Pastors' readiness to change their physical activity behavior: A qualitative study based on the Transtheoretical Model

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PASTORS’ READINESS TO CHANGE THEIR PHYSICAL ACTIVITY BEHAVIOR: A QUALITATIVE STUDY BASED ON THE TRANSTHEORETICAL MODEL

by

Nathan Tucker West

A Dissertation
Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

Major: Social and Behavioral Sciences

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First and foremost, to my wife, Rachel, thank you. Without your love, support, and willingness to speak truth, I am not sure any of this would have been possible. Regardless of how much I have talked about the doctoral process, you have always chosen to listen and have been willing to help me work through problems. Your grit, selflessness, and heart are an inspiration to me and to everyone around you. In all honesty, this degree is just as much yours as it is mine. You embody what it means to be a true follower of Jesus Christ.

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Engaging in the recommended amounts of physical activity (i.e., 150 minutes of moderate-to-vigorous physical activity/week) has many health benefits; yet only half of the United States (US) adult population meets this recommendation. Low physical activity engagement may be partially attributable to individual, social, and environmental barriers and factors. Barriers to meeting physical activity recommendations have been found among Christian clergy (i.e., clergy). In addition, clergy report a high prevalence of obesity, some non-communicable diseases and mental health problems. However, only a few studies have examined physical activity among clergy using a theory-guided approach, which limits our understanding of perceptions and the strategies used to mitigate existing barriers to being active. This study was guided by the Transtheoretical Model to better understand the perceptions of physical activity barriers, benefits, and motivators among clergy at different levels of physical activity readiness to change. In-depth interviews were conducted with currently employed clergy \( N = 27 \) who were categorized into different stages of change based on their responses to the Physical Activity Stages of Change Questionnaire. Interpretation of findings were based upon informed grounded methodology. The major themes that emerged from the data were: 1) Clergy’s relationship with physical activity (e.g., perception, types of physical activity); 2) Benefits received from engaging in physical activity; 3) Physical activity specific cons or barriers impeding physical activity engagement; 4) Individualized strategies clergy use to mitigate existing physical activity barriers; 5) Motivators influencing clergy’s willingness to be physically active; and 6) Facilitators that enable clergy to engage in physical activity. Findings from this study showed a shift in the
relative balance of barriers of and facilitators to physical activity, particularly in the later stages of change. Moreover, study findings have important implications for future health promotion efforts among clergy, as it is evident that access (e.g., geographic location), policy-level changes (e.g., denominationally) and support (e.g., environment, family, church) may help clergy initiate or maintain their physical activity behavior. These findings also suggest the need for future clergy health behavior change to use theoretical frameworks that account for the individual, social, and environmental factors influencing physical activity engagement.
TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION ........................................................................................................ 1
  Physical Activity .................................................................................................................. 1
    Definition and Guidelines ............................................................................................... 1
    Physical Activity Benefits .............................................................................................. 2
    Physical Activity Barriers .............................................................................................. 7
  Clergy ................................................................................................................................. 10
    Clergy Role ...................................................................................................................... 11
    Clergy Health .................................................................................................................. 12
    Clergy Physical Activity ............................................................................................... 14
    Clergy Physical Activity Barriers .................................................................................. 18
    Clergy Physical Activity Intervention ........................................................................... 20
  Literature Gaps .................................................................................................................. 22
  Conceptual Framework ..................................................................................................... 24
    Transtheoretical Model of Health Behavior Change ..................................................... 24
    TTM Constructs Predicting Physical Activity Behavior ................................................. 29
    Application of TTM to Physical Activity Behavior Change ........................................ 31
    Qualitative Application of TTM ..................................................................................... 33
  Rationale for Conceptual Framework and Study Design .................................................. 37
  Study Purpose ................................................................................................................... 38
  Research Questions .......................................................................................................... 38

