

THESIS

THE THERAPEUTIC USE OF YOGA IN OCCUPATIONAL THERAPY  
FOR INDIVIDUALS WITH STROKE

Submitted by

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## ABSTRACT

### THE THERAPEUTIC USE OF YOGA IN OCCUPATIONAL THERAPY FOR INDIVIDUALS WITH STROKE

The purpose of this study was to provide a description of the experiences of occupational therapists (OT) who are currently using yoga in occupational therapy practice for individuals that have experienced a stroke. Specifically, this study aimed to understand how and why OTs may be integrating yoga into rehabilitation for stroke. Ten OTs from around the United States completed a survey and comprehensive interview. Interview data was analyzed using an iterative process and both deductive and inductive coding. Themes in the data emerged related to the perceived benefits of integrating yoga in occupational therapy for stroke including: how yoga promoted client-centered recovery; that yoga brought “context” to therapy; and how yoga could be used to address multiple physical, emotional, and psychosocial needs following stroke. Based on these findings, yoga is currently being integrated into health care and specifically into occupational therapy. Yoga may be a beneficial means of therapy for individuals post-stroke to aide in physical and psychosocial rehabilitation and increase reintegration into life after stroke. While this study highlights a sample of OTs using yoga in practice, these findings do not serve as a guideline for OTs, but rather describe why OTs have chosen to use this complementary approach.

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## CHAPTER 1: INTRODUCTION

Stroke is a leading cause of serious long-term disability, affecting nearly 800,000 individuals each year [1]. As a result, many individuals experience persistent challenges in daily activities [2]. Stroke is common and leads to multiple residual impairments that impact physical, cognitive, and emotional functioning, leading to decreased quality of life. Common impairments associated with stroke include: decreased or loss of movement or hemiparesis [3]; challenges related to language, cognitive functions, and vision [4, 5]; higher instances of mental health disorders [6]; and challenges with emotional regulation and socialization [7]. Such challenges lead to limitations in participation in valued activities and impact overall quality of life [2] indicating the need for rehabilitation services.

Rehabilitation teams consist of several professionals, including occupational therapists (OT)[8]. The focus of occupational therapy is to promote engagement in daily occupations, or daily activities that are necessary or meaningful to an individual [9]. Stroke often leads to occupational deprivation or decreased participation in occupations and has lasting impacts on the individual [10]. Occupational therapy for stroke increases engagement in valued occupations and routines by reestablishing, increasing, or compensating for motor, cognitive, and psychological abilities [8].

In addition to traditional rehabilitation, complementary and integrative health [11] is gaining distinction as an approach to treat chronic conditions including stroke. Yoga is one of the most popular CIH used in integrative health practice [11]. There is a growing body of evidence supporting the use of yoga to improve both physical and mental health following stroke [12, 13]. The combination of movement and postures, as well as attention to the breath, mindfulness, and

self-acceptance addresses several chronic symptoms of stroke. Yoga has been shown to improve: balance; mobility; endurance; strength; and dexterity for individuals who have experienced a stroke [13-17]. Yoga also has the potential to mitigate mental health challenges such as anxiety and depression following a stroke [18, 19]. Individuals with stroke have noted both physical and psychosocial outcomes following participation in a yoga program [7]. Importantly, when using yoga for stroke rehabilitation, yoga practices can be modified to meet the specific abilities or needs of the individual [14]. Therefore, the use of yoga for individuals with stroke appears to be a feasible option as a therapeutic intervention.

Similar to yoga, occupational therapy emphasizes a holistic view of the individual. Mailoo [20] described yoga as “an ancient occupational therapy” and argued that aspects of yoga would be a valuable addition to occupational therapy. Researchers in occupational therapy have started exploring the benefits of combining yoga and occupational therapy for individuals with stroke [17]. According to AOTA, yoga can be used as a preparatory task or modality as well as an activity to support engagement in meaningful occupations [21]. Occupational therapy is one profession incorporating CIH into clinical practice [21].

The integration of yoga within occupational therapy practice could be a beneficial means of therapy for individuals with stroke. The literature supports the benefits of yoga for individuals with stroke, however, current studies vary in setting and duration and provide limited description regarding what yoga looks like when integrated into rehabilitation and implemented as part of occupational therapy. Therefore, the purpose of this study was to gain the perspective of OT’s using yoga for individuals who have experienced a stroke, specifically: (1) provide insight into why practitioners have chosen to use this CIH approach with clients who have experienced a stroke and (2) provide an understanding of how yoga is implemented into occupational therapy.

## CHAPTER 2: REVIEW OF THE LITERATURE

### **Introduction**

Prior to discussing the evidence for the use of yoga as a compliment to occupational therapy for individuals who have had a stroke, it is important to summarize existing occupational therapy interventions for this population. This chapter summarizes best practice for common occupational therapy interventions and current literature on the use of yoga for individuals with stroke. The literature review starts with presenting background information on the prevalence of stroke and its impact on the individual and their occupational performance. The literature related to the traditional, evidenced-based, occupational therapy intervention approaches for individuals who have experienced a stroke is then presented. Following that, the existing literature on the use of yoga for individuals with stroke is summarized. Finally, the similarities between occupational therapy and yoga are presented to explain the fit of yoga in occupational therapy practice. This literature review indicates a gap in the current understanding of both how and why OTs are integrating yoga into occupational therapy for individuals with stroke and why this understanding would benefit occupational therapy knowledge and literature.

### **Stroke**

#### *Incidence and Prevalence of Stroke*

A stroke or cerebrovascular accident (CVA) is a one of the most prevalent health conditions in the United States [1]. It results from a blockage to blood flow to an area of the brain causing deprivation of oxygen to brain cells and eventual cell death [3]. According to the AHA [1], stroke is a leading cause of long-term disability in the United States, affecting nearly 800,000 individuals each year. Globally, approximately 5 in 1000 people experience a stroke



each year, with about 33 million people living after stroke [22]. In the United States, an estimated 6.6 million people over the age of 20 have had a stroke [23]. While stroke is a leading cause of death [24], many individuals live through their stroke, however, the majority of individuals face lasting deficits. Consequently, many people with chronic stroke face challenges related to participating in their daily activities [2].

### *Impact of Stroke on the Individual*

The hallmark characteristic of a stroke is hemiparesis or the loss of movement or weakness on one side of the body [3]. Stroke can also affect language, cognitive functions, and vision [4, 5]. Additionally, individuals who have experienced a stroke have a higher prevalence of mental health challenges, such as anxiety and depression [6]. Such mental health disorders have the potential to increase stress and further reduce participation in desired activities [25]. Furthermore, Garrett, Immink, and Hillier [7] remarked that stroke can lead to emotional and social challenges that result in social isolation and decreased emotional regulation. Almost half of all individuals living with stroke experience psychological or emotional challenges [26]. These deficits affect an individual's cognitive, emotional, and physical capabilities which leads to limitations in participation in valued activities and impacts overall quality of life [7].

### **Occupational Therapy and Stroke**

According to the 2016 guidelines for stroke rehabilitation, “effective stroke rehabilitation is likely to remain an essential part of the continuum of stroke care” [2]. Therefore, it is important to evaluate interventions that are successful in treating and managing chronic stroke symptoms. Additionally, reduced participation in occupations is often reported by stroke survivors indicating the importance and need for attention from occupational therapy [27].

Throughout rehabilitation, occupational therapy is a profession that commonly works with individuals who have experienced a stroke.

### *Definition of Occupational Therapy*

The emphasis of occupational therapy is on promoting participation and performance in daily activities that an individual needs or wants to do [9]. OTs promote participation and performance in daily activities through the therapeutic use of occupations or meaningful, everyday activities specific to an individual and central to their identity. Occupational therapy services include habilitation, rehabilitation, and promotion of health and wellness for individuals with needs related to a disability, disease, or injury. OTs integrate information about the client, their unique occupations, and their environment to improve health, well-being, and participation in life's activities [28]. When an individual is faced with an occupational disruption due to a certain diagnosis or impairment, occupational therapy will address barriers to participation to promote engagement in valued life activities.

