doesn’t keep things together... I think it’s hard to have people coming and going”* (PY12).

Scheduling conflicts, including those with other aphasia groups were considered barriers by study participants. One participant commented on the additional travel time incurred if a yoga class was not piggybacked on to a pre-existing aphasia group meeting. *“... An hour at the same time better. Than having another travel, uh, again [gesturing back and forth with hand]”* (PA1).

3.1.10 PWAs having limited access to technology

One participant discussed the increasing use of websites and internet for advertising yoga classes, and how having no device to access this information would be a barrier for PWAs. *“... a lot of yoga [classes] are... advertised online... depending on whether or not... they have access to... social media, they have social media accounts...”* (PY11).

3.1.11 No modifications for physical and/or sensory needs

The common co-occurrence of physical disabilities and aphasia post-stroke (Wade, Langton Hewer, David, & Enderby, 1986), and the physical requirements of a yoga practice make barriers of this category highly relevant to the research topic. Sensory

needs were grouped here because they may occur alongside aphasia as a factor of age or stroke.

Barriers identified in this category included: holding the yoga class in a location that was physically inaccessible (e.g., no elevator, no space for a wheelchair to travel), physical requirements of yoga postures and sequences, a lack of appropriate modifications, physical risks associated with hot yoga (*“My heart probably wouldn’t make it”* PA2), taking public transit with physical disabilities, no safe evacuation procedure in the yoga facility in case of emergency, no modifications for sensory concerns (e.g., hearing/vision) and misconceptions of yoga provider around accommodating sensory concerns (e.g., using amplification).

Physical requirements of yoga identified as challenging for people with physical disabilities were balancing in standing and sitting postures, and transferring between standing and seated. As one participant with aphasia described: *“Because it’s hard* [gesturing to right half of the body]. *Because it’s rrrrt- oooooo-* [gesturing swaying back and forth] **crash sound effect*. [laughs]. Sorry, but”* (PA4).

3.2. Facilitators

Facilitators to participation in a group yoga class for PWAs post-stroke as noted from all participants in the study are presented in Table 3.2. Analysis revealed a total of 56 facilitator codes, grouped into the following 11 facilitator categories: collaboration with key stakeholders; aphasia education in the yoga facility; aphasia-friendly advertising strategies; additional participatory support from yoga provider and social network; yoga instructor has the necessary knowledge, skills, and abilities; aphasia-friendly class composition and structure; supported communication in the yoga facility; physical set-up of yoga facility is aphasia-friendly; logistical facilitators; PWAs having access to technology; and modifications to accommodate any physical/sensory disabilities. The following sections provide detail on each facilitator category.

Table 3.2 Facilitators for Participation in a Group Yoga Class for PWAs Post-Stroke

Category: Codes:	<p><i>Collaboration with key stakeholders</i></p> <p>Collaboration between yoga provider and PWAs to create an individualized yoga class</p> <ul style="list-style-type: none"> Yoga provider creates safe opportunities to obtain key information from PWAs prior to the yoga class (e.g., communication needs, medical background, learning styles, physical ability) Yoga provider supports goal-sharing with PWAs in a variety of modalities prior to class (e.g., meet and greet, visiting aphasia community groups, online self-assessment) Yoga provider offers opportunities for PWAs to provide feedback on the offered yoga class and processes (e.g., evaluation, debrief) PWAs bringing materials (e.g. communication book) to help share their needs <p>Collaboration between yoga provider and allied health professionals/stroke recovery services for class development and problem solving</p>
Category: Codes:	<p><i>Aphasia education in the yoga facility</i></p> <p>Yoga instructor is an SLP or has worked with PWAs</p> <p>SLP provides training on aphasia and yoga to yoga instructors</p> <ul style="list-style-type: none"> Training to include what aphasia is, communication strategies (“toolbox”), how to develop and implement aphasia-friendly written materials in a yoga class setting Format of training for yoga instructors (e.g., community centres, online module, including PWAs in providing the training) <p>All staff at yoga facility (reception, maintenance, etc.) provided with training about aphasia (e.g., insisting as much as possible for all staff to interact with PWAs directly as opposed to a support person)</p> <p>Any yoga students without aphasia have enough awareness to maintain a respectful environment</p>
Category: Codes:	<p><i>Aphasia-friendly advertising strategies</i></p> <p>Publicity materials for the yoga class are communicatively accessible</p> <ul style="list-style-type: none"> Publicity materials for the yoga class are available in a variety of formats (e.g., online, pamphlet, poster, audio, video) <p>Publicity materials for the yoga class are available in key locations for PWAs (e.g., healthcare settings, stroke recovery centres, social media)</p> <p>Advertising to those who are often in contact with PWAs (e.g. healthcare professionals, stroke/aphasia community, volunteer groups)</p> <p>Basic yoga instruction provided to inpatients in hospital setting prior to discharge</p> <p>Advertising to the yoga community (e.g., studios, clothing stores, festivals/events)</p> <p>Advertising to the general population (e.g., on TV, message boards)</p>
Category: Codes:	<p><i>Additional participatory support from yoga provider and social network</i></p> <p>Yoga provider offers supports to prepare PWAs for a group yoga class</p> <ul style="list-style-type: none"> Pamphlet available detailing what to bring/wear to the yoga class Yoga provider sends out class reminders to PWAs Yoga fundamentals class available (either 1:1 or in small groups) to prepare PWAs for the group class All yoga equipment (e.g., mat, towel, props) available at the studio to reduce planning demands PWA receives more individual attention during initial yoga classes <p>Yoga provider offers resources to help PWAs plan transportation to the yoga class</p> <ul style="list-style-type: none"> Aphasia-friendly directions to the yoga studio are available (e.g. simple cards with key information)

- Staff trained to help PWAs problem-solve transportation (e.g., collaborate with family members or caregivers)
 - Interactive online schedule available with links to maps
- Yoga provider supplies/welcomes a helper to support PWAs communicatively, physically, or emotionally during the yoga class
- Support person available to help with the registration process
 - Yoga provider allows caregiver to provide consent if the PWA is unable
 - Supports in place for PWAs who bring guests (i.e. pamphlet about their role, icebreaker)

Category:

Yoga instructor has the necessary knowledge, skills, and abilities

Codes:

Yoga instructor can create and lead a communicatively accessible and physically safe yoga class for PWAs

- Yoga instructor who helps PWAs to feel a sense of well-being will increase their willingness to return
- Yoga instructor creates a class that does not feel like therapy to PWAs

Yoga instructor can adapt style and difficulty to fit needs/goals and empower PWAs

- More than one yoga instructor available to increase variety
- Yoga instructor encourages PWAs to accept their individual skill set
- Yoga instructor challenges PWAs to help them realize a fuller potential
- Yoga instructor can include elements such as therapeutic use of sound/chanting, focus on breath work and mindfulness, long savasana at the end of class

Yoga instructor can manage a complex class (e.g., directing the group, managing assistants, offering modifications)

Yoga instructor takes notes in class to identify and recall individual needs of students

Category:

Aphasia-friendly yoga class composition and structure

Codes:

Yoga class open to PWAs/stroke survivors only (e.g., for social support, to better accommodate unique needs)