CHAPTER 2: METHODS ......................................................................................................... 39
  Study Design ...................................................................................................................... 39
  Rationale for Informed Grounded Theory ....................................................................... 39
  Study Population and Recruitment .................................................................................. 41
  Sample Size Rationale ..................................................................................................... 41
  Topic Guide Development ............................................................................................... 41
  Study Procedures & Data Collection ............................................................................... 42
  Data Analysis .................................................................................................................... 43
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Coding</td>
<td>43</td>
</tr>
<tr>
<td>Focused Coding</td>
<td>44</td>
</tr>
<tr>
<td>Final Coding</td>
<td>45</td>
</tr>
<tr>
<td>Rigor/Trustworthiness</td>
<td>45</td>
</tr>
<tr>
<td>Credibility</td>
<td>46</td>
</tr>
<tr>
<td>Confirmability</td>
<td>46</td>
</tr>
<tr>
<td>Dependability</td>
<td>46</td>
</tr>
<tr>
<td>Transferability</td>
<td>47</td>
</tr>
<tr>
<td>Memo Writing</td>
<td>47</td>
</tr>
<tr>
<td>Reflexivity</td>
<td>47</td>
</tr>
<tr>
<td>Ethical Issues</td>
<td>48</td>
</tr>
<tr>
<td>Incentives</td>
<td>48</td>
</tr>
<tr>
<td>Data Security, Privacy, and Confidentiality</td>
<td>48</td>
</tr>
<tr>
<td>CHAPTER 3: RESULTS</td>
<td>50</td>
</tr>
<tr>
<td>Sample Characteristics</td>
<td>50</td>
</tr>
<tr>
<td>Qualitative Themes</td>
<td>53</td>
</tr>
<tr>
<td>Physical Activity Relationship</td>
<td>53</td>
</tr>
<tr>
<td>Benefits</td>
<td>55</td>
</tr>
<tr>
<td>Barriers</td>
<td>56</td>
</tr>
<tr>
<td>Strategies Used to Mitigate Barriers</td>
<td>62</td>
</tr>
<tr>
<td>Physical Activity Motivators</td>
<td>63</td>
</tr>
<tr>
<td>Physical Activity Facilitators</td>
<td>66</td>
</tr>
<tr>
<td>CHAPTER 4: DISCUSSION</td>
<td>77</td>
</tr>
<tr>
<td>Overview of Study Purpose and Findings</td>
<td>77</td>
</tr>
<tr>
<td>Physical Activity Perception</td>
<td>78</td>
</tr>
<tr>
<td>Decisional Balance</td>
<td>79</td>
</tr>
<tr>
<td>Pain/Injury &amp; the TTM</td>
<td>79</td>
</tr>
<tr>
<td>Environment &amp; the TTM</td>
<td>80</td>
</tr>
<tr>
<td>Strategies Used to Mitigate Barriers</td>
<td>82</td>
</tr>
</tbody>
</table>
Physical Activity Motivators & Facilitators ...................................................... 83
  Confidence ........................................................................................................ 83
  Processes of Change ...................................................................................... 84
Strengths ............................................................................................................ 85
Limitations ........................................................................................................... 85
Conclusions ......................................................................................................... 86
REFERENCES ..................................................................................................... 87
APPENDIX A ...................................................................................................... 100
  Measure 1. Demographic Survey ................................................................. 101
  Measure 2. Physical Activity Stages of Change Questionnaire ................. 101
  Measure 3. Topic Guide ............................................................................. 102
APPENDIX B ..................................................................................................... 103
  University of Memphis Institutional Review Board ..................................... 104
  Informed Consent ...................................................................................... 105
CHAPTER ONE: INTRODUCTION

Physical Activity

Definition and Guidelines

Physical activity is defined as any bodily movement leading to energy expenditure (Physical Activity Guidelines Advisory Committee [PAGAC], 2018), whereas exercise is planned and structured activity intended to improve health and physical fitness (PAGAC, 2018). There are three main forms of physical activity: aerobic or endurance activity (e.g., brisk walking, running), muscle-strengthening (e.g., weightlifting), and bone-strengthening or weight-bearing (e.g., running, jumping jacks) (PAGAC, 2018). Physical activity can be measured in time spent in the activity (e.g., min/week, hr/week), intensity (e.g., light, moderate, vigorous) or in metabolic equivalents (METs), which is a unit of energy expenditure adjusted for body mass (Woodcock, Franco, Orsini, & Roberts, 2011). Moreover, national recommendations suggest individuals engage in at least 150 minutes/week of moderate intensity aerobic physical activity (brisk walking, yoga, yard work), 75 minutes/week vigorous aerobic intensity (jogging or running, high-intensity interval training, jumping rope, swimming laps), or a combination of both (PAGAC, 2018).

Physical Inactivity

The prevalence of US adults meeting the physical activity recommendations (i.e., physical inactivity), is approximately 53% (Clarke, Norris, & Schiller, 2019). Moreover, the prevalence of US adults engaging in no physical activity outside of work is approximately 25% (Centers for Disease Control and Prevention, 2022). Physical activity engagement also varies in prevalence across states, race/ethnicity and regions. In the US, the percentage of adults who meet the criterion for physical inactivity ranges from 17% (Colorado) to 48% (Puerto Rico) (CDC,
2022). Additionally, Hispanic (32%) and non-Hispanic Black (30%) adults have the highest prevalence of no activity engagement outside of work, especially when compared to non-Hispanic White adults (23%) (CDC, 2022). The Southern region of the US had the highest prevalence of no physical activity engagement outside of work (28%), when compared to the Northeast (26%), Midwest (25%) and West (21%) regions (CDC, 2022). In light of this, previous research has labeled physical inactivity in the US a “pandemic” (Kohl et al., 2012).