### *Occupational Therapy Interventions for Stroke*

Stroke is a diagnosis commonly addressed by OTs [8]. Many individuals with stroke report decreased participation in their daily occupations or meaningful activities [27]. The role of occupational therapy is to address reduced participation in meaningful occupations and in turn improve the individual's overall quality of life and wellness [9]. Common occupational therapy interventions for individuals post-stroke address: repetitive task practice; constraint-induced motor therapy (CIMT); mirror therapy; strengthening and exercise; action observation; [29] instruction in functional activities; task-oriented training [30]; and remediation of motor abilities through use of the affected arm [31]. In addition to restoring or compensating for motor impairments, occupational therapy also addresses cognitive deficits. Common effective cognitive

interventions used by OTs focus on performance, include strategy training, and compensate for reduced abilities [32]. Additionally, due to the prevalence of psychosocial or emotional impairments following stroke, occupational therapy interventions have also focused on reducing anxiety, depression, and stress through exercise based interventions and education on symptom management [26]. Occupational therapy interventions aim to improve occupational performance and participation in desired activities for individuals with motor, cognitive, and emotional impairments resulting from stroke [8].

Furthermore, there is a body of literature that supports the benefits of engagement in physical activity such as physical exercise following a stroke [33]. Engagement in physical activity leads to improvements in mobility; cognition; quality of life; and overall recovery for individuals who experience a stroke. Also, physical activity is recommended and beneficial early on in the stroke diagnosis [34]. Exercise was the most commonly reported treatment for depression, anxiety, or mental health-related quality of life in occupational therapy literature [26].

One popular form of physical activity for individuals with chronic conditions is yoga. There is a growing body of literature supporting the use of yoga for individuals who have experienced a stroke. The benefits of yoga from a physical stand point reflect those linked to participation in physical exercise including improvements in mobility, balance, and muscle strength [35]. The literature also suggests that participation in yoga is equal or superior to exercise for many outcome measures including balance, mood, and quality of life for individuals with chronic conditions [36].

## **Yoga and Stroke**

### *Definition of Yoga*

Yoga unites the mind, body, and spirit to address physical, mental, and emotional needs [18]. Common yoga practices integrate dynamic movements and static postures (asana), breathing techniques (pranayama), and mindfulness through meditation (dhyana), relaxation, and body awareness [37]. Yoga uses a holistic approach to rehabilitation that is unique for each individual [38]. Hatha yoga, the most commonly practiced school of yoga in the United States and Europe, focuses on the combination of and interaction between physical movement through postures and the breath [11].

Over the past decade, the benefits of yoga for a variety of different populations have been researched. Yoga is one form of complementary and integrative health [11] that falls under mind and body practices [11]. CIH is often used in tandem with conventional care to improve physical and emotional health and well-being as well as to mitigate symptoms associated with chronic conditions, such as stroke [39]. The use of yoga as a CIH has increased steadily over time and is the most popular mind and body practice when compared to tai chi and qi gong [40].

### *Yoga as Treatment for Stroke*

Yoga has recently gained attention in complementary medicine literature as a technique to promote self-management of chronic conditions, including stroke [21]. The effects of yoga for individuals with neurological disorders, such as stroke, is documented in the literature [12, 13, 41]. Additionally, yoga is being implemented in a variety of different settings, both medical and community based, and during different stages of stroke rehabilitation [41].

Due to the increase in anxiety and depression amongst individuals who have experienced a stroke, there is a need to expand the focus of rehabilitative care beyond purely physical to

incorporate both physical and mental health [42]. Yoga alleviates both the mind and body from stress associated with the chronic symptoms related to stroke [41]. As a holistic practice, yoga involves more than physical exercise [43]. Yoga may also improve mental health status following a stroke [18]. Additionally, yoga may be an appropriate form of exercise for individuals who have activity limitations associated with stroke as it can be modified to meet the needs of the individual [36]. Yoga can offer a gentle alternative to traditional exercise and can be easily adapted for individuals who have had a stroke [14].

Current evidence indicates that yoga can influence both physiological and psychological health. Physical improvements for individuals with stroke after participation in yoga are reported in the research in areas of: mobility and balance [44]; motor coordination and dexterity [16]; range of motion; strength; and endurance [17]. Additionally, research has shown that participation in yoga can lead to psychological improvements such as: reduction in anxiety [44]; reduction in depression [45]; reduced stress [13]; improvement in speech [16]; and improved cognitive skills [5]. Additionally, in a qualitative study by Garrett, Immink, and Hillier [7], participant perceived outcomes following a yoga intervention program included increased relaxation, physical improvements such as balance, strength, and body awareness, and that the program provided an opportunity to interact with others who had also suffered a stroke. For individuals with chronic conditions like stroke, participation in yoga programs have a positive effect on exercise capacity, quality of life, and well-being when compared with typical rehabilitation [12]. According to Schmid et al. [17], yoga also improved overall quality of life, self-efficacy related to falls, and reduced fear of falling, all common concerns following a stroke.

The following studies demonstrate the physical benefits of yoga. Yoga postures have been noted to improve strength and flexibility [46]. Bastille and Gill-Body [14] compared effects

of yoga on balance and timed mobility for individuals with post-stroke hemiparesis. The authors discovered that not all participants respond the same to the yoga intervention, however their results indicated that yoga may be beneficial for individuals with post-stroke hemiparesis in terms of increased balance and speed of mobility. Furthermore, this study demonstrated that increased participation in yoga led to increased improvements in measures of balance and mobility. Similarly, Immink, Hillier, and Petkov [44], found that a yoga intervention for individuals with post-stroke hemiparesis improved mobility and balance.

In addition to physical improvements, the following studies demonstrated how yoga can improve mental health functions. In a study by Smith et al. [43], yoga was found to significantly decrease anxiety-related symptoms when it incorporated meditation and ethical/spiritual teachings along with exercise. In one meta-analysis on the benefits of yoga for individuals with chronic stroke, Thayabarnathan et al. [47] reported that yoga reduces anxiety and depression, implying that yoga can provide greater benefits beyond those of traditional exercise.

Additionally, Chan, Immink, and Hillier [18] compared the effects of yoga on patient self-reported symptoms of anxiety and depression between participants in an exercise group and an exercise and yoga group. This study demonstrated the positive benefits of exercise on symptoms of anxiety and depression. This data suggested the possible mental health benefits of adding yoga to a traditional exercise program for individuals who have experienced a stroke.

### **Yoga and Occupational Therapy**

Within the scope of occupational therapy, CIH, including yoga, can be viewed as preparatory tasks or modalities, as well as an activity to support engagement in meaningful occupations [21]. Additionally, for those that regularly practice yoga and have integrated it into their daily routine, yoga can be viewed as an occupation itself. The inclusion of CIH into

occupational therapy must be done in the context of the occupational therapy process and part of a collaboration between the client and the OT. Therefore, client values, culture, and identified needs must be considered when electing to use any CIH, such as yoga [21].

Several studies have explored the benefits of combining elements occupational therapy and yoga to increase self-management following stroke [48, 49]. Schmid et al. [48] reported the benefits of merging yoga and occupational therapy including reduction in falls and increased self-efficacy. Additionally, in a study conducted by Adler et al. [49], individuals with stroke reported increased engagement in daily activities, increased relaxation, and improved confidence following an intervention merging yoga and occupational therapy (MY-OT).