- PWAs participating in a yoga class are of a similar age
- Yoga instructor is close in age to PWAs
- Yoga class open to PWAs of any gender and body type

Separating PWAs into different yoga classes based on language/physical abilities

Limiting class sizes (e.g., to reduce stimuli, so instructor can better accommodate individual needs of students)

Strategies to help PWAs learn yoga

- Predictable class format/sequence
- Yoga instructor provides verbal outline of the yoga class before beginning
- Continuity between yoga classes offered at more than one location
- Limited number of poses per class initially to focus on learning core postures
- Class taught at slower pace

Category:

Supported communication in the yoga facility

Codes:

Registration process (including informed consent) is aphasia-friendly

- Registration is available in a variety of formats (e.g., over the phone, through the hospital, written form, online)
- Each registration/informed consent format is communicatively accessible

Aphasia-friendly sign-in process for individual yoga classes (e.g., placing a tick beside name, packaging classes)

Clear verbal cues during yoga class

- Simple language, short verbal prompts
- Repeating and restating verbal cues
- Slow rate of speech
- Language of invitation to help PWAs connect with their bodies

Providing movement cues in non-verbal modalities in isolation or to supplement verbal

cues

- › Visual cues (e.g. demonstration, pictures)
- › Tactile cues
- › Auditory cues (e.g., silence, music, bowls and chimes during meditation)

Yoga instructor breaking down poses during class

Supportive materials for the yoga sequence available to PWAs before and during the class (e.g., laminated folder with poses/sequences either written or depicted in the same order as the class)

- › Yoga instructor guiding PWAs through materials during class
- › PWAs repeating the names of poses with another person before the yoga class

Physical materials to support non-verbal and spontaneous communication are available (e.g., whiteboards, communication boards)

- › Non-verbal/gestural communication during class encouraged rather than writing down sentences

Opportunities for questions during the yoga class

Category:

Physical set-up of the yoga facility is aphasia-friendly

Codes:

Serene and inviting atmosphere within yoga facility

- › Moderated sensory stimulation (e.g., background noise, lighting, clutter, heat)

Pictures and names of yoga poses posted throughout the facility

Lighting adequate for yoga instructor to see PWAs and the PWAs to see themselves

Mirrors available in the yoga room

Yoga class held in a spacious room

Yoga class held in a room that offers privacy

Yoga equipment is pre-laid in the yoga facility (e.g., for PWAs by staff, or by instructor so PWAs can mirror their set-up)

PWAs arranged in class in a single row facing the instructor

PWAs close to the instructor in a mixed class (aphasia and non-aphasia/stroke)

Category:

Logistical facilitators

Codes:

Yoga class held at convenient location for travel

Availability of accessible transportation for PWAs (e.g., disability transportation service available on a regular schedule, support from family members/healthcare professionals/friends/hired services to provide or arrange transportation, access to independent transportation options)

PWAs registered for a set of yoga classes ensures commitment from yoga instructor and PWAs

Low cost yoga classes

- › Free classes available
- › Discounted rates/fees for PWAs' helper
- › Connecting with stroke organizations and local community centres for reduced space rental fees
- › Funding (e.g. wellness grant) available to PWAs
- › Complementary yoga equipment (e.g. clothing, mats) available to PWAs

Routine scheduling

- › Yoga class follows a regular weekly schedule
- › Consideration of other weekly aphasia group meetings
- › Yoga class piggybacked on to preexisting aphasia group meetings
- › Consideration of the time of day the class is offered (e.g., early morning or late night)

Aphasia-friendly templates available for yoga studios to adapt (e.g., for registration, waivers/consent, schedule, and samples of poses)

Category:

PWAs having access to technology to (e.g., smartphone)

Codes:

PWAs having access to technology to help with research, registration, communication, and scheduling

- PWAs having access to both a smartphone and a computer
- Apps available to support participation at the yoga studio (e.g., yoga apps, taxi apps)

Category:	<i>Modifications to accommodate any physical/sensory disabilities</i>
	Physically accessible building
	Physical adaptations available for yoga poses
	<ul style="list-style-type: none"> ▸ Chairs available in the yoga class ▸ Incorporating PWAs' personal support devices (e.g., cane, Ankle Foot Orthosis) into the yoga class ▸ Yoga class building toward a PWA trying not to use their physical supports ▸ Yoga instructor including poses in the class that may be easier for someone with hemiparesis to perform ▸ Yoga instructor using props to help PWAs increase body awareness and range of motion (e.g., from tai chi, using a sword to help with arm extension and wrist range of motion)
	Duration of the yoga class is modified when needed (e.g., for PWAs subject to fatigue or with physical challenges)
	Yoga instructor aware of mobility profiles
	Restorative style yoga class available
	Moving between standing and seated only once during the yoga class
	PWAs seeing a yoga therapist before coming to the yoga class
	Having an FM system available to accommodate a person with hearing loss

3.2.1 Collaboration with key stakeholders

Many participants discussed the benefits of developing a yoga class in partnership with key stakeholders and supporters such as PWAs, health professionals, and stroke recovery services. Yoga providers could support collaboration with PWAs by making PWAs *“feel really comfortable and nurtured”* (PY9) in order to disclose their needs and *“have some say in what they’re going to be doing in the class”* (PY9). A variety of modalities were suggested including sitting down with the yoga instructor, communicating over e-mail, completing a self-assessment form, or adapting the registration process to include a communication needs and goal sharing component. PWAs sharing their needs prior to class would in turn help the yoga instructor *“write the class so that... [they’re] not going to be limiting a whole bunch of people... from doing poses”* (PY11). PWAs providing feedback after the class was also considered important. *“... I could probably try it, to make, uh, you, you give me the program, and, and I can say oh, geez that’s too tough for me”* (PA2). PWAs could also support collaboration with yoga providers by bringing their own needs-related communication materials with them to the facility.

Participants suggested partnering with healthcare or stroke recovery services as a knowledge source for class development or problem solving. “... *you’d want to be in partnership with somebody who has that knowledge... that a yoga studio could be in touch with... partnerships with other health care professions to make sure that everything is..., accessible and safe*” (PH5).

3.2.2 Aphasia education in the yoga facility

Participants identified aphasia awareness in the yoga environment as a facilitator for PWAs. Within this category, participants named the following facilitators: yoga instructor is an SLP or has worked with PWAs, SLP provides training on aphasia and yoga to yoga instructors, all staff at the facility provided with training about aphasia, and any yoga students (without aphasia) have enough awareness of aphasia to maintain a respectful environment.

One yoga instructor described how experience working with PWAs acted as a facilitator for teaching yoga to PWAs: “...*my expectations for holding a class is different than if I were to come in without knowing much about specific... difficulties that people [with aphasia] may have in the class. So I think knowledge is... a big part in, in saying yes to teaching*” (PY12). Participants also described the role that an SLP could play in training yoga instructors who did not have experience with aphasia. “...*the most important thing would be just understanding what aphasia is. Again, understanding the inherent competence of people with aphasia, and then helping them to build a class that really acknowledges that competence*” (PH5). Participants named a variety of formats for communication training, such as online modules, reaching out to yoga teacher training programs, visiting community centres, and including PWAs to help train others.