**Physical Activity Benefits**

**Physical Health**

There is decades of high-quality evidence that at least 150 minutes/week of moderate activity or 75 minutes/week of vigorous activity reduces mortality, particularly when compared to being physically inactive (PAGAC, 2018). This finding was documented in a meta-analysis of 22 cohort studies (\(N = 977,925\); men = 334,738; women = 643,187) examining associations between meeting the moderate physical activity intensity guideline and mortality rate (Woodcock et al., 2011). This study included adults representing several countries (e.g., United States (US), Sweden, Canada, China) with follow-up times ranging from 4 to 25 years. Individuals engaging in approximately 150 minutes/week of moderate physical activity, compared to physically inactive individuals, had a 19% (adjusted Relative Risk [ARR]: 0.81, 95% CI: 0.76, 0.85) reduced mortality rate. Additionally, a prospective cohort study of middle-to older-aged US adults (\(N = 252,925\); person follow-up years = 1,265,347) found individuals meeting the vigorous physical activity recommendation, compared to inactive individuals, had a reduced risk for all-cause (ARR: 0.68; 95% CI: 0.64, 0.73), cardiovascular (ARR: 0.67; 95% CI: 0.60, 0.75), and cancer mortalities (ARR: 0.87; 95% CI: 0.79, 0.96) (Leitzmann et al., 2007).
According to the PAGAC, engaging in a combination of moderate-to-vigorous-intensity physical activity (MVPA) (e.g., 150 minutes/week) is also associated with reduced risk of incident obesity and noncommunicable diseases. A prospective cohort study of Australian adults ($N = 12,873$; follow-up = 12 months) found physically inactive adults, who were not obese in the previous year, were at an increased risk for incident obesity, when compared to physically active adults (ARR: $1.30$; 95% CI: $1.30 – 1.69$; $p = .05$) (Montgomerie, Chittleborough, & Taylor, 2014). Of note, normal-weight and obesity are defined as having a body mass index (BMI) of 18.5 to $< 25 \text{ kg/m}^2$ and $\geq 30 \text{ kg/m}^2$, respectively (National Heart Lung Blood Institute [NHLBI], 1998). Additionally, a cohort study of British adults ($N = 3,670$; follow up = 5 and 10 years) found individuals engaged in an intermediate physical activity volume (1.56 – 4.25 h/week), when compared to individuals engaged in a low physical activity volume (0 – 1.50 h/week), were less likely to be obese at the 10-year follow-up (adjusted Odds Ratio [AOR]: 0.66; 95% CI: 0.47, 0.91) (Bell et al., 2014). Moreover, a study of US adults ($N = 383,928$) examined the cross-sectional associations of self-reported physical activity and chronic health conditions (Bennie, De Cocker, Teychenne, Brown, & Biddle, 2019). Individuals meeting the minimum MVPA guidelines, when compared to individuals not meeting the guidelines, were at reduced risk for: hypertension (adjusted Prevalence Ratio [APR]: 0.87; 95% CI: 0.86 – 0.89), high cholesterol (APR: 0.94; 95% CI: 0.92 – 0.95), diabetes (APR: 0.70; 95% CI: 0.68 – 0.71), coronary heart disease (APR: 0.79; 95% CI: 0.76 – 0.81), and chronic obstructive pulmonary disease (APR: 0.57; 95% CI: 0.56 – 0.59).

MVPA and vigorous activity (alone) have been shown to accrue the most health benefits even when accumulated below the recommendations. These findings were documented in a meta-analysis of prospective cohort studies (avg. follow-up = 9.8 years) examining the dose
response of MVPA on mortality risk among older adults ($N = 122,417$) (Hupin et al., 2015). Findings suggest, when compared to physically inactive adults, both a low dose of MVPA (e.g., 1-499 MET-min/week) and 150 minutes/week of MVPA resulted in a 22% (ARR: 0.78, 95% CI: 0.71 – 0.87) and 28% (ARR: 0.72, 95% CI: 0.65 – 0.80) mortality reduction, respectively.

Moreover, a prospective cohort study ($N = 416,715$; avg. follow-up: 8.05 years) of Taiwanese adults also found benefits of lower-than-recommended levels of vigorous intensity physical activity engagement (Wen et al., 2011). For example, individuals engaged in a low volume of vigorous activity (e.g., 3.75-7.49 MET-hr) when compared to inactive individuals, saw a 27% (adjusted Hazard Ratio [AHR]: 0.73, 95% CI: 0.54–0.98) reduction in all-cause mortality.

Several mechanisms for the long-term health benefits of physical activity have been determined from lab/experimental studies. A meta-analysis of 20 acute, mechanistic, light-intensity physical activity studies (1.5 – 3.0 METs) showed statistically significant acute reductions in postprandial glucose (-17.5%; 95% CI: -26.2 to -8.7) from bouts of at least two minutes and sedentary behavior interruption every 20 minutes, particularly among metabolically impaired individuals (Chastin et al., 2019). Findings from these studies also showed statistically significant acute reductions in postprandial insulin levels (-25.1%; 95% CI -31.8, -18.3) following light-intensity physical activity, when compared to controls (sitting > 7 hours/day).

Additionally, a meta-analysis of 11 randomized physical activity trials ($N = 1,250$, range of trial duration = 2 – 12 months) found significantly reduced inflammatory markers for the aerobic exercise groups including: C-reactive protein ($n = 7$ studies; standardized mean difference [SMD] = 0.53, 95% CI = 0.26, 0.81, $p = 0.0002$), tumor necrosis factor-alpha ($n = 5$ studies; SMD = 0.75, 95% CI = 0.31, 1.19, $p = 0.0007$), and interleukin 6 ($n = 6$ studies; SMD = 0.71, 95% CI = 0.24, 1.17, $p = 0.003$) (Zheng et al., 2019).
Mental Health

Along with physical health benefits, meeting the PAGAC recommendation provides general mental health benefits. In a cross-sectional analysis of health-related quality of life (HRQOL) \((n = 5,630 \text{ US adults})\), individuals meeting the PAGAC recommendations, compared to individuals not meeting the recommendations, had a more positive perception of their mental health (e.g., mood) \((\text{AOR: 1.59; 95\% CI: 1.19, 2.12})\) (Hart, Benavidez, & Erickson, 2017). This finding was also documented in a cross-sectional analysis of a national sample of US adults \((N = 303,480)\) (Fluetsch, Levy, & Tallon, 2019). Individuals who were active (e.g., 150-300 min/week), when compared to inactive individuals (e.g., 0-10 min/week), were more likely to report less poor mental health days (e.g., anxiety, depression, stress) \((-1.28 \text{ days/month, } p < .0001\)) after adjusting for: age, gender, race, education, employment, income, and weight status.