Yoga maintains a holistic view of the person with their unique, individual, abilities and desires by promoting self-expression and self-acceptance [20]. Similarly, occupational therapy philosophy values understand the unique needs of the individual and the use of strategies that incorporate all the whole person. Therefore, yoga could have meaningful contributions to the practice of occupational therapy. Mailoo [20] contends that, with research, certain aspects of yoga could be a valuable addition to OT practice.

## **The Gap**

OTs commonly work with individuals who have experienced a stroke. Common occupational therapy interventions for individuals with stroke include self-management, functional task training, and education and instruction on compensatory strategies. Due to the recent influx of CIH approaches, yoga is quickly becoming another intervention tool for occupational therapy. Although the body of evidence supporting the use of yoga for individuals with chronic conditions, like stroke, continues to grow, the evidence available for how yoga is

introduced and applied for individuals with stroke is lacking. There is a need to understand how and why yoga is being used by OTs to treat individuals with stroke.

Yoga can be beneficial for stroke rehabilitation as is currently being incorporated into the rehabilitation as a complementary addition to treatment [13]. As part of the rehabilitation team, occupational therapists may also be using yoga as treatment for stroke, but there is lacking evidence as to why, how, and when the OTs use yoga. Following a review of the current research for yoga and stroke rehabilitation, there appears to be substantial evidence supporting the use of yoga as therapy for this population. However, there is a lack of evidence indicating how yoga is being implemented for individuals who have experienced a stroke. Current yoga programs and teachings vary in duration and frequency and there is limited description about how to effectively introduce, implement, and integrate yoga into occupational therapy practice. An understanding of what OT practitioners are doing in practice, how they are using yoga, and why they decide to integrate yoga into practice would benefit future OTs who seek to use yoga in practice.

## **Conclusion**

Occupational therapy, like yoga, values a holistic approach to treatment that incorporates both the mind and the body. Therefore, yoga fits well within the boundaries of occupational therapy. Yoga can be a beneficial addition in stroke rehabilitation and occupational therapy may be a profession that is outfitted to integrate yoga principles into treatment of stroke. However, there is currently a gap in the research related to how and why occupational therapists use yoga in treatment. This addition would increase the knowledge on best practice related to integrating yoga in stroke rehabilitation. This research will aim to answer these questions in the hopes of providing future therapists with the experience from other practitioners.



## CHAPTER 3: METHODS

### **Design**

This was a descriptive qualitative study exploring the experiences of OTs using yoga in practice with clients post-stroke. The aim of descriptive qualitative studies is to generate a comprehensive summary of specific events or experiences as understood by individuals [50].

### **Recruitment and Participants**

Participants were recruited through a survey shared with online yoga and occupational therapy groups and through convenience sampling. The survey is part of a larger, comprehensive study on the use of yoga in health care. For the current study, the survey was used to identify OTs using yoga for individuals with stroke. To be included in this study, participants had to be practicing OTs who identified as someone regularly using yoga in clinical practice for individuals with stroke. OTs who met the inclusion criteria and provided contact information for future research were contacted through email for an interview. Additional OTs were recruited through snowball sampling. Thirteen OTs who met inclusion criteria and provided consent were contacted for an interview. Interviews continued until data reached saturation [51]. A total of ten OTs were included in this study.

### **Primary Researcher's Position Statement**

Three authors of this study (AA, CR, and AS) have a personal yoga practice, believe in the physical and emotional benefits of yoga, and believe that yoga is beneficial for individuals with chronic conditions. The primary researcher (AA) values participation in yoga for stress management and anxiety relief. To mitigate the bias in reporting of information, the primary researcher maintained a reflective journal to record impressions and personal bias. Additionally,

the primary researcher discussed codes and impressions with the research team to ensure that bias was not impacting data analysis.

### **Data Collection**

Data collection occurred during a period of 6 months. First, participants completed the survey and then participated in a qualitative interview. Survey data were obtained online and kept on a secure server. While the survey primarily served as a recruitment tool, it also provided demographic information of participants. Information obtained from the survey included: therapist name; setting(s); state of residence; if they were a yoga instructor and/or therapist; number of years personally practicing yoga; number of years as an OT; and number of years integrating OT and yoga.

Following completion of the consent form and survey, participants completed a semi-structured interview. Interviews were administered in person or over the phone and lasted 30 to 60 minutes. The primary researcher trialed interview questions with a practice interviewee prior to the first interview to obtain feedback on questions and suggestions to improve interviewing abilities. Participants were asked 15-20 questions focused on his or her experience using yoga for individuals with stroke, their perception of the benefits of yoga, and how yoga was presented and implemented into practice. Interview topics included: how yoga was introduced to clients; techniques for moving clients into postures; common facilitation procedures; the influence of the setting; the connection between OT and yoga; and any recommended training or knowledge.

(See Appendix A)

### **Data Management and Analysis**

All interviews were audio-recorded and transcribed verbatim by the primary researcher. Interview data were loaded into Nvivo 11 Software for organization of codes. An iterative

process was used for coding. First, all researchers independently read through initial interviews and met to discuss overall impressions. To begin, the researchers used a deductive coding process by creating a preliminary codebook based on interview questions [52](see Table 1). As data collection and analysis continued, an inductive approach was applied, allowing codes to emerge from the data [52](see Table 2). Throughout data collection, the codebook was refined through discussion and agreement on codes. Changes to the codebook were recorded and noted in the audit trail.

**Table 3.1.** Example questions and preliminary codes.

<b>Question</b>	<b>Deductive Code</b>	<b>Quote</b>
What has influenced you to incorporate yoga into your practice?	Initial draw	“I’ve been doing yoga for...10 or 11 years now and it just makes sense to me...I’m just like a big proponent of using modalities that are meaningful to people” – Kathy
What outcomes have you noticed for people with stroke after using yoga?	Outcomes	“She actually regained sensory functions” – Heather
How do you incorporate yoga into your sessions?	Implement	“Providing a handout for them with pictures is helpful for continuing it in the home program” – Heather
What knowledge or experience do you recommend?	Knowledge/experience	“Understanding which muscles are being active, ways of protecting the body” – Kathy

**Table 3.2.** Sample inductive codes and themes

<b>Quote</b>	<b>Inductive Code</b>	<b>Theme</b>
“Make a modification that’s appropriate for where the individual’s at based on their...flexibility, their balance” – Dalia	How: modify	Yoga promotes client-centered recovery
“It really depends on the person...I let it be client led, what’s most important to them?” – Jessica	How: individualize	
“If someone’s gonna sit at the edge of the bed...I might say...let’s just practice...in your mind” – Amber	How: cueing	
“It’s that holistic approach that creates that meaningful activity” – Megan	Influence: meaningful	Yoga brings “context” to therapy
“I use it as a way for client to...continue rehab after their number of visits...to incorporate their affected side into everyday life” – Dara	Influence: continued recovery	
“I want them to...take on the work themselves...try to go to a yoga class in the area” - Beth	Influence: community reintegration	
“It’s really kind of amazing to watch people start to become more in control...getting them out of that fright or flight response” –Angie	Used for: psychosocial	Yoga addresses multiple needs after stroke
“Balance improvements...increased functional use of a hemiparetic limb” – Megan	Used for: physical	
“Start with...attention training and mindfulness...using the breath as a tool for attention” – Jessica	Used for: attention	

Subsequent interviews were read and coded by at least two researchers. Then, the researchers came together to discuss codes. Disagreements on codes were discussed until the researchers reached consensus. Throughout the coding process, the codebook was further refined or added to by the researchers. Then, all researchers came together to discuss common reoccurring ideas and develop themes. Themes emerged inductively through the process of analyzing reoccurring codes across interviews and combining codes into larger, meaningful categories (see Table 2). Direct quotes from participants were used to exemplify common themes.