Many participants underscored the importance of providing communication strategies during this training, to yoga instructors, and any others who may interact with PWAs throughout the course of the yoga experience for a “*general awareness in the studio*” (PH5). As one participant with aphasia said: “... *number one is to have a toolbox to make... to communicate*” (PA2). Participants felt that communication training of staff would not only facilitate communicative interactions but also create “*an atmosphere of empowerment*” (PY10) for PWAs.

3.2.3 Aphasia-friendly advertising strategies

Participants identified that aphasia-friendly advertising strategies would facilitate awareness of yoga classes, and in turn, participation in them. Within this category, participants commented on availability of communicatively accessible publicity materials, availability of publicity materials in key locations, advertising to those who are often in contact with PWAs, providing basic yoga to hospital in-patients, advertising to the yoga community and the general population.

Communicatively accessible publicity materials were described in terms of simplicity of language, content, navigation, and format:

“Well let’s not get into the complex chakras and all this all at once. Let’s just start off with the basics, like, body, mind, spirit. Type of thing” (PH7).

“An aphasia friendly format...online somehow simplified links so that... they can find the information more easily” (PH8).

Availability of this information in a variety of formats such as websites, videos, pamphlets, and posters *“in places where people who have aphasia are going to go, whether it’s aphasia groups, whether it’s physiotherapists’ office[s]” (PY11)*, hospitals, or potentially social media was deemed essential. The combination of communication access and increased exposure to publicity materials facilitates autonomous discovery and research of the yoga class by PWAs, which participants felt was important.

Another facilitator identified by participants in this category was to advertise the yoga classes to people who are commonly in contact with PWAs, such as stroke recovery members and health professionals. As one participant described: *“it’s almost like it’s up to the people around [PWAs] to bring this type of information to [PWAs] unless they are already actively looking for it” (PY11)*. One participant suggested inviting the health professionals to the yoga class as another form of advertising to this group.

Providing basic yoga to hospital inpatients was identified as an aphasia-friendly advertising strategy when coupled with the intent *“for it to transition right out into your life as soon as you leave” (PY9)*. Participants noted that yoga community locations such

as studios, stores, and festivals/events as well as general advertising on TV and public message boards were feasible platforms to distribute information.

3.2.4 Additional participatory support from yoga provider and social network

Participants felt that additional support from both the yoga provider and the PWA's social network could facilitate participation in a group yoga class. Supports to help PWAs prepare for a group yoga class could include: informational pamphlets, sending out class reminders, 1:1 or small group orientation classes, providing the equipment, and giving PWAs more individual attention during their initial classes. Yoga providers could also support PWAs through transportation planning by providing aphasia-friendly directions, collaborating with family members or caregivers, and creating an interactive online schedule with links to maps.

Support from a yoga staff member, disability service, healthcare professional, student volunteer, PWA mentor, or social/family contact through the registration process was identified as a facilitator. Participants felt that these types of helpers could support PWAs communicatively, physically, and/or emotionally throughout the yoga class and experience, as the following participants described:

PA4: *Well, that's right there. [Gestures to (name of disability support service) on phone call history]. Then.*

I: *So you'd call them.*

PA4: *Yep.*

I: *And they would support you.*

PA4: *Yep.*

I: *To do the registration.*

PA4: *Right.*

"I can help [people with aphasia] along too" (PA1).

"I had... students that were floating around and I was able to give the verbal instruction and the model but then I could just point to a student who was closer so that maybe she could go give someone a belt, or... modify something with my coaching" (PH8).

One participant suggested that having a pamphlet explaining the role of the support person, or an icebreaker to help everyone feel involved, may facilitate the inclusion of helpers more smoothly.

3.2.5 Yoga instructor has the necessary knowledge, skills, and abilities

Participants felt that the yoga instructor was ultimately responsible for the quality of the yoga class and subsequent willingness for PWAs to return. It was important that the yoga instructors should have the ability to create and lead a communicatively safe and physically accessible yoga class, the ability to adapt the style and difficulty to fit the needs/goals and empower PWAs, the ability to manage a complex yoga class, and the ability to identify and recall individual needs of PWAs during class (e.g., by taking notes).

Participants felt that a yoga instructor for PWAs should be able to accurately gauge and challenge students in order to “[help] *people realize that they can do more than maybe they thought, or they can move in more ways than they thought*” (PY10). As one yoga instructor described: “... *if I thought you could do more, I would ask you to do more... if I... felt like you were holding back because of fear, or an idea that you couldn’t do something, I would... try to push you to your edge*” (PY10). Similarly, a yoga instructor should have the knowledge and skills to incorporate a range of elements in the yoga class in response to the PWAs’ needs and goals, such as mindfulness practices, physical postures, or breath work. One participant suggested an empowering mantra: “*I am more than my brain injury, I am strong, I am a survivor. So, whether or not they can repeat those words... maybe if it’s said out loud... I could see those words being pretty powerful, hopefully, to the people, if they are receptive to that*” (PY9). The ability to choose from variety of yoga instructors and classes may help PWAs to find their best fit.

Participants identified that yoga instructors for PWAs should be able to manage a complex teaching environment that includes directing assistants, recognizing needs and offering modifications, and “*more one on one connection to clarify needs and wants*” (PY10), while directing the class as a whole.

3.2.6 Aphasia-friendly class composition and structure

Within this category, participants commented that stroke/aphasia-only yoga classes would facilitate a sense of community in the group and allow the yoga provider to more adequately accommodate unique needs.

“If you have a sense of community around the people you are attending class with, that would be very helpful” (PY12).

“Well because they, they needs to be for stroke is b-, uh, needs the little bit better uh in movement and everything. So you be better than normal class...” (PA3).

“... So, so stroke and aphasia, better. Have a, uh, a group together, we’re an older age, no problem” (PA1).

Participants also suggested that separating PWAs into different yoga classes based on language/physical abilities and limiting class sizes, would facilitate participation of PWAs.

“...you’re going to have a group of people who are so... varied and different that you might want to split it between people who... have some physical limitations and people who don’t have any physical limitations so that... you’re not speeding the class too much or slowing down the class too much. Making sure that you’re creating a class that is tailored to the audience” (PY11).

Participants named specific strategies that would facilitate PWAs learning the practice of yoga such as: *“doing that same class every single time... [so people with aphasia] kinda know what to expect” (PY9)*, yoga instructor providing a verbal outline of the class before beginning, continuity between classes offered at more than one location, limiting the number of postures initially to focus on the core poses, and *“the stroke class to teach it little bit slower” (PA3).*

3.2.7 Supported communication in the yoga facility

Participants identified a wide variety of facilitators relating to supported communication in the yoga facility. With respect to class registration and sign-in, participants commented that offering communicatively accessible registration in a variety of formats (e.g., written form, online, over the phone, at the hospital, or using “*an app that can be downloaded at the promotions time*” PH5) would be a facilitator for PWAs. Participants suggested that yoga providers could modify their class sign-in process to better suit PWAs by allowing them to place a tick beside their name instead of writing it, or registering for a set of classes to prevent multiple sign-ins.