Engaging in the recommended amounts of MVPA also provides protective effects from anxiety and anxiety symptoms. This finding was documented in a meta-analysis of 14 prospective cohort studies \((N = 75,831; \text{ avg. follow-up = 3.5 years})\) examining anxiety outcomes among mostly adult samples \((n = 73,330 \text{ adults}; n = 2,501 \text{ children/adolescents})\) from four continents (Asia, North America, Europe, Oceania) (Schuch et al., 2019). Within this meta-analysis, three cohort studies \((n = 42,692)\) found that those engaging in recommended MVPA, compared to physically inactive individuals, had reduced risk for incident anxiety \((\text{AOR: 0.71; 95\% CI: 0.54, 0.94; } p = .031)\). Additionally, cross-sectional findings from the Swedish National March Cohort \((N = 43,863)\) showed individuals meeting the recommendation, when compared to physically inactive individuals, had reduced odds of reporting anxiety symptoms \((\text{AOR: 0.76; 95\% CI: 0.68, 0.86; } p < .001)\) (Hallgren et al., 2019).
Additionally, meeting the recommended amounts of MVPA is associated with reduced depression and depressive symptoms. A cross-sectional analysis of US adults \((N = 383,928)\) found that meeting the recommended MVPA guidelines, compared to not meeting the guidelines, had a negative association with depressive disorder diagnosis \((\text{APR: 0.72; 95\% CI: 0.71, 0.73})\) (Bennie, De Cocker, et al., 2019). This finding also was documented in a meta-analysis of 49 prospective cohort studies \((N = 266,939)\) among mostly adult samples \((n = 261,185 \text{ adults}; n = 5,754 \text{ children/adolescents})\) from different continents (Asia, North America, Europe, Oceania) (Schuch et al., 2018). Meeting the recommendation, compared to not meeting, was associated with a reduced risk for incident depression over an average seven years of follow-up \((\text{AOR: 0.78; 95\% CI: 0.61, 0.98; } p = .038)\). Moreover, physical activity is associated with reductions in depression across levels of severity. A cross-sectional study of US adults \((N = 17,839; \text{response rate: 47\%})\) found that meeting the MVPA recommendation, compared to not meeting, was associated with reduced odds of mild \((\text{APR: 0.63; 95\% CI: 0.57, 0.69})\), moderate \((\text{APR: 0.44; 95\% CI: 0.37, 0.53})\), and moderately severe/severe depressive symptoms \((\text{APR: 0.38; 95\% CI: 0.30, 0.48})\) (Bennie, Teychenne, De Cocker, & Biddle, 2019).

Along with reducing anxiety and depression, engaging in more MVPA can reduce perceived stress and “burnout”. Of note, burnout is found among individuals, who primarily work with or care for others, and is characterized by experiencing emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, 1993). This finding was documented in a prospective cohort study of Swedish health-care and social insurance workers \((N = 3,114; \text{follow-up = 2 years})\) (Jonsdottir, Rödjer, Hadzibajramovic, Börjesson, & Ahlborg Jr, 2010). At baseline, individuals engaged in MVPA, compared to sedentary individuals (e.g., no physical activity), had a lower prevalence of high perceived stress \((\text{PR:0.46; 95\% CI: 0.36, 0.59})\).
and high perceived burnout (PR: 0.40; 95% CI: 0.32, 0.50). At the two-year follow-up, individuals engaged in MVPA, compared to sedentary individuals, were at a reduced risk for high perceived stress (Adjusted Relative Risk [ARR]: 0.40; 95% CI: 0.27, 0.59) and high burnout (ARR: 0.43; 95% CI: 0.28, 0.64).

Conclusions

The evidence suggests that meeting the minimum aerobic physical activity recommendations reduces the risk of mortality, obesity, non-communicable diseases, mental health outcomes (e.g., anxiety, depression, stress) and can improve health-related quality of life. Also, achieving some activity that doesn’t reach the 150-minute threshold has health benefits. Knowing this, physical activity provides substantial health benefits and is modifiable, yet physical activity remains a complex behavior due to barriers (e.g., personal, social, environmental) influencing physical activity engagement.

*Physical Activity Barriers*

**Psychological**

There are common barriers that hinder an individual’s ability to maintain physical activity or meet the physical activity recommendations, particularly psychological barriers. For example, a systematic review of reviews including 980 primary studies ($N = 25$) identified psychological correlates (i.e., cross-sectional associations) and determinants (i.e., prospective) influencing physical activity engagement and maintenance (Choi, Lee, Lee, Kang, & Choi, 2017). Within this review, some studies found that psychological correlates such as perceived work demands (e.g., high job strain), lack of time, and fatigue had negative influences in physical activity engagement. Findings also showed psychological determinants such as stress, perceived poor health status, and self-efficacy (i.e., confidence) were both negative and positive
influences on physical activity over time. Additionally, a systematic review of physical activity correlates ($N = 38$; cross-sectional: $n = 31$; longitudinal: $n = 7$) found lack of time to be negatively associated with physical activity engagement whereas enjoyment, motivation, expected benefits and confidence were positively associated with physical activity engagement (Trost, Owen, Bauman, Sallis, & Brown, 2002).