To increase study rigor, data analyses occurred simultaneously as interview data were collected [52]. Interview questions were re-assessed to ensure questions were leading to adequate information. The primary researcher maintained a reflective journal throughout the analysis process to reflect on personal opinions, possible biases, and important realizations. Researchers also used peer review but confirming codes and themes with each other.

## CHAPTER 4: MANUSCRIPT

### **Introduction**

Stroke is a leading cause of serious long-term disability, affecting nearly 800,000 individuals each year [1]. As a result, many individuals experience persistent challenges in daily activities [2]. Common impairments associated with stroke include: decreased or loss of movement or hemiparesis [3]; challenges related to language, cognitive functions, and vision [4, 5]; higher instances of mental health disorders [6]; and challenges with emotional regulation and socialization [7]. Such challenges lead to limitations in participation in valued activities and impact overall quality of life [2] indicating the need for rehabilitation services.

Rehabilitation teams consist of several professionals, including occupational therapists (OT)[8]. The focus of occupational therapy is to promote engagement in daily, occupations, or daily activities that are meaningful, important, or satisfying to an individual [9]. Occupational therapy values active engagement in occupations to improve overall health, wellbeing, and quality of life. Stroke often leads to occupational deprivation or decreased participation in occupations and has lasting impacts on the individual [10]. Occupational therapy for stroke focuses on reestablishing, increasing, or compensating for motor, cognitive, and psychological abilities to increase engagement in valued occupations reintegrate the individual back into their daily life routines [8].

In addition to traditional rehabilitation, complementary and integrative health (CIH) is gaining distinction as an approach to treat chronic conditions including stroke. Yoga is one of the most popular CIH used in integrative health practice [11]. There is a growing body of evidence supporting the use of yoga to improve both physical and mental health following stroke [12, 13].

Yoga has been shown to improve: balance; mobility; endurance; strength and dexterity for individuals who have experienced a stroke [13-17]. Yoga has the potential to mitigate mental health challenges such as anxiety and depression following a stroke [18, 19]. Individuals with stroke have noted both physical and psychosocial outcomes following participation in a yoga program [7]. Importantly, when using yoga for stroke rehabilitation, yoga practices can be modified to meet the specific abilities or needs of the individual [14]. Therefore, the use of yoga for individuals with stroke appears to be a feasible option as a therapeutic intervention.

Mailoo [20] described yoga as “an ancient occupational therapy” and argued that aspects of yoga would be a valuable addition to occupational therapy. Researchers in occupational therapy have started exploring the benefits of combining yoga and occupational therapy for individuals with stroke [17]. According to the American Occupational Therapy Association (AOTA), yoga could be used as a preparatory task or modality as well as an activity to support engagement in meaningful occupations [21].

The integration of yoga within occupational therapy practice could be a beneficial means of therapy for individuals with stroke. The literature supports the benefits of yoga for individuals with stroke, however, current studies vary in setting and duration and provide limited description of what aspects of yoga are being used in rehabilitation. Yoga, as a popular CIH, is being used by rehabilitation professions, including occupational therapy, however, there is limited explanation of why OTs have decided to use this approach. Therefore, the purpose of this study was to gain the OT’s perspective on the use of yoga for individuals who have experienced a stroke, specifically: (1) provide insight into why practitioners have chosen to integrate yoga into occupational therapy and (2) provide an explanation of the perceived benefits of using yoga throughout stroke rehabilitation.

## **Methods**

### *Design*

This was a descriptive qualitative study exploring the experiences of OTs using yoga in practice with clients post-stroke. The aim of descriptive qualitative studies is to generate a comprehensive summary of specific events or experiences as understood by individuals [50].

### *Recruitment and Participants*

Participants were recruited through a survey shared with online yoga and occupational therapy groups and through convenience sampling. The survey is part of a larger, comprehensive study on the use of yoga in health care. For the current study, the survey was used to identify OTs using yoga for individuals with stroke. To be included in this study, participants had to be practicing OTs who identified as someone regularly using yoga in clinical practice for individuals with stroke. OTs who met the inclusion criteria and provided contact information for future research were contacted through email for an interview. Additional OTs were recruited through snowball sampling. Thirteen OTs who met inclusion criteria and provided consent were contacted for an interview. Interviews continued until data reached saturation [51]. A total of ten OTs were included in this study.

### *Primary Researcher's Position Statement*

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the primary researcher discussed codes and impressions with the research team to ensure that bias was not impacting data analysis.

### *Data Collection*

Data collection occurred during a period of 6 months. First, participants completed the survey and then participated in a qualitative interview. Survey data were obtained online and kept on a secure server. While the survey primarily served as a recruitment tool, it also provided demographic information of participants. Information obtained from the survey included: therapist name; setting(s); state of residence; if they were a yoga instructor and/or therapist; number of years personally practicing yoga; number of years as an OT; and number of years integrating OT and yoga.

Following completion of the consent form and survey, participants completed a semi-structured interview. Interviews were administered in person or over the phone and lasted 30 to 60 minutes. The primary researcher trialed interview questions with a practice interviewee prior to the first interview to obtain feedback on questions and suggestions to improve interviewing abilities. Participants were asked 15-20 questions focused on his or her experience using yoga for individuals with stroke, their perception of the benefits of yoga, and how yoga was presented and implemented into practice. Interview topics included: how yoga was introduced to clients; techniques for moving clients into postures; common facilitation procedures; the influence of the setting; the connection between OT and yoga; and any recommended training or knowledge.

(See Appendix A)

### *Data Management and Analysis*

All interviews were audio-recorded and transcribed verbatim by the primary researcher. Interview data were loaded into Nvivo 11 Software for organization of codes. An iterative

process was used for coding. First, all researchers independently read through initial interviews and met to discuss overall impressions. To begin, the researchers used a deductive coding process by creating a preliminary codebook based on interview questions [52](see Table 1). As data collection and analysis continued, an inductive approach was applied, allowing codes to emerge from the data [52](see Table 2). Throughout data collection, the codebook was refined through discussion and agreement on codes. Changes to the codebook were recorded and noted in the audit trail.

**Table 4.1.** Example questions and preliminary codes.

<b>Question</b>	<b>Deductive Code</b>	<b>Quote</b>
What has influenced you to incorporate yoga into your practice?	Initial draw	“I’ve been doing yoga for...10 or 11 years now and it just makes sense to me...I’m just like a big proponent of using modalities that are meaningful to people” – Kathy
What outcomes have you noticed for people with stroke after using yoga?	Outcomes	“She actually regained sensory functions” – Heather
How do you incorporate yoga into your sessions?	Implement	“Providing a handout for them with pictures is helpful for continuing it in the home program” – Heather
What knowledge or experience do you recommend?	Knowledge/experience	“Understanding which muscles are being active, ways of protecting the body” – Kathy

**Table 4.2.** Sample inductive codes and themes

<b>Quote</b>	<b>Inductive Code</b>	<b>Theme</b>
“Make a modification that’s appropriate for where the individual’s at based on their...flexibility, their balance” – Dalia	How: modify	Yoga promotes client-centered recovery
“It really depends on the person...I let it be client led, what’s most important to them?” – Jessica	How: individualize	
“If someone’s gonna sit at the edge of the bed...I might say...let’s just practice...in your mind” – Amber	How: cueing	
“It’s that holistic approach that creates that meaningful activity” – Megan	Influence: meaningful	Yoga brings “context” to therapy
“I use it as a way for client to...continue rehab after their number of visits...to incorporate their affected side into everyday life” – Dara	Influence: continued recovery	
“I want them to...take on the work themselves...try to go to a yoga class in the area” - Beth	Influence: community reintegration	
“It’s really kind of amazing to watch people start to become more in control...getting them out of that fright or flight response” –Angie	Used for: psychosocial	Yoga addresses multiple needs after stroke
“Balance improvements...increased functional use of a hemiparetic limb” – Megan	Used for: physical	
“Start with...attention training and mindfulness...using the breath as a tool for attention” – Jessica	Used for: attention	

Subsequent interviews were read and coded by at least two researchers. Then, the researchers came together to discuss codes. Disagreements on codes were discussed until the researchers reached consensus. Throughout the coding process, the codebook was further refined or added to by the researchers. Then, all researchers came together to discuss common reoccurring ideas and develop themes. Themes emerged inductively through the process of analyzing reoccurring codes across interviews and combining codes into larger, meaningful categories (see Table 2). Direct quotes from participants were used to exemplify common themes.