With respect to verbal cues, participants said that “*using the simplest terms*” (PH7), “*repeating [the] phrase, and maybe rephrasing it*” (PY9), and using a slow rate of speech would help PWAs to follow directions in the yoga class. One participant described how using “*a language of inviting*” (PY12), for example: “*explore what it might feel like to have your arms up*” (PY12), might help a PWA to become more connected with their body.

Participants advocated for the use of non-verbal cueing in the yoga class to supplement or replace verbal cues. Non-verbal cues could be visual (e.g., pictures, models, demonstration, watching a candle as meditation), tactile (e.g., hands on shoulders to help soften shoulders), or auditory (e.g., silence, music, or bowls and chimes during meditation). One participant with aphasia described his experience learning from visual cues: “*... you’re watching what they’re doing. You learn off different movements, you’re not learning about the, uh, speech*” (PA2). Participants suggested that verbal and non-verbal cues could be combined to help PWAs understand directions (e.g., yoga instructor breaking down poses in the middle of class).

Participants felt that having reference materials available for the yoga classes, such as a “*laminated folder of the... instructions*” (PH5) with “*large font...key words... phrases at best... And then a lot of... pictures, that depict the various poses*” (PH5) would be a facilitator for PWAs. Materials such as these “*could be... at the front of the mat. So that actually shows the pose or describes it or has it written...in the order that the... instructor... is going to do the class in*” (PH5). It was suggested that the yoga

instructor could reference these materials in class to help the PWA follow along. Another participant suggested that reference materials could be used for PWAs to *“look at... and repeat the names of the poses with someone beforehand”* (PH6).

In addition to reference materials, participants thought that yoga providers could have physical materials to support communication available, such as *“whiteboards... to help with... spontaneous communication”* (PH5), and communication boards. One yoga instructor described her experience facilitating gestural communication in the yoga class to maintain the flow: *“Rather than writing down “doing this is hurting me” you know you can just put your hand on the place and make a face... or just stop doing whatever it is, and when that happens I go over and offer you... modifications”* (PY10).

Participants underscored that opportunities for PWAs to ask questions in the yoga class would facilitate their participation through learning and safe execution of postures.

3.2.8 Physical set up of the yoga studio to support PWAs

Participants identified facilitators pertaining to the physical environment of a yoga facility that would encourage the participation of PWAs. Participants commented on the positive impact of a serene and inviting atmosphere, with regulated background noise, music, chatter, lighting, and temperature. As one participant stated: *“...I just feel like you want to limit... the stimulation that’s going on. Our senses are always overloaded”* (PY9). Other facilitators relating to the physical environment included: placing *“pictures of the various... poses around the studio, in the locker rooms... so that there’s constant reinforcement”* (PH5), using mirrors in the yoga room to help PWAs follow directions and self-monitor, holding the yoga class in a spacious and private room, pre-laying the yoga equipment for PWAs, or *“the instructor to have... set out props you might need for the class set up on her mat so that you can mirror that and set up your mat”* (PH6). Participants suggested that PWAs be arranged in a single line facing the instructor for a stroke/aphasia only class, or be close to the instructor at the front in a mixed class *“so you do the movements, somebody’s always helping you”* (PA2).

3.2.9 Logistical facilitators

Participants commented on a wide variety of logistical factors that would support the participation of PWAs in a group yoga class. Participants identified holding the yoga class at a location that was convenient for travel, and ensuring availability of accessible transportation as logistical facilitators. Accessible transportation could include hired services, public transit, independent transportation (e.g., car, bike), or transportation support from a family member, healthcare provider, or social contact. One participant suggested a partnership between yoga provider and a taxi service to help PWAs with limited transportation options.

Participants felt that preregistering for a set of yoga classes would be preferable to using a drop-in structure, as it enables a commitment from both the yoga instructor and the PWAs to keep the yoga class running. Participants also felt that financial supports such as free classes, collaborating with community services for reduced space rental fees, discounted fees for a PWAs' helper, funding, and complementary yoga equipment would facilitate class participation.

Participants commented that routine scheduling would facilitate the participation of PWAs in a group yoga class. This included: yoga class following a regular weekly schedule, consideration of other aphasia groups when scheduling the yoga class, and consideration of the time of day a class is offered. One participant with aphasia emphasized the benefits of coordinating a yoga class with a preexisting aphasia group meeting: *"A stroke aphasia?... after class, better. Find out, travel, register? Easy, easy"* (PA1).

One participant suggested that having aphasia-friendly templates available for yoga studios to adapt (e.g., for registration, consent, and schedules) would help to mitigate time constraints and increase consistency across yoga facilities.

3.2.10 PWAs having access to technology (e.g., smartphone)

Participants commented that access to technology could facilitate participation in a group yoga class for PWAs, by providing a platform to research, register, schedule, and communicate.

“Yeah. And then, right. This one here. [types “yoga” in a map application on smartphone]. And then right here. [a map pops up indicating yoga studios in the immediate area]” (PA4).

“Even grandparents have cellphones now... it’s a tool that people already have. That it seems like we should be making use of it, to help people. You know what I mean? ... Under-utilized I think” (PY11).

One participant advocated for having both a cell phone for portability, and a home computer, with a larger screen that was more user-friendly. Some participants favored the apps for the yoga studio, taxi, or other uses as an aphasia-friendly option for smartphones. *“... if it’s an app, which a lot of studios have. Apps tend to work, actually... If that person has access to a device” (PH5).*

3.2.11 Modifications to accommodate any physical/sensory disabilities

Aphasia and physical/sensory disabilities often co-occur (Wade et al., 1986), and so the facilitators noted by participants related to these needs are considered to be highly relevant.

Participants commented on physical adaptations to yoga poses that would facilitate participation in a group yoga class. These adaptations included: offering traditional yoga props or chairs in the yoga class, incorporating PWAs’ personal support devices, building a yoga class towards a PWA not relying on their physical supports, yoga instructor including poses that may be easier for a person with hemiparesis to perform, and the yoga instructor including props to help PWAs increase body awareness and range of motion (e.g., holding a sword in tai chi to help with arm extension and wrist rotation).

Additional facilitators suggested by participants with respect to physical needs included: modifying the duration of yoga classes, having the yoga instructor aware of mobility profiles of each PWAs, offering the yoga class in a physically accessible building, offering a restorative style class, moving between standing and seated only once during the yoga class, and PWAs seeing a yoga therapist prior to the yoga class.

With respect to sensory needs, one participant commented that having an FM system available at the yoga facility would help to accommodate PWAs who also experienced hearing loss.

Chapter 4: Discussion

This aim of this study was to identify and synthesize barriers and facilitators that may influence participation in a group yoga class for PWAs post-stroke, from the perspective of PWAs post-stroke, health professionals, and yoga instructors. This investigation was motivated by the need for communication access research in the field of aphasia (Worrall, Rose, Howe, McKenna, & Hickson, 2007), combined with the potential benefits of yoga for PWAs. Expanding on previous exercise research on accessibility for PWAs by focusing on a specific type of activity (i.e., yoga), and using in-depth qualitative interviews from three relevant and widely variant perspectives, this study elicited a comprehensive, detailed, and actionable summary of barriers and facilitators to participation in a group yoga class for PWAs.