Moreover, direct associations between psychological barriers and physical activity engagement have been found in cross-sectional studies. For example, a cross-sectional study of US adults ($N = 1,818$; response rate = 61%) found psychological barriers such as a lack of time (AOR: 0.58; 95% CI: 0.46, 0.75), being too tired (AOR: 0.56; 95% CI: 0.43, 0.73), poor health (AOR: 0.60; 95% CI: 0.42, 0.85), lack of energy (AOR: 0.46; 95% CI: 0.33, 0.64), lack of motivation (AOR: 0.58; 95% CI: 0.43, 0.78), and a lack of enjoyment from exercise (AOR: 0.62; 95% CI: 0.45, 0.64) were negatively associated with meeting the recommended amount of moderate or vigorous intensity physical activity (Brownson, Baker, Housemann, Brennan, & Bacak, 2001). Similarly, in a cross-sectional study of Australian adults ($N = 1,332$; response rate = 46%) (Salmon, Owen, Crawford, Bauman, & Sallis, 2003), individuals reporting being too tired (AOR: 0.5; 95% CI: 0.4, 0.8; $p < .001$) or work commitments (AOR: 0.6; 95% CI: 0.4, 0.9; $p = .009$) were less likely to meet the US physical activity recommendations.

Social

There are also a range of social factors (e.g., socio-economic status [SES], educational attainment, marital status) that influence physical activity engagement (Choi et al., 2017; Herazo-Beltrán et al., 2017; McNeill, Kreuter, & Subramanian, 2006; Sallis et al., 2016). For example, a systematic review found higher educational attainment and income were positively associated with physical activity engagement (Choi et al., 2017). Findings also showed a long-
term negative association between family obligations (e.g., having a child) and physical activity levels. Another systematic review of cross-sectional studies ($N = 197$; adult studies: $n = 124$; children/adolescent studies: $n = 73$) found mixed evidence that having higher educational attainment was positively associated with physical activity engagement (Sallis et al., 2016).

Direct associations have been found between social factors and barriers to physical activity engagement. For example, in a cross-sectional study of Colombian adults ($N = 2,103$) (Herazo-Beltrán et al., 2017), individuals with low to middle SES, compared to high SES, were more likely to report inadequate motivation (AOR: 1.76; 95% CI: 1.4, 2.1) and lack of resources (AOR: 1.37; 95% CI: 1.1, 1.6) as barriers to engaging in physical activity. Additionally, individuals with lower educational attainment, compared to higher educational attainment, were more likely to report inadequate motivation (AOR: 1.38; 95% CI: 1.2, 1.7), fear of injury (AOR: 2.70; 95% CI 2.2, 3.3), lack of skill (AOR: 3.27; 2.6, 4.0), and lack of resources (AOR: 2.78; 95% CI: 2.2, 3.3) as barriers to physical activity. Moreover, individuals who were married or living with a partner, compared to single individuals, were less likely to report inadequate motivation (AOR: 0.54; 95% CI: 0.4, 0.7), fear of injury (AOR: 0.44; 95% CI: 0.3, 0.5), lack of skill (AOR: 0.35; 95% CI: 0.2, 0.4), and lack of resources (AOR: 0.38; 95% CI: 0.2, 0.4) as physical activity barriers.

Environmental

While common physical activity barriers exist (e.g., lack of time, limited accessibility, inadequate motivation, poor social support, and the lack of skill and energy) (Centers for Disease Control and Prevention, 2020), differences also become visible when environmental factors are examined (Bauman et al., 2012; Choi et al., 2017; Duncan, Spence, & Mummery, 2005; Spiteri et al., 2019). One systematic review ($N = 62$) examined the impact occupational factors have on
physical activity (Kirk & Rhodes, 2011). In this review, six studies found a negative association between higher total work hours (e.g., ≥ 45 hours/week) and physical activity levels.

Systematic reviews of both cross-sectional (Sallis et al., 2016) and longitudinal studies (i.e., ≥ 6 months) (van Stralen, De Vries, Mudde, Bolman, & Lechner, 2009) have shown perceived access to physical activity facilities had a positive influence on physical activity engagement. Additionally, this was found in a meta-analysis of cross-sectional studies ($N = 16$) examining the associations between environmental characteristics and physical activity engagement (Duncan et al., 2005). Findings indicated individuals were more likely to be physically active when they reported access to sidewalks (AOR: 1.29, 95% CI: 1.17-1.41), physical activity facilities (AOR: 1.20, 95% CI: 1.06-1.34), and less heavy traffic (AOR: 1.22, 95% CI: 1.08 – 1.37). In contrast, another cross-sectional study among Australian adults ($N = 2,194$; response rate = 11.5%) found that a lack of facilities (AOR: 1.10; 95% CI: 1.01, 1.23) were associated with not engaging in the recommended levels of MVPA (Cerin, Leslie, Sugiyama, & Owen, 2010).

Conclusions

The evidence provided suggests that common physical activity-specific barriers exist but may vary in the type (e.g., psychological, social, environmental). Physical activity is a complex behavior, with a variety of barriers contributing to the high prevalence of physical inactivity. With that said, a population that has reported some physical activity barriers is that of Christian clergy.

Clergy

Currently, there are nearly a quarter-million clergy in the US (Bureau of Labor Statistics, 2017). Christian clergy respond to a “call” to serve in ministry and as leaders in the church
Therefore, instead of pursuing a career, this “calling” is considered a vocation (Joynt, 2017; Nel & Scholtz, 2016). When pursuing full-time ministry, many Christian clergy receive additional education (45%) (e.g., seminary, bible school) before pursuing full-time ministry (Brown, Brown, & Kinnaman, 2017).