To increase study rigor, data analyses occurred simultaneously as interview data were collected [52]. Interview questions were re-assessed to ensure questions were leading to adequate information. The primary researcher maintained a reflective journal throughout the analysis process to reflect on personal opinions, possible biases, and important realizations. Researchers also used peer review but confirming codes and themes with each other.

## **Results**

All (N=10) participants were white and female and reported having personal yoga experience; the majority identified as registered yoga teachers (80%) (see Table 1 for additional demographic information). Additionally, one OT (Beth) was also a yoga therapist. The OTs worked in a variety of settings including: acute; inpatient; outpatient; community; and private practice. The majority of OTs in this sample recommended additional training and knowledge prior to implementing yoga into occupational therapy. Pseudonyms were used for all therapist names.

**Table 4.3.** Demographic Information

Participant	Age	State	Setting	Yoga instructor?	Years personally practicing yoga	Years an OT	Years using yoga in OT practice
<i>Heather</i>	30	Arizona	Outpatient Community	Yes	10-20	1-3	1-3
<i>Amber</i>	36	Colorado	Acute	Yes	10-20	4-10	4-10
<i>Mindy</i>	41	Colorado	Acute	No	10-20	1-3	1-3
<i>Megan</i>	41	Colorado	Inpatient	No	> 20	1-3	1-3
<i>Dalia</i>	38	Alaska	Acute Inpatient SNF <sup>1</sup> Outpatient Community Psychiatric	Yes	> 20	1-3	1-3
<i>Angie</i>	N/A	Michigan	Acute Outpatient Private practice	Yes	4-10	10-20	1-3
<i>Beth</i>	48	California	Private practice	Yes	>20	>20	10-20
<i>Claire</i>	37	Florida	Inpatient Community	Yes	10-20	10-20	4-10
<i>Kathy</i>	28	Idaho	Inpatient and outpatient neuro-rehab	Yes	10-20	4-10	1-3
<i>Jessica</i>	36	Arizona	Outpatient	Yes	10-20	10-20	N/A

<sup>1</sup>Skilled Nursing Facility

Thematic analysis of the data revealed three key themes: (1) yoga promotes client-centered recovery; (2) yoga brings “context” to occupational therapy; and (3) yoga addresses multiple needs following stroke. Each key theme contained 3-5 subthemes (Table 2). These

themes and subthemes answered the question of why OTs integrated yoga into rehabilitation.

The following sections exemplify pertinent quotes to illustrate each theme.

**Table 4.4.** Key Themes and Subthemes

Key Theme	Subtheme
Yoga promotes client-centered recovery	Yoga is individualized to meet the client's needs and wants
	Yoga encourages client reflection
	Client-centeredness is guided by yoga philosophy
Yoga brings “context” to therapy	Yoga is “meaningful”
	Yoga is “active”
	Yoga promotes a “lifelong approach” to recovery
Yoga addresses multiple needs after stroke	Yoga prepares the body for movement
	Yoga reconnects the mind and body to bring body awareness
	Yoga addresses psychosocial elements
	Yoga supports self-acceptance

*Key Theme: Yoga Promotes Client-Centered Recovery*

Several OTs reported that yoga enhanced “client-centered” recovery. Being “client-centered” for OTs in this study implied promoting autonomy, choice, and a partnership between client and therapist. Using a client-centered focus, the OTs discussed individualizing yoga to each client based on their presentation of symptoms, daily environments, and personal needs. This “client-centeredness” guided evaluations and the use of yoga in treatment. Being “client-centered” also influenced the OTs choice to use yoga or not. Yoga was not “one size fits all”, but instead, OTs always brought the focus back to the client – how the client was feeling and experiencing symptoms and then the OT used this information to tailor yoga to the client’s current needs. As two OTs stated:

It really depends on the person...I do...an in depth...evaluation to see how are they moving...assessments to see if they have that internal awareness...then use those [assessments]...to create...a change in their body...I let it be client led, what's most important to them? What do they want to be doing? (Jessica)

The person themselves is still the expert about their own body and their experience...you have, as a practitioner, knowledge and advice...but ultimately they're the experts on themselves...you need to use...specific evaluations to be able to tease out...what they need separate from me and my practice and what I need. (Dalia)

Three subthemes emerged under “client-centered” recovery: (1) yoga is individualized to meet the client’s needs and wants; (2) yoga encourages client reflection; and (3) recovery is guided by yogic philosophy.

**Yoga is individualized to meet client’s needs and wants.** Often, the OTs choice to use yoga and what to focus on depended on the client’s current needs and situations. Client’s needs influenced OTs to make decisions about how to introduce and progress through yoga in treatment. Angie shared:

I try to meet people where they’re at, so if someone’s been stuck in a wheel chair for a year a half were gonna start in the wheel chair...then maybe go to the edge of the mat and do...modified quadruped [table top]...then from there we might...graduate to standing.

Individualization of yoga also included providing modifications that matched the client’s ability with the yoga element to allow the client to feel successful. By individualizing yoga to their client’s current needs, OTs targeted specific areas for treatment and made recovery relevant to the client. Dalia reported:

We would make a modification that’s appropriate for where the individual’s at based on their...flexibility, their balance, their perception of where they are in space, and their awareness of their body...it kind of depends on what the person can grab on to.

Additionally, several OTs referenced individualizing yoga based on clients’ current mood and abilities that day. Megan discussed altering her expectations on a day to day basis to make each session relevant to the client’s present needs. She said:

Meet your patient where they are that day...just because you did something one day and it was great, doesn't mean they wanna do yoga every day...just because they got up into a great posture...doesn't mean their gonna do it the next day...that's part of yoga...meeting them, and yourself, where you are that day.

**Yoga encourages client reflection.** OTs frequently described how yoga encouraged self-learning through a process of personal reflection. By allowing clients to communicate and understand feelings, OTs empowered clients to feel in control of their body. Client reflection gave autonomy to clients and permitted clients to be the “experts” of their body. Jessica said:

The main goal would be to teach them this process of self-reflection...the typical view point is that we're the expert and they're the patient...if you can switch your view point...to they are the expert of their body and you are the learner then you're asking them questions continually...where they become the expert...it really empowers that person...it gives them the responsibility.

Similarly, Angie described how her choice to use yoga was less about the actual poses and more about “how they feel in it”. She encouraged awareness and attention in her clients by prompting reflection both during and after yoga. OTs used specific cues to cultivate awareness and influence the client to reflect on how they felt both physically and emotionally during yoga.

**Client-centeredness is influenced by yoga philosophy.** Many OTs referenced the relationship between the philosophies and values of yoga and occupational therapy. Overlapping values include maintaining a holistic view of the individual, promoting community, and encouraging awareness and self-acceptance. Angie commented:

If you start to delve into yoga philosophy it really...does run pretty much parallel to what we do as OTs...the holism looking at the whole person and in their environment and in their bodies...and community...getting people back into their community and not stuck inside in their homes.