The robust and recurring pattern of perceived barriers and facilitators across multiple settings calls for change at a systemic and societal level (Simmons-Mackie et al., 2007; Solarsh & Johnson, 2017; Wallace, 2010). Like many studies investigating communication access for PWAs, this study revealed aphasia awareness, communication training, access to information, transportation, physical environment, and social support as factors that influence participation (Ashton et al., 2008; Blonski et al., 2014; Brown et al., 2006; Brown, Davidson, Worrall, & Howe, 2013; Brown, Worrall, Davidson, & Howe, 2011²; Duchan, Jennings, Barrett, & Butler, 2006; Howe, Worrall, & Hickson, 2008; Simmons-Mackie et al., 2007; Worrall et al., 2007).

Findings from the current research included all the facilitators reported by Blonski et al. (2014) in their more general investigation of the accessibility of community exercise programs for PWAs, such as: nonverbal communication, one-on-one attention, presence of other PWAs to build community, and advertisement, as well as all the barriers in the study, such as: the instructor speaking too quickly, impatience of people without aphasia, no communication partner or family support, and high program costs (Blonski et al., 2014). The current study also reinforced findings from the investigation by Damush et al. (2007) about barriers and facilitators to participating in exercise as perceived by stroke survivors such as social support as a facilitator to exercise, and transportation as a barrier (Damush et al., 2007). This overlap between the current study

and the investigations by Bonski et al. (2014) and Damush et al. (2007) suggests that there may be some common barriers and facilitators across a variety of exercise-based settings.

The current study revealed a wide range of new barriers and facilitators to the literature that were not identified in the previous investigations by Blonski et al. (2014) and Damush et al. (2007), such as those in the areas of collaboration, knowledge, skills, and attitudes of the yoga instructor, class composition and structure, and communication complexities. The importance of social support was also highlighted in the current investigation.

An important facilitator identified in this PAR project about yoga was to apply something like a PAR framework to the development of an accessible yoga class. PWAs are so diverse in nature that no set of barriers and facilitators can universally apply to all individuals (Howe, Worrall, & Hickson, 2004; Worrall et al., 2007). The findings from this study suggest that it may be important for all participants in a proposed yoga class to collaborate to create a workable and enjoyable service that is individual to that group. An equal alliance between yoga providers, PWAs, and potentially health professionals or stroke recovery professionals would provide a strong foundation for a service that could then be maintained and evolve over time, and an integrated approach to aphasia rehabilitation (Shisler Marshall & Mohapatra, 2017).

Collaboration can be facilitated by training yoga instructors and staff on how to implement their knowledge in the context of their facility, and in training to empower them to take responsibility, think creatively, and collaborate with PWAs to create communicatively accessible solutions (Thomson-O'Brien et al., 2001). PWAs should be enabled to contribute in all aspects of design and evaluation including but not limited to: providing communication training to the yoga instructors and staff (Duchan et al., 2006), developing aphasia-friendly advertising or support materials (Ghidella, Murray, Smart, McKenna, & Worrall, 2005; Rose, Worrall, & McKenna, 2003), providing support to one another (Damush et al., 2007; Hilari & Northcott, 2006), scheduling, and providing feedback on the yoga class (Solarsh & Johnson, 2017). Empowering PWAs in the design process of a yoga class would not only ensure that their needs are being met, but the collaborative approach may also provide PWAs with a sense of purpose, community, and

identity that may be lacking in their lives (Liamputtong, 2013; Shadden & Agan, 2004; Vickers, 2010).

Another key facilitator to participation in a group yoga class for PWAs that was identified in this study is the yoga instructor, in whom the combination of the following unique qualities may be hard to find: the yoga instructor needs appropriately supportive communication skills, adequate knowledge of stroke and aphasia, and adequate knowledge of yoga poses, styles, and techniques to adapt to PWAs physical, emotional, or personal needs and goals. The participants also highlighted that the yoga instructor would need to be able to integrate their knowledge and skills to select appropriate poses and sequences, and lead that sequence in a communicatively accessible manner, while offering individual adaptations, or directing helpers on how to assist. It was also highlighted that the yoga instructor should not coddle the PWAs, or fear challenging them because of their disability.

A high-skill, high-challenge environment results in “flow,” a stimulating feeling of timelessness and selflessness achieved through immersion in a task that perfectly matches your skill set (Sather, Howe, Wolf Nelson, & Lagerwey, 2017). The concept of flow explains why combining all levels of aphasia and physical ability in a single class might be so challenging for the instructor, as well as less enjoyable for the students with aphasia. Students with full mobility may not be challenged enough, and become bored, while students with limited mobility may be too challenged, and become anxious or discouraged. Flow is associated with psychosocial benefits such as feelings of accomplishment (Sather et al., 2017), and may increase willingness to return to the yoga class. In order to create an environment where every person is more likely to experience flow, it may be beneficial to consider separating PWAs into classes based on their aphasia and/or physical level (Sather et al., 2017).

Communication complexity was also identified as a significant barrier to PWAs in the current study; however, it can be an important barrier for PWA in any environment (Ashton et al., 2008; Blonski et al., 2014; Brown et al., 2006; Duchan et al., 2006; Howe et al., 2008; Simmons-Mackie et al., 2007; Worrall et al., 2007), and accounted for 54% of participation restrictions perceived by PWAs in a study by Wallace (2010). In the context of a yoga class, participants identified advertising, registration, verbal cueing in

the yoga class, and social communication as areas that would need additional communication support in order overcome the barriers relating to communication complexity.

Currently there is no research directly investigating successful marketing to PWAs. Research relating to aphasia resource availability in healthcare is inconclusive as to the best method of providing information in the chronic stages of aphasia (Hinkley, Hasselkus, & Ganzfried, 2013). Written information is the most common, but the use of websites and the internet is growing (Kerr, Hilari, & Litosseliti, 2010). Caregivers could also be considered when deciding where and how to provide information, as they may be “active information seekers” on behalf of their loved one (Hinkley et al., 2013, p. 315). To help PWAs discover the information independently, and to increase public awareness of yoga classes for PWAs this research suggests that aphasia-friendly information about yoga classes should be readily available in a variety of formats (e.g., websites, apps, videos, posters, pamphlets, radio) and locations that PWAs may frequent. It is important to consider the images used for these materials, and how they might appeal to PWAs (Worrall et al., 2007). The finding that the availability of information in a variety of formats is facilitative extended to the registration process, as well as communication between the yoga instructor and the PWA prior to the yoga class to share needs and goals.

The fact that yoga is a verbally cued activity is an inherent barrier for PWAs. To compensate, this study suggests that yoga instructors might use clear and simple language, repeat and rephrase themselves, replace, or augment their verbal cues with written (e.g., laminated binder with the sequence/poses named and depicted), visual (e.g., demonstration, watching the flicker of a candle to meditate), tactile, or auditory cues (e.g., music to meditate). However, PWAs have previously identified background noise as a barrier (Howe et al., 2008), and in fact, PWAs are more susceptible to distracting auditory stimuli on semantic judgements than neurotypical adults (Murray, Holland, & Beeson, 1997b). It is recommended that PWAs and yoga providers consult with one another and make these decisions together (Ghidella et al., 2005; Rose, Worrall, & McKenna, 2003).