**Clergy Role**

Approximately 71% of individuals in the US self-identify as Christian and 47% report attending religious services at least once per week (Pew Research Center Religion & Public Life, 2014). Knowing this, Christian clergy are considered opinion-leaders (Campbell et al., 2007) and have the potential to influence a large segment of the general US population by role modelling healthy lifestyles and behaviors (Campbell et al., 2007; Harmon, Strayhorn, Webb, & Hebert, 2018). For example, clergy engaged in healthy behaviors (e.g., diet, physical activity) are also more likely to deliver health promotion messages from the pulpit (Webb & Bopp, 2017a) and promote health promotion programming in their church (Harmon, Blake, Armstead, & Hébert, 2013). Previous research has shown buy-in from clergy is essential to the success of faith-based health promotion (Baruth, Bopp, Webb, & Peterson, 2015; Bopp, Baruth, Peterson, & Webb, 2013; Campbell et al., 2007).

Even though clergy health behaviors play a role in the communities they serve, their role in and the characteristics of this “helping profession” can impede their engagement in positive health behaviors (e.g., physical activity). The work of clergy has been categorized as being done for a “greedy” institution (Coser, 1974), due to the necessity of meeting the needs of congregants past “regular business hours” and in the midst of personal time (Ferguson, Andercheck, Tom, Martinez, & Stroope, 2015). Additionally, the sedentary nature of the clergy vocation may also contribute to low engagement in physical activity (Proeschold-Bell & LeGrand, 2012; Terry &
Cunningham, 2020b). Furthermore, unlike the general population, studies examining clergy have not widely reported the beneficial effects of meeting the physical activity guidelines as some studies have reported a prevalence of obesity among clergy similar to or higher than the US adult population (42%) (Hales, Carroll, Fryar, & Ogden, 2020).

Clergy Health

Physical Health

One study examining a nationwide sample of U.S. clergy, of various denominations, found a 32% prevalence of obesity (Ferguson et al., 2015). This study also found that among Protestant clergy \((n = 378)\), specifically, there was an inverse relationship between time spent in exercise and BMI (AOR: 0.81; 95% CI: 0.67, 0.97). Another study with a nationwide sample of clergy found a 41% prevalence of obesity (Webb, Bopp, & Fallon, 2013a) and also found an inverse association between meeting the physical activity guidelines and being obese (Unadjusted odds ratio [UOR]: 0.60; 95% CI: 0.44, 0.82). Further, in two statewide wide samples of US clergy (IL, OK), a 52% (Webb & Chase, 2019) and 34% (Gwin, Branscum, & Taylor, 2017) prevalence of obesity was found, but these findings were among non-representative samples. Two non-peer reviewed reports of United Methodist clergy also found a 43% (Wespath Benefits and Investments, 2017) and ~40% prevalence of obesity (Duke Clergy Health Initiative, 2014). Although limited, these data indicate that U.S. clergy are likely to be at higher risk of obesity than the general adult population.

A few survey studies of clergy have found the prevalence of several non-communicable diseases to be similar or higher to the general U.S. adult population. Across studies, for example, the ranges of the most frequently reported chronic disease diagnoses were: high blood pressure (20% - 36%), high cholesterol (14% - 41%), diabetes (10% - 13%), arthritis (14% - 34%), heart
disease (4% - 6%) (Duke Clergy Health Initiative, 2014; Gwin, Taylor, Branscum, & Hofford, 2013; Webb et al., 2013a; Webb & Chase, 2019; Wespath Benefits and Investments, 2017). In comparison, the prevalence of non-communicable diseases among US adults includes hypertension (46%) (CDC, 2021c), high cholesterol (11.5%) (CDC, 2021b), diabetes (10.2%) (CDC, 2020), arthritis (23.7%) (CDC, 2021a), and heart disease (7%) (Fryar, Chen, & Li, 2012).

Mental Health

Along with some poor physical health outcomes, clergy also have reported a high prevalence of mental health conditions. For example, a non-peer reviewed report (N = 24,158) found nearly one-third of clergy from various denominations, report dealing with burnout and nearly half with depression (Brown et al., 2017). Moreover, mental health problems were also found in a sample of United Methodist Clergy from North Carolina (N = 1726; response rate = 95%), who were recruited from the North Carolina and Western North Carolina conferences (Proeschold-Bell et al., 2013). Findings indicated that approximately 11.1% and 13.5% of the sample reported struggling with depression and anxiety, respectively. While limited, findings from these studies suggest clergy may be at a high risk for mental health problems, especially depression.

Conclusions

While clergy have acknowledged the importance of self-care in relation to leading a healthy lifestyle (Case et al., 2020; Harmon, Strayhorn, et al., 2020; Vaccarino & Gerritsen, 2013), they have reported minimal use of self-care activities. For example, among a convenience sample of clergy (N = 332) of various denominations, only 23% and 8% reported they engaged in exercise to function well and to manage work demands, respectively (Terry & Cunningham, 2020b). These findings indicate behaviors such as physical activity may not be perceived as
important contributing to the poor health outcomes seen among clergy in the US. Given their minimal use of self-care and poor health outcomes, clergy have been labeled a high-risk population (Terry & Cunningham, 2020b). Yet, many clergy report their health as very good or excellent, which highlights a potential disconnect between their perceived and objective health (Baruth, Wilcox, & Evans, 2014; Brown et al., 2017; Lindholm, Johnston, Dong, Moore, & Ablah, 2016).

*Clergy Physical Activity*

No published studies have reported physical activity engagement among representative samples of Christian clergy in the US, making it difficult to gauge the physical activity prevalence in this population. There are, however, large-scale, non-peer reviewed reports and several published studies that provide useful physical activity data. While limited, these studies provide a glimpse into clergy physical activity behaviors.