All OTs in this sample had personal experience with yoga and several expressed how yoga was a part of them, intertwined into what they did as OTs. Therefore, many OTs felt that yoga could not be separated from occupational therapy. Yogic philosophy personally influenced



many OTs and promoted a “presence” with their clients. This presence encouraged OTs to truly attend to their client and remain client-centered during treatment. Yoga philosophy guided how OTs both individualized yoga and cued clients. As Amber stated:

If someone’s gonna sit at the edge of the bed I would...first of all, not be doing lots of other things...I would...quiet down and talk to them about our goal...ask them to set aside everything...I might say...let’s just practice...in your mind...I want you to completely relax your body and then I might guide them through step by step.

*Key Theme: Yoga brings “context” to therapy*

Many OTs discussed how “context” was brought to therapy through yoga. The “context” provided through yoga promoted a meaningful, active, participatory, and life-long approach.

Heather reflected:

I consider yoga that purposeful activity that is meaningful to the patient...and they could do it at home...it becomes meaningful to them and it becomes part of their repertoire of what they’re doing in their life to get better.

As exemplified by the above quote, yoga brought “context” to rehabilitation because it provided meaning, could be a form of active recovery, and gave the client something to do after therapy ended if they chose to do so. Many OTs referenced the difference between yoga and other common techniques used in occupational therapy following stroke. Frequently, OTs chose to use yoga over other forms of therapy because yoga was “fun”, “meaningful”, and “purposeful” compared to other forms of therapy or exercise that are often used after stroke.

Other OTs spoke about how yoga permitted them to be intentional about the muscles they wanted activated or stretched while also providing variety for the client. In this way, yoga was a deliberate and engaging activity used to target the same benefits offered through repetitive movement. Dalia stated:

I might try yoga as a way to really be specific about what I’m doing...and offer repetition...[the patient is] not really focused on ‘oh my gosh this one muscle is just

getting hammered’...they think ‘gosh we did all these things’, but my inner therapist knows...I really went after that one target area using fifteen different approaches.

Context was reflected in three subthemes: (1) yoga is “meaningful”; (2) yoga is active and participatory; and (3) yoga promotes a “lifelong approach” to recovery.

**Yoga is “meaningful”.** Several OTs referred to yoga as a “meaningful” treatment technique because yoga was fun and enjoyable. The use of meaningful activities or occupations during rehabilitation is a common focus in occupational therapy. OTs frequently discussed that they chose to use yoga over other modalities because yoga could create meaning for the client compared to rote exercise. As two OTs stated:

I’m a big proponent of using modalities that are meaningful to people...I think [yoga is] more enjoyable for patients...it’s so all-encompassing...no matter what my goal is, if I’m doing yoga there’s a way to bring it into it and to them it feels more natural. (Kathy)

Using the tools and techniques of yoga, you can create meaning in everyday tasks. Using...different principles of yoga...to help [clients] find meaning even where it feels like the task might be meaningless. (Jessica)

**Yoga is “active”.** OTs spoke about yoga as an “active” rather than “passive” approach that clients could engage in during therapy. This active approach was beneficial for clients as they engaged in yoga and in their recovery, giving control over their rehabilitation. Actively engaging the client also promoted self-efficacy and confidence. Two OTs stated:

When people say modality to me that’s more of a passive approach, where the patients just checked out, they’re getting their arm ranged...and they’re just not really participating...yoga is more [active]. (Megan)

We’re gonna provide range of motion, but were gonna have them cognizantly aware of what we’re doing...beginning stages would look like gentle range of motion, but over time they will start to assist...learning to the subconscious to a point to say...‘hey I can do this’ this versus a therapist coming in and physically manipulating. (Claire)

**Yoga promotes a “lifelong approach” to recovery.** Many OTs referenced the extended benefits of yoga if clients continued yoga after rehabilitation. In fact, OTs often introduced yoga

with the goal of it becoming a personal practice for the client, in order to promote extended recovery over time. Yoga provided an ongoing context of continued recovery and self-exploration for many clients. Additionally, several OTs alluded to the barriers of insurance coverage during rehabilitation after a stroke. OTs felt that yoga was a means to continue recovery once insurance ended. Dalia explained:

I use [yoga] as a way for clients...to continue rehab...continue to make gains and to incorporate their affected side into everyday life...there would be...there was this gap that existed between where patients get to in their time with us and where they can get to on their own if they keep practicing.

In addition to promoting recovery over time, many OTs used yoga to initiate a healthy lifestyle change and promote community reintegration. OTs in this sample viewed yoga as a way to introduce a lifelong change to overall health and wellbeing in addition to promoting recovery. For some OTs, yoga was included in the home exercise program to continue recovery after the completion of therapy. Megan stated:

[Yoga is] giving them that link that you can continue to do this...somebodies not gonna go home and...pull clothes pins off something...they're not gonna lift their arm above their head 14 times, but they might go home and try and get into warrior two...get in shavasana...it's more of a participatory and lifelong approach.

OTs saw yoga as a way to illicit a lifestyle change for their clients. For Beth, her goal was that her clients would “take on the work themselves” and integrate yoga into their daily routines to promote health and wellness throughout the day. Beth described yoga as an “all day treatment” and described how she taught her clients to use yoga “from the minute they get up”.

*Key Theme: Yoga addresses multiple needs after stroke*

Across all interviews, OTs spoke to multiple symptoms of stroke addressed through yoga including: physical; emotional; cognitive; sensory; and physiological elements. OTs discussed how they considered yoga to be superior to other approaches used in post-stroke occupational

therapy. As one OT noted, the combination of various physical and psychosocial elements was of tremendous benefit to a client after stroke:

She was just so out of touch with her body...when we started doing...she understood where her body was in space...she felt like she was able to do more...her balance improved, her coordination improved, her symmetrical movement of both arms improved...the combination of all of them together is a huge benefit of yoga. (Kathy)

OTs also spoke about using yoga in a variety of different settings with people in varying stages of stroke. The OTs focus or decision to use certain yoga elements was influenced by the stage of their patient's stroke. Several acute care OTs shared that they incorporated certain aspects of yoga into the acute stages of stroke. Frequently used yoga elements in acute care included: breathing; coping strategies; relaxation techniques; and simple movements and stretches. Mindy commented:

People are seriously into the idea of doing yoga [in the hospital]...yoga is, for some, a form of exercise that they can conceive of doing in the hospital...so somebody says 'oh yeah I do yoga normally' I'll be like 'oh do you want to do it now...that's usually my first thing and then anxiety, pain, and low oxygen...just that need for stretch for somebody who's been in bed...since the last time I saw them 24 hours ago.

Subthemes identified under this theme included: (1) yoga prepares the body for movement; (2) reconnects the mind and body after stroke; (3) helps with emotional regulation; (4) brings body awareness; and (5) supports self-acceptance.

**Yoga prepares the body for movement.** OTs often discussed how yoga could aide in promoting and reestablishing functional movement for clients following a stroke. Yoga increased functional movement and "good posture" by making changes to the client's nervous system. For Beth, this was the purpose of using yoga interventions for her clients after stroke:

My whole thing is about brain retraining...let's say...they wanna put a shirt on...a big part of that is the seated yoga...doing cat cow...warrior two seated...camel seated...let's say they're standing and...we're working on standing balance...then we would be working on warrior one at the sink...as they're washing dishes or washing their face.

Additionally, several OTs chose to use specific yoga poses as preparation for movements their clients would likely do throughout their day. These “preparatory” movements could reinforce muscle memory when a client is performing a task in their daily life. For example, Dalia said:

If they have to bend over and get clothing out of the dryer, I might give them a preparatory yoga pose...I say, let's do this yoga pose...then I might... give them a laundry basket and say, ok now you've got to...set down the laundry basket...reach in the dryer...pull out some clothes, and you're gonna use that [yoga pose]...they're kind of scaffolding their learning as they go.

Additionally, Megan discussed how yoga promoted a functional pattern of movement which protected the client's body and increased their ability to perform necessary movements. She stated that many clients she works with “need to be able to use their arm” in a “normal pattern, not a compensatory pattern”. For OTs, yoga was beneficial in reestablishing and promoting functional movements necessary for completing daily activities.