This study highlighted the importance of ensuring everyone in the yoga studio had an understanding of aphasia and how to communicate with the individuals with aphasia. Strong research evidence supports the use of communication training to increase the life participation of PWAs (Kagan, Black, Duchan, Simmons-Mackie, & Square, 2001; Simmons-Mackie et al., 2007). The Supported Conversation for Adults with Aphasia (SCA) method put forth by Kagan (1998) is considered the gold standard in communication training programs, and includes both strategies to facilitate interpersonal communication as well as standards for the creation of pictographic or written materials. In the context of a yoga studio, communication could be provided to yoga instructors, staff (e.g., reception, maintenance), and other class members without aphasia. These individuals could be potentially by a trained SLP, or through an online module. At a more systemic level, communication training could be included as a part of yoga teacher training programs.

The findings that classes should be open only to PWAs or stroke survivors; that PWAs should be welcome to bring a guest for communication, physical, or emotional support; and that PWAs could help other PWAs through the process of a yoga class, highlights the importance of community and social relationships to PWAs, as with previous research in the area (Blonksi et al., 2014; ¹Brown, Worrall, Davidson, & Howe, 2011; Brown, Worrall, Davidson, & Howe, 2012; Brown et al., 2013; Damush et al., 2007; Hilari & Northcott, 2006; Wallace, 2010). The simple fact of attending the yoga class on a weekly basis with other people with aphasia could increase perceived social participation and connection (Vickers, 2010), and may help move PWAs toward accepting a new identity with aphasia (Shadden & Agan, 2004). For this reason, using a drop-in class structure, where members of the group change weekly, may negatively impact social relationships. PWAs may also prefer a preorganized activity (Parr, Byng, Gilpin, & Ireland, 1997) because it may involve reduced demands on communication.

Finally, the results from this study could be used to inform the development of an audit tool for an accessible group yoga class. Solarsh and Johnson (2017) describe an audit tool that was developed collaboratively with businesses, communication experts, and people with communication disabilities over the course of five years to assess

businesses for their communication accessibility. The results of this research could be used in a similar way.

4.1 Study Limitations

The investigation has some key limitations that need to be considered. First, the study included only 12 participants. The use of maximum variation sampling to select participants from widely different perspectives on the topic helped to maximize the variation of experiences within this small sample. The inclusion of more participants, especially those with aphasia who were passionate about yoga would have added new and valuable perspectives to the results. Another limitation of the study was that all the participants with aphasia were male and of similar age, and all the allied health professional and yoga instructor participants were female. This is of note because of the cultural perception of yoga as a ‘female’ activity. The perspective of a participant with aphasia who was female may have balanced male perspectives specifically around class composition and the potential barrier of gender. The perspective of a male allied health professional or yoga instructor participant may have provided similar contributions. While divided by gender, the participants with aphasia varied on dimensions of physical ability, aphasia severity, and time post-stroke, whereas allied health professional participants varied by profession and therefore still provided important variations in perspective.

4.2 Future Directions

To complete the iterative cycle of PAR, findings from the current study will be used to design, trial, and evaluate a yoga class for PWAs in a follow-up study. To increase the quality and validity of the PAR project, participants from phase I will be invited to participate to facilitate continuity between the two studies. During the yoga class, the researcher will engage in participant observation and document field notes. Participants with aphasia will be interviewed directly following the yoga session (Galliers et al., 2012). Field notes will be analyzed using qualitative content analysis (Graneheim & Lundman, 2004). Interviews will be transcribed verbatim based on the conventions of

Poland (1995) and analyzed using qualitative content analysis (Graneheim & Lundman, 2004). Findings from the follow-up study will be used to validate the current findings as the basis for an audit tool for an accessible group yoga class for PWAs.

It is acknowledged that facilitating the participation of PWAs in research requires a significant investment of additional time and effort, resulting in the regular exclusion of PWAs from stroke research (Brady, Frederick, & Williams, 2013). Regardless, advocacy for the inclusion of PWAs in stroke research should continue. The reader is directed to guidelines and templates for aphasia-friendly research documentation that are evidence-based and readily available (Pearl & Cruice, 2017). These resources should continue to be promoted and shared in the stroke research sphere to reduce the exclusion of PWAs in future investigations.

Chapter 5: Conclusion

Research investigating barriers and facilitators to participation in a group yoga class for people with aphasia post-stroke advances our knowledge in the field of communication access for PWAs. Key barriers and facilitators relating to advertising, aphasia awareness, communication, yoga instructors, and social support should be considered from a collaborative framework so that *“from the minute you walk in [the yoga studio] has all the signs that it is communicatively accessible”* (PH5).

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Appendices

Appendix A: Recruitment Poster for Participants with Aphasia

Yoga and aphasia – Interview study

Do you have **aphasia** caused by a **stroke**?

Was your **stroke** more than **6 months** ago?

AND



Do you have **experience** with **or interest in yoga**?

We are doing a UBC study as part of a **Master's thesis** to help design an accessible group yoga class for people with aphasia.

We want to talk to people with aphasia about:



- What **might help** participation in a **group yoga class**?



- What **might be hard** about participating in a **group yoga class**?

This study will involve:



- **interview** in your **home** or other place you choose (about **65 minutes**)
- second **interview** to get **your opinion** about the overall results (**30 minutes**)

To find out more about the study, please contact:

Appendix B: Recruitment Poster for Allied Health Professionals



THE UNIVERSITY OF BRITISH COLUMBIA School of Audiology and Speech Sciences

443-2177 Wesbrook Mall, Vancouver BC V6T 1Z3
T. 604.822.5591 F. 604.822.6569
www.audiospeech.ubc.ca

Yoga and aphasia – Interview Study

Do you have experience working as an **allied health professional** with people with **aphasia**?

AND



Do you have personal experience with **yoga**?

Aphasia is a language disorder caused by stroke or other brain damage. It results in difficulties speaking, understanding, reading, and writing. People with aphasia are at risk of social isolation and reduced life participation.

We are conducting a UBC study as part of a Master's thesis investigating **barriers and facilitators** to participating in a **group yoga class** for **people with aphasia**. We want to interview allied health professionals to discover their perspective on how to make a group yoga class more communicatively accessible for people with the language disorder of aphasia.

The study will involve:

- an **interview** (about **1 hour**) (you can choose to be interviewed by **telephone or in person**). The interview will be **audio-recorded**
- providing **written feedback** on the initial study results (about **15 minutes**).

Appendix C: Recruitment Poster for Yoga Instructors

Yoga and aphasia – Interview Study

Do you have experience working as a **yoga instructor**?

AND



Do you have experience teaching yoga to or other experience working with people with **aphasia after a stroke**, people with other **language difficulties**, or English Language Learners?

Aphasia is a language disorder caused by stroke or other brain damage. It results in difficulties speaking, understanding, reading, and writing. People with aphasia are at risk of social isolation and reduced life participation.

We are conducting a UBC study as part of a Master's thesis investigating **barriers and facilitators** to participating in a **group yoga class** for **people with aphasia**. We want to interview yoga instructors to discover their perspective on how to make a group yoga class more communicatively accessible for people with the language disorder of aphasia.