One non-peer reviewed report examined the physical activity habits among a convenience sample of currently appointed United Methodist clergy \(N = 1,453\); response rate = 75%) from two conferences (Western North Carolina Conference; North Carolina Conference) representing 16 districts in North Carolina (Duke Clergy Health Initiative, 2014). Physical activity data were collected by asking clergy “whether they engaged in moderate or vigorous activity outside of work in a typical week (Duke Clergy Health Initiative, 2014).” Findings show clergy spent 3 days a week in 10- or more-minute bouts of moderate physical activity (89% male clergy; 85% female clergy) and 68% of clergy engaged in 10 minutes of vigorous activity at least three times per week. While this report had a strong response rate, it was limited to United Methodist clergy in North Carolina. Moreover, this report shows that many United Methodist clergy engage in some forms of MVPA and vigorous activity, but data were collected used a
non-validated scale and reported in a way that make it difficult to conclude if clergy are achieving 150 minutes of MVPA/week, which produces the most health benefits.

Another non-peer reviewed report examined the physical activity habits of a nationwide convenience sample of currently appointed United Methodist clergy ($N = 1,360$; response rate = 34%) (Wespath Benefits and Investments, 2017). The report states that physical activity data were collected using Virgin Pulse, “an activity program that motivates, tracks, and rewards activity efforts (Wespath Benefits and Investments, 2017).” Based on their findings, clergy reported spending an average of 4.5 hours in moderate physical activity per week (Wespath Benefits and Investments, 2017). While clergy appear to be highly active, this report had a relatively low response rate among a nationwide sample of clergy from one denomination (e.g., United Methodist). Therefore, clergy who were already physically active may have been more likely to participate in the survey (e.g., selection bias). Additionally, the authors do not discuss if the physical activity data from the tracker is objective or self-reported nor do they discuss the length of time of which it was collected (e.g., week, month, year).

A cross-sectional study containing a convenience sample of Oklahoma clergy ($N = 141$; response rate = 22%), of various denominations, examined physical activity determinants among participants (Gwin et al., 2013). Physical activity data were collected using online and paper-based formats of the International Physical Activity Questionnaire (IPAQ). Clergy reported spending an average of 1,159 MET-min/week (classified as moderate engagement by IPAQ standards), with approximately 37% of the sample classified as sedentary (0 MET-min/week). Unlike the previous studies mentioned, physical activity data were collected using a validated measure (e.g., IPAQ), with clergy reporting a moderate amount of time spent in physical activity and over one-third were classified as sedentary. Of note, these data are limited
by a low participation rate from a small statewide sample of clergy, further increasing the chance of selection bias (i.e., more active clergy may have participated).

Additionally, a study examined a convenience sample of Illinois clergy, representing various denominations, \((N = 221; \text{response rate} = 17\%)\) who completed an online questionnaire regarding their “perception of the clergy vocation and its impact on their health” (Webb & Chase, 2019). Physical activity data were collected using the IPAQ, with clergy reporting an average of 959 MET-min/week, representing a moderate amount of activity (standards set by IPAQ), but they also spent an average of six hours in sedentary behavior. Like the previous study, physical activity data were collected using a validated measure and clergy reported moderate physical activity engagement, but they also spent a large amount of time in sedentary behavior. This study was also limited by a low participation rate from a statewide sample of clergy, further reducing the generalizability of findings and increasing the risk of selection bias.

One study using data from the 2008/2009 U.S. Congregational Life Survey’s national sample of clergy \((N = 539; \text{response rate:} 31\%)\) examined the association between exercise and BMI (Ferguson et al., 2015). Physical activity data were collected through a survey question, “Within the past seven days, how much time did you spend in the following activities: Physical exercise for your health (hours).” Overall, the average time clergy spent in exercise was 3.65 hours/week \((SD = 2.68)\). While clergy reported high physical activity engagement, a non-validated measure was used to collect these data with little description of what “physical exercise” meant. Additionally, unlike the IPAQ, this question did not differentiate between physical activity intensity or calculate METs, making it difficult to know if clergy are engaging in the recommended amounts of MVPA per week.
One cross-sectional study of a nationwide convenience sample of clergy \((N = 844;\) participation/response rate = 6.9\%), of various denominations, examined the association between physical activity and the likelihood of being obese (Webb et al., 2013a). Physical activity data were collected asking questions from the physical activity module of the Behavioral Risk Factor Surveillance System (BRFSS) (Webb et al., 2013a). Based on responses, clergy were then categorized as meeting or not meeting 150 minutes of moderate intensity physical activity/week or 75 minutes of vigorous intensity physical activity/week. Overall, 475 (63\%) participants met the physical activity guidelines. Although most clergy met the physical activity guidelines, the response rate was below 10\%, following a pattern across studies examining clergy physical activity. Due to the low response rate and use of convenience sampling, this study may also have been biased due to more active clergy participating, further decreasing the representativeness of this larger nationwide sample.

Conclusions

Although some studies of convenience samples indicate many clergy engage in the recommended amounts of physical activity, available data are all limited by the use of non-representative samples (e.g., low response rates, small samples, specific geographic locations and denominations), with some using non-validated physical activity measures. Despite some studies portraying clergy as a physically active population, it is apparent many clergy are not benefiting from meeting the physical activity recommendations (e.g., high prevalence of obesity, chronic diseases, mental health conditions). Additionally, studies that assessed associations between physical activity and health conditions such as obesity relied on cross-sectional designs, which prevents causal inferences from being made. As will be reviewed in the next section, clergy also have reported personal, psychological and environmental barriers to maintaining physical activity.
activity over time, which may be a contributing to the poor health outcomes found within this population.