**Yoga reconnects the mind and body to bring body awareness.** OTs frequently discussed how yoga linked the mind and the body and promoted body awareness following stroke. Body awareness was defined as understanding where one's body is in space. Re-establishing body awareness is important following a stroke so the client can effectively plan and initiate movements. Individuals with stroke are often unaware of where their body is in space, especially if an individual is experiencing any sort of neglect, this may lead to a mind-body disconnect. Yoga, with its emphasis on awareness, was often used to reconnect the mind and body. For example, Heather said:

[Yoga is] a really good opportunity to have them pay attention...I noted just increased awareness of their bodies...every pose...they can just constantly be checking in with that left hand and then also getting that proprioceptive awareness by weight bearing.

Similarly, Amber promoted body awareness by using specific language and cues that she attributed to yoga. Amber used cues to help her clients attend to different areas of their bodies before a transfer or action. For example, she would cue her clients to bring their attention to their feet if they were standing at the sink to help bring awareness and grounding.

By promoting body awareness, OTs aimed to increase not only their client's physical abilities, but also self-efficacy related to carrying out everyday tasks. Dalia used yoga to help her clients "gain strength and awareness" which would carry over into everyday actions. Similarly, Jessica combined yogic breathing with movements to encourage body awareness. She said:

Maybe they're taking...their left hand, and coordinating with breath the grasping, lifting, and releasing and then...bringing their attention to different sensations...then using mindfulness and breath to really try to get the person to respond and improve their awareness and attention...by cultivating that mindfulness...you're more aware of where your body is in space.

**Yoga addresses psychosocial elements.** Many OTs discussed using yoga to improve emotional regulation or management of mental health and psychosocial challenges post-stroke, such as: anxiety; depression; stress; anger; or sadness. Many individuals with stroke experience these symptoms in addition to more evident physical impairments, which can further limit participation in daily tasks. Therefore, addressing emotional regulation during rehabilitation can be beneficial for individuals post-stroke. OTs promoted emotional regulation by merging breath with movement, promoting relaxation through meditation, and integrating various breathing techniques that help control emotions, allowing clients to work through such feelings. Two therapists discussed:

I'm a big believer in...pranayama yoga breath...creating that crisis situation of 'oh my god I'm gonna fall, oh my god that hurt, oh my god my arm doesn't work' and just bringing that anxiety level down and approaching the movement...through the breath and just kind of that calming piece of it too. (Megan)

It's really kind of amazing to watch people start to become more in control. The first thing is parasympathetic dominance, getting them out of that fright or flight response...and into that relaxation, which actually gives them the ability to do more. (Angie)

OTs implied that emotional regulation strategies are tied to the holistic approach shared between yoga and OT. With stroke, as with many diagnoses, it is not always physical impairments limiting the individual's ability to participate in daily activities. Many OTs viewed yoga as the bridge that combines both physical and mental characteristics of the individual.

Amber said:

She's got enough strength, but her anxiety and depression are really getting in the way...it feels like [yoga is] getting back to some of the roots of OT in terms of mental health and the holism and that it's not just...hemiplegia affecting the reason why they can't get out of the bed, it's a lot of other things.

OTs primarily focused on psychosocial elements when integrating yoga into acute care settings. Features of yoga that were of focus in acute care included attention to breath, mindfulness, and meditation to reduce anxiety and stress associated with a new diagnosis. While physical movements were less accessible in acute care, OTs reported that their clients could still benefit from yoga practices at this stage of stroke.

**Yoga supports self-acceptance.** Many therapists expressed using yoga as a way to help clients accept the new diagnosis and re-form a personal identity. Megan noticed:

They're able to handle their panic and their sense of crisis...they're able to say 'alright this is what happened, this is what is today'...they're able to kind of deal with that ebb and flow and give themselves a little grace...meet themselves where they are.

Another OT discussed how, through yoga, clients were more open to trying new things because they had tools to manage their emotions and stress which, in turn, increased self-efficacy. Andy said:

Before doing yoga, there was a lot of self-limiting... 'no I can't do that'... 'no it hurts'...there was a lot of resistance to trying new things. When we brought the focus back into the breath...I found that they were more open to trying things.

## Discussion

The purpose of this qualitative study was to provide a description of the experiences of OTs integrating yoga into therapy for individuals with stroke. The current study provided insight into why occupational therapy has chosen to use this form of complementary medicine for individuals with stroke and how yoga reflects some of the core values of occupational therapy including client-centeredness, attention to context, and addressing the whole person. Based on these findings, yoga may be feasible at all stages of recovery because it is adaptable and integrates many areas affected after stroke. However, it is important to remain true to occupational therapy when considering integrating CIH into practice. Integrating yoga into occupational therapy should be done within the context of the occupational therapy process and should be consistent with the current needs, experiences, and values of the client [21].

Yoga interventions for stroke have been studied in the literature [13, 15, 16, 44], however, there is a lack of research exploring how or why yoga is being used by health care professionals to promote recovery following a stroke. To our knowledge, this is the first study describing why OTs have chosen integrate yoga into rehabilitation for stroke and the benefits of yoga from the perspective of the OT.

Interesting, 9 out of 10 OTs in this study were practicing yoga prior to being an OT and this may have influenced their decision to incorporate yoga into treatment for individuals with stroke. OTs in this study chose to use yoga because it supported individualized, specific recovery based on the client's current needs and many considered it a meaningful and active preparatory activity. These data suggest that OTs used yoga as a gentle form of exercise to target specific physical, emotional, and cognitive needs of the client. Additionally, yoga was regarded as a treatment technique that could be easily adapted based on client's needs (i.e. using props,



modified postures, or including seated poses). In this way, yoga could be used with any level of ability at any stage of stroke to promote recovery and active engagement in therapy.

In occupational therapy, preparatory activities are those which prepare the client for participation in daily activities, such as strengthening or balance training [9]. Findings from the current study suggest that OTs chose to use yoga because it was a preparatory activity that was meaningful, fun, and purposeful while targeting the same or similar goals as other rehabilitation strategies or modalities. For OTs in this study, yoga was more than a modality, it was something that gave clients purpose and meaning, both of which are focuses of OT.

These findings also support the “lifelong” benefits of continuing yoga practice such as prolonged recovery, engagement in meaningful activity, and introduction to community reintegration. While most individuals who experience a stroke are discharged home, only about 25% of those who return home return to prior functioning [54]. In one qualitative study, individuals with stroke reported feeling that rehabilitation following their stroke ended abruptly [7]. Additionally, Schmid et al. [15] found that individuals who received yoga in the chronic phases of stroke reported they would have liked to receive yoga soon after the onset of their stroke. Yoga provided clients an opportunity to continue rehabilitation and engage in activity after they were discharged home or when insurance coverage ended. OTs viewed yoga as an activity that clients could continue to use to promote physical recovery, regulate stress and emotions, and increase internal and external body awareness to increase participation in everyday activities. By incorporating yoga into their client’s daily routines, OTs discussed yoga as the occupation they were using in rehabilitation. Similarly, in a qualitative study by Atler, Van Puymbroeck, Portz, and Schmid [49] when yoga was merged with a group OT intervention (MY-

OT) for individuals with stroke, participants noted increased engagement in everyday activities. Increased engagement in everyday activities is a common focus in occupational therapy.

OTs chose to use yoga because it was something clients could do in their community to increase community engagement and social participation, both commonly addressed in occupational therapy [9]. Individuals who have experienced a stroke report the impact that impairments have on all areas of life including social isolation and pursuit of leisure opportunities [55]. Therefore, the inclusion of social and leisure opportunities offered through continued yoga practice could be beneficial for individuals who have experienced a stroke.