The study will involve:

- an **interview** (about **1 hour**) (you can choose to be interviewed by **telephone or in person**). The interview will be **audio-recorded**
- providing **written feedback** on the initial study results (about **15 minutes**).

Appendix D: Consent form for Participants with Aphasia



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CONSENT FORM – PARTICIPANTS WITH APHASIA

Designing an **accessible group yoga class** for adults
with **aphasia** post-stroke.

Phase one: qualitative **interviews**



Researchers:



Dr. Tami Howe

UBC School of Audiology & Speech Sciences



Kelsea Ross (MSc Student)

UBC School of Audiology & Speech Sciences



Dr. Lorraine Jenstad

UBC School of Audiology & Speech Sciences

What is this research about?

We want to learn how to:



- **help** people with **aphasia** to **access group yoga classes**.

We will interview:

- people with **aphasia**
- allied **health professionals** and
- **yoga instructors**.

You are invited because...

You have had a **stroke**
over 6 months ago



You have **aphasia**



You have an **interest in yoga**



What will happen in the research?



You will be seen by **Kelsea at your home**

Or any place you are comfortable

At a time **you choose**



You can have **family or someone else** with you at the research sessions if you want

You will have **2 sessions:**

Session 1: about **65 minutes**

Session 2: **30 minutes**

Session 1:

the **researcher** will:

- make sure you qualify for the study by:
asking you to **describe a picture** to briefly **assess your aphasia (5 minutes)**.

If you do not qualify for this study, the researcher will stop the study and your study information will be destroyed.

- ask some details about your age & stroke &
- **ask your opinions** about **yoga** for **people with aphasia**:



What **helps** to take part in a group **yoga class**?



What makes it **harder** to take part in a group

yoga class?

You may **choose not** to **answer questions** at any time.



This session will be **video-recorded**

to record your **gestures**, facial expressions, and words.

Only you will be recorded on video.

Videoing is **required** in this session.

Later, we will **write out** the **information** from this video.

We will **analyse this information**.

Session 2:

the researcher will ask you to **share**
your **opinions** about the **results**
from everyone.

The **results** will **not use your name** or other
personal information.



Results

After, we will report the results

in **a graduate thesis** and **academic journals**, and
conferences

You can get a copy of the **final study results.**

Will you be paid?



You will **NOT** get paid for taking part in the research

What might be difficult?



The research is NOT **dangerous**

It will **take** up **your time**



What might help you?



There are **no direct benefits**

You may **enjoy** taking part



You will **help people** in the **future**



Protecting your confidentiality

We will keep the **information** about you **safe**

in a **locked cabinet**



or **password protected computer** in a **locked office**



Only the **researchers** and **research assistant** will see the **information about you**



We will **not use your name**

We will **destroy information** after **5 years**

If you have questions:

	Dr. Tami Howe
	Kelsea Ross

If you have complaints or concerns:

If you are **concerned** about your **rights**
or your **experiences**
while participating in this study, contact:

Research Participant **Complaint Line**

Ph. 604-822-8598



Ph. 1-877-822-8598

RSIL@ors.ubc.ca



Consent



You **can** decide



You can **talk** to your family to help you decide

You don't have to decide right now



You **don't** have to take part

Saying no will **not** change your relationships or healthcare



If you change your mind, **you can stop** at any time

You **don't** have to **give** a reason

If you consent to take part in this research, please check the boxes below:



I know that it is **my choice** to participate

☐ YES



I know that I **can ask questions** at any time

☐ YES



I know that I **can stop the research** at any time

☐ YES

I have a **copy** of this **consent form**

☐ YES



I have had **enough time** to decide

☐ YES

I **understand** what **this research** is about

☐ YES

I **agree** to **take part** in this **research**

☐ YES

Participant's Name: _____

Participant's **Signature:** _____

Date: _____



I wish to have a **copy of the final study results**

☐ YES

☐ NO

My preferred **method of contact**

☐ Phone

☐ Text

☐ E-mail

Contact information: _____

I wish to be **contacted** about possibly taking part in
phase 2 of this research

☐ YES

☐ NO

Acknowledgement: Some graphics were obtained from the National Institute of Health Research; <http://www.nihr.ac.uk/nihr-in-your-area/stroke/aphasia.htm>

Appendix E: Consent forms for Allied Health and Yoga Instructor Participants



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CONSENT FORM – ALLIED HEALTH PROFESSIONAL & YOGA INSTRUCTOR PARTICIPANTS

Study Title: Designing an accessible group yoga class for adults with aphasia post-stroke. Phase one: Qualitative interviews.

I. Who is conducting the study?

Principal Investigator: Dr. Tami Howe
UBC School of Audiology and Speech Sciences

Co-Investigators: Kelsea Ross, MSc Student
UBC School of Audiology and Speech Sciences

Dr. Lorientne Jenstad
UBC School of Audiology and Speech Sciences

II. What is the study purpose?

This study aims to identify barriers and facilitators to participating in a group yoga class for individuals with chronic aphasia post-stroke (difficulties speaking and understanding language and as the result of a stroke affecting the language areas of the brain). We are interviewing people with aphasia, allied health professionals, and yoga instructors to learn more about their opinions on this topic. The outcome of the study will be a summary of barriers and facilitators that can help to make group yoga classes more accessible for adults with aphasia post-stroke.

III. Invitation to be part of the study

You are being invited to take part in this study because you are:

- an allied health professional with experience working with people with aphasia and personal experience with yoga or
- a yoga instructor with experience working with people with language difficulties.

We believe that your experience offers a unique perspective on how to make a group yoga class for people with aphasia more accessible.

IV. What happens if you say “Yes, I want to be in the study”?

If you say “Yes”, you will:

- be contacted by the researcher to arrange a time and/or location for an interview that is convenient for you (telephone interviewing is an option).
- complete a written form about some basic demographic information
- participate in an interview lasting approximately one hour. The interview will be audio-recorded. The interview will cover your experience with yoga, your experience with aphasia/communication difficulties, and your perspective on what might help or hinder the participation of someone with a communication impairment in a group yoga class.
- be sent an initial summary of the findings from all the interviews (with all personal identifying information removed) near the end of the study. You will be asked to make written comments on the summary and to send it back to us within 3 weeks of receiving it (estimated time 15 minutes).

V. Study Results

- The final results (with all personal identifying information removed) will be re-analyzed and reported in Ms. Ross’s graduate thesis and may also be published in journal articles and presented at professional workshops and conferences.
- You can check a box later in the consent form, if you want a summary of the final research results to be sent to you at the end of the study.

VI. Is there any way this study could be bad for you?

- There are no direct risks associated with participation in this study, other than the use of your **time** (75 minutes).

VII. Will being in this study help you in any way?

- If you decide to participate in this study, there are no direct benefits to you.
- However, in the future, others may benefit from what we learn in this study.

VIII. How will your confidentiality be protected?

- Your confidentiality will be respected at all times.
- Only the principal investigator, co-investigators, and research assistant(s) will have access to the information collected for the study.
- Digital files of audio-recordings and typed copies of the transcripts will be de-identified and coded using numbers, and stored and encrypted on a password protected computer.
- Signed consent forms and contact details will be coded and kept in a locked filing cabinet separate from study data in the locked laboratory of Dr. Tami Howe.
- Hardcopies of the transcripts from the audio recordings will be de-identified and coded using numbers, and stored in the locked laboratory of Dr. Tami Howe.
- For face-to-face interviews which require the co-investigator to travel, audio-recordings will be transferred to a password-protected encrypted USB drive immediately after the interview. The USB drive will be secured in a locked box or cabinet when not in use.
- All personal identifying information will be removed in any of the reports on the completed by the study. Direct quotes may be used in the final reports about the study; however, all identifying information will be removed from quotes and pseudonyms will be used.
- As per UBC policy, data will be kept for five years in the laboratory of Dr. Tami Howe, and then destroyed.

IX. Will you be paid for your time?

- Participation in this study is voluntary. We will not pay you for the time it takes to participate in this study.

X. Who can you contact if you have questions about the study?

If you have any questions or concerns about what we are asking of you, please contact Kelsea Ross or Dr. Howe.

XI. Who can you contact if you have complaints or concerns about this study?

- If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance e-mail RSIL@ors.ubc.ca or call toll free 1-877-822-8598.

XII. Participant Consent

Taking part in this study is entirely up to you. You have the right to refuse to participate in this study. If you decide to take part, you may choose to pull out of the study at any time without giving a reason and without any negative impact on your personal relationships with any of the investigators.

- Your signature below indicates that you have received a copy of this consent form dated _____ for your own records.
- Your signature indicates that you consent to participate in this study.
- Your signature indicates that you have had time to consider whether to take part in this study.

Participant Signature

Date

Printed Name of the Participant signing above

Please circle to answer the following:

Do you wish to have a copy of the final results from this study?

yes / no

If yes, e-mail address where you would like the results to be sent:

Appendix F: Demographics Form for Participants with Aphasia



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DEMOGRAPHIC INFORMATION FORM PARTICIPANTS WITH APHASIA

Participant ID# *:

Name:

Address:

Phone:

E-mail:

***This page with contact details will be stored separately
from the remaining pages and research data.**



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Participant ID #:

***Please tick all boxes that apply**

1. Gender

Female	Male	Other
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





2. Age at time of interview: _____ (years)

3. Date of **stroke** that caused **aphasia**:



4.1 Physical supports



Wheelchair: <input type="checkbox"/> All the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Never 	Walk independently: <input type="checkbox"/> All the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Never 
Cane/Walker: <input type="checkbox"/> All the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Never 	Brace (any body part): <input type="checkbox"/> All the time <input type="checkbox"/> Sometimes <input type="checkbox"/> Never 

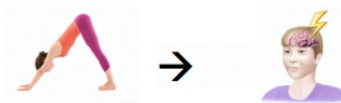
4.2 Please list any physical disabilities



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5. Yoga before your stroke



5.1 Experience with yoga before your stroke

	None
	Group Yoga
	At-Home Yoga
	Other Experience with Yoga

of years experience: _____

5.2 Interest in yoga before your stroke



1-----3-----5



Not interested

Very interested



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6. Yoga after your stroke



6.1 Experience with yoga after your stroke



	None
	Group Yoga
	At-Home Yoga
	Stroke Group Yoga
	Other _____

of years experience: _____

6.2 Interest in yoga after your stroke



1-----3-----5



Not interested

Very interested

Appendix G: Demographics Form for Allied Health and Yoga Instructor Participants



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**DEMOGRAPHIC INFORMATION FORM –
ALLIED HEALTH & YOGA INSTRUCTOR PARTICIPANTS**

Participant ID# *:

Name:

Address:

Phone:

E-mail:

- This page with contact details will be stored separately from the remaining pages of the demographics information form and research data.



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Participant ID#:

1. Gender (Please tick appropriate box):

Female	Male	Other

2. Age in years at the time of interview: _____

3. Related work experience (Please tick appropriate box, or boxes, and indicate number of years experience):

- ☐ Registered Speech-Language Pathologist _____ years
- ☐ Registered Occupational Therapist _____ years
- ☐ Registered Physiotherapist _____ years
- ☐ Registered Recreational Therapist _____ years
- ☐ Certified Yoga Instructor _____ years
- ☐ Other (Please specify): _____ years



4. Experience working with people with language difficulties or English language learners (Please tick appropriate box(es), indicate number of years, and setting – example: teaching a yoga class, acute care, inpatient rehabilitation, outpatient rehabilitation, community practice, stroke group):

- ☐ With people with aphasia _____ years
 - Setting(s): _____
- ☐ With people with other language difficulties _____ years
 - (Please specify types of language difficulties):

 - Setting(s): _____
- ☐ With people who are learners of English as an additional language: _____ years
 - Setting(s): _____

5. Experience with yoga (Please tick appropriate box(es) and indicate number of years of experience):

- ☐ Certified yoga instructor _____ years
- ☐ Student in group yoga classes _____ years
- ☐ At-home yoga _____ years
- ☐ Other experience with yoga (please specify below) _____ years

Appendix H: Semi-Structured Interview Topic Guide

Study Title: Designing an accessible group yoga class for adults with aphasia post-stroke. Phase one: Qualitative interviews.

Semi-structured interview topic guide

Topic	Sample statements
1) Experience with yoga	Tell me about your experiences with/ interest in yoga.
2) Experience with aphasia/ working with people with aphasia/ language difficulties	<p>Tell me about your experiences with aphasia and/or working with people with language difficulties or English language learners.</p> <p>Tell me about any experiences you have with people with aphasia and/or language difficulties/English language learners and yoga.</p>
3) Barriers to participating in a group yoga class for people with aphasia	From your experience, what things made/make/might make participation in a group yoga class harder (for a person with the language disorder of aphasia)?
4) Facilitators for participating in a group yoga class for people with aphasia	<p>From your experience, what helped/help/might help someone with aphasia participate in a group yoga class?</p> <p>From your experience, what might make participation in a group yoga class easier / or help to overcome some of the things you said that might/do make it harder?</p> <p>Tell me what an ideal group yoga class for someone with aphasia/language difficulties might be like./ What suggestions would you give to someone who was setting up an accessible group yoga class for adults with aphasia?</p>
5) Any other comments	<p>Is there anything else you feel is important to share?</p> <p>Is there anything we missed on this topic that you would like to talk about?</p>

Comments will be made such as:

- Can you tell me more about that?
- Can you give me an example of that?

If not discussed in the interview, the researcher will probe re: what might help/make it hard to find out about/become involved in/register for a group yoga class? Travel to and from a group yoga class? Participate during a class? Participate in any other aspects of a group class?

Appendix I: Semi-Structured Interview Topic Guide for Participants with Aphasia



Tell me **a little bit** about your **experience with aphasia**.



Tell me about your **experience with/ interest in yoga**.

Before stroke? After stroke?



What **helps people with aphasia** to take part in in a group **yoga class**?



What things make it **harder for people with aphasia** to take part in a group **yoga class**?



Tell me what **your ideal group yoga** class looks like for **people with aphasia**



What things **help** OR **make it harder for** people with aphasia to:



- **Find out** about a group **yoga class**?



- **Travel** to and from a group **yoga class**?



- **Register** for a group **yoga class**?



- **Participate during** a group **yoga class**?