Yoga addressed, not only physical, but emotional, cognitive, and personal challenges following stroke. While the most common impairment noted following stroke is hemiparesis [3], many individuals with stroke are also left with cognitive, psychosocial, and emotional challenges that impact participation in daily activities [6, 25]. OTs were guided by the philosophies of both yoga and occupational therapy and viewed this combination of multiple elements as beneficial in promoting physical recovery, mental health, and overall participation in daily life following stroke.

Individuals with stroke have described their experience as a separation of the mind and body [56]. This mind-body disconnect can also be understood in terms of decreased: body awareness; emotional attachment to one's body; and acceptance of self [7]. Schmid, Miller, Puymbroeck, and Debaun-Sprague [17] discussed how yoga reconnects the mind and body and increases the individual's perception of their body and abilities following stroke to improve recovery. Similarly, in one qualitative study, individuals with stroke expressed how yoga helped to reestablish this connection between the mind and body, the subconscious and the conscious, which promotes acceptance of self and engagement in activities [7]. By encouraging client

reflection and promoting body awareness through yoga, OTs in the present study attempted to reconnect the mind and body of their clients.

The onset of a stroke has been described as a sudden and devastating experience that leads to feelings of loss of control [7]. Several OTs in this current study used yoga during acute and inpatient rehabilitation stages of stroke to reduce stress and mental health challenges (i.e. anxiety, depression), improve relaxation through meditation and breathing, and promote simple physical movements. Similarly, in a qualitative study conducted in inpatient rehabilitation, participants noted how yoga influenced recovery in areas of breathing, relaxation, and psychological wellbeing [19]. The findings reported by Schmid et al. [19] relate to the present study in that several OTs in this sample discussed the eight different limbs of yoga (i.e. asana, pranayama, etc.) and how clients could still participate in yoga by just focusing on the breath. Often, during acute stages of stroke, the mind and the breath were the first focus for OTs, to calm the nervous system and regulate stress and emotions.

### *Limitations*

While the purpose of qualitative research is not to provide generalizable data, but rather provides a description of experiences, the results in this study represent a small sample of OTs using yoga in practice and cannot be generalized to all OTs. The choice to use yoga was a personal choice for each OT based on their professional experience and the needs of their clients. These results do not aim to represent all OTs, but to describe a sample that are using yoga in occupational therapy for individuals post-stroke. Additionally, most OTs in this study identified as registered yoga teachers and many had years of experience in yoga prior to integrating yoga into practice. While these findings serve to describe the experiences of these OTs, the results are not sufficient enough to teach other OTs how to integrate yoga into occupational therapy. This

sample of OTs recommended having training and experience prior to integrating yoga into practice.

## **Conclusion**

CIH approaches are gaining distinction as alternative and integrative methods to treating chronic conditions, including stroke. Based on the current study, OTs are successful at integrating yoga into therapy for individuals with stroke. The focus on the individual, attention on psychosocial and mental health, and matching activity with the abilities of the individual are just a few overlapping themes between yoga and occupational therapy. Integrating yoga into rehabilitation should be done within the context of the setting and values of the profession and the client [21]. Like OTs in this study recommended additional knowledge and training, so did the AOTA [21]. AOTA contends that OTs are responsible for obtaining knowledge and training to ensure CIH, like yoga, are integrated safely and effectively into practice.

Yoga, as a CIH approach, is being integrated into OT practice for individuals with stroke. OTs perceive that yoga may be a beneficial adjunct therapy for this population because yoga addresses aspects of physical, emotional, and mental health while also promoting continued engagement in rehabilitation and community reintegration. Future research should explore outcomes of yoga for individuals with stroke to support targeted outcomes when used by OTs. Additionally, future research should how yoga is integrated into different settings or stages of stroke rehabilitation to serve as guidelines for using yoga for stroke in occupational therapy.

## CHAPTER 5: CONCLUSION

Given the number of individuals experiencing stroke and resulting, lasting challenges, studies that examine effective rehabilitation will be beneficial in informing best practice. Additionally, as CIH approaches continue to gain popularity in Western medicine to treat chronic conditions such as stroke, it is imperative that the methods of integration and benefits of these CIH continue to be examined. The purpose of this study was to describe why OTs use yoga in practice for this population. Based on the findings reported above, OTs may choose to use yoga because: it is client-centered and can be modified to address specific needs of the individual; provides meaning and purpose to preparatory methods; can become part of the client's routine to promote healthy lifestyle, community integration, and continued rehabilitation; and addresses multiple deficits (i.e. physical, emotional, cognitive) that are impacted after stroke.

### **Implications for occupational therapy**

Based on the current study, OTs are currently integrating yoga into occupational therapy for individuals with stroke. The focus on the individual, attention on psychosocial and mental health, and matching the activity (i.e. yoga) with the abilities of the individual are just a few overlapping philosophies between yoga and occupational therapy. It is important, however, to remain true to occupational therapy when considering integrating CIH into practice. Integrating yoga into occupational therapy should be done within the context of the occupational therapy process and should be consistent with the current needs, experiences, and values of the client [21]. Additionally, the American Occupational Therapy Association (AOTA)[21] states that individual OT practitioners are responsible for obtaining knowledge and training to ensure CIH, like yoga, are integrated safely and effectively into practice. However, the addition of yoga to

occupational therapy could be beneficial for individuals that have experienced a stroke because it addresses and combines physical, emotional, and psychosocial areas affected following a stroke. Additionally, yoga may be an appropriate modality or preparatory task to promote active engagement in rehabilitation and participation in daily occupations for individuals with stroke.

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## APPENDIX A

### Interview Questions

1. What has influenced your choice to incorporate yoga into your practice?
  - a. How do your experience influence how you think about/administer yoga?
  - b. What's your experience with yoga? How has that influenced you?
2. How is it you came to incorporate yoga into your intervention practice for individuals with stroke?
3. What has yoga done for people with stroke? What are the outcomes that you've seen?
  - a. What are the benefits and potential disadvantages of incorporating yoga into treatment for individuals with stroke?
  - b. Benefits and disadvantages
4. In what instances has yoga been less than beneficial? Why?
5. What yoga practices do you find most beneficial in treatment sessions with clients with stroke (postures, breathing, meditation)?
  - a. Are there certain aspects of yoga you use vs. don't use?
  - b. What leads you to make these decisions?
6. What do you notice beyond the symptoms of stroke when incorporating yoga?
  - a. Looking for activity level
7. Based on your client population, do you feel you have to reframe "yoga"?/ Describe a client who has had a stroke that you worked with you was not as accepting to yoga?
  - a. How do your client's respond when you incorporate yoga into treatment?
  - b. How do you explain what yoga is/how it works? Do you think it's important?
  - c. Are there times you combine this with what occupational therapy is?
    - i. It is preparatory? Is it coping strategies? Is it developing a new occupation
8. Describe a treatment session using yoga with an individual with stroke.
9. How do you incorporate yoga into your session?
10. Do you prefer to implement yoga in group settings or one on one?
  - a. If they do both: which do you find more meaningful/impactful? Or are both the same?
  - b. If they do group setting: how does the influence of others change outcomes?
  - c. If you could give any tips to other OTs that want to use yoga in practice what would those be?
11. Describe your understanding of the connection between OT and yoga.
12. We've talked about using yoga and integrating it. If you could give any tips to practitioners who want to use yoga with their clients with stroke what would those be? (do we have any in mind? Need some key words to think about different directions)
13. Do you talk about yoga theory during intervention? If so what parts do you use?
14. What types of reactions do you get from clients when incorporating yoga into interventions?
15. What (if any) knowledge or experience do you recommend practitioners have before incorporating yoga into therapy?
16. How does your setting influence your choice to use yoga/others acceptance of yoga in practice?