**Clergy Physical Activity Barriers**

While previous studies have examined clergy physical activity, most have been unable to give an in-depth understanding of barriers influencing these behaviors. Specifically, questions still remain about which physical activity specific barriers are most important for clergy, and particularly, if active and inactive clergy struggle with the same barriers. One qualitative study examined the motivators and barriers influencing the physical activity behaviors of a small sample of Catholic clergy from Canada (N = 8) (Chiarlitti & Kolen, 2020). Six of the eight participants were meeting the physical activity guidelines; however, the authors identified similar psychological barriers (e.g., lack of time, knowledge, and motivation; pain/fatigue) and facilitators (e.g., health benefits, discipline, self-affirmation, enjoyment) influencing physical activity behavior across the study sample. Additionally, environmental barriers (e.g., lack of education, inadequate facilities, weather) and facilitators (e.g., social support, being active in nature) also were noted to have an impact on physical activity behavior (Chiarlitti & Kolen, 2020).

Other studies also have shown the many individual (e.g., race/ethnicity, gender, health identity), church (e.g., congregational needs), and spiritual level factors influence clergy health behaviors (e.g., diet, physical activity) (Bopp et al., 2013; Bopp & Fallon, 2011; Harmon et al., 2018; Harmon, Strayhorn, et al., 2020; Proeschold-Bell et al., 2011). Additionally, clergy have reported the frequency of relocation and church structure (e.g., congregation size, denomination) as having an influence on their ability to maintain proper self-care behaviors (Bopp & Fallon, 2011; Lindholm et al., 2016; Proeschold-Bell et al., 2011).
Clergy have the perception of working in a 24/7 and “on-the-go” vocation (Harmon et al., 2013; Proeschold-Bell et al., 2011). Therefore, clergy have reported a struggle with detaching from work during their time off (e.g., vacation) (Terry & Cunningham, 2020a). An inability to detach from work may be due to balancing numerous roles (e.g., administrator, pastor, mental health counsellor, caregiver, funeral preparation) (Carroll & McMillan, 2006), working other jobs (Ferguson et al., 2015; Harmon, Strayhorn, et al., 2020), or having an unpredictable work schedule and unrealistic expectations from a congregation (Lindholm et al., 2016).

Christian clergy, in particular, are known to have high time demands, which may influence their physical activity engagement, ability to set boundaries and involvement in health promotion programs (Harmon et al., 2013; Harmon, Strayhorn, et al., 2020; Proeschold-Bell et al., 2011; Terry & Cunningham, 2020b). For example, clergy have reported working more than 46+ hours per week (Brunette-Hill & Finke, 1999; Ferguson et al., 2015; Webb & Chase, 2019). A case-study (N = 5) examining protestant clergy work-related behaviors found they worked an average of 51+ hours/week and represented four different working roles: interpersonal (e.g., leader), informational (e.g., spokesperson), decisional (e.g., resource allocator), and professional (e.g., care-giver) (Kuhne & Donaldson, 1995). Another study also found that Wesleyan clergy (N = 45), in growing churches, worked an average of 52+ hours/week (Connell, 1997). These findings are important because longer work hours may reduce the time clergy spend in self-care (Webb & Chase, 2019), and increase the risk of poor health outcomes and behaviors (e.g., obesity, chronic disease, mental health complications, sedentary behavior) (Terry & Cunningham, 2020b).
Conclusions

Clergy report various demands and barriers related to their vocation which may be acting against their ability to maintain the recommended levels of physical activity over time. A few physical activity-related interventions have been implemented to help clergy mitigate existing barriers and improve their physical activity engagement, which will be reviewed in the next section.

Clergy Physical Activity Intervention

Some improvements in physical activity and psychosocial outcomes have been reported in a randomized physical activity trial among clergy. Webb et al. (2017) administered a 12-week web-based educational program. Clergy were recruited from faith-based organizations in Pennsylvania (e.g., email, letter, word of mouth, conferences). Clergy were screened based on their physical activity engagement, using the physical activity module of the BRFSS, and had to be insufficiently active or sedentary to be eligible for participation. The authors used a two-arm, randomized controlled design with an intervention group (n = 24) and a wait-list control group (N = 20). The authors examined the intervention effect on self-reported (i.e., Community Healthy Activities Model Program for Seniors [CHAMPS]) and objectively measured physical activity (i.e., accelerometer data). At baseline, no significant differences were found between groups in total physical activity (intervention: 4895 kcal/week, control: 5373 kcal/week), MVPA (intervention: 3278 kcal/week, control: 3592 kcal/week), or walking (intervention: 981 kcal/week, control: 1330 min/week). Additionally, the authors found no significant intervention effect on self-reported physical activity.

For objectively measured physical activity, 17 participants were removed after randomization (intervention = 10, control = 7) due to invalid wear time during the seven day pre-
and post-testing assessments. After removal, no significant differences were found between groups for any activity variables. At baseline, there were no significant between-group differences in time spent in sedentary behavior, light activity, moderate activity, or vigorous activity. A medium intervention effect (F (1,24) = 11.18, p = .003, \( \omega^2 =0.06 \)) was found on average time spent in sedentary behavior (intervention - pre: 4167±561 to post: 3880±966 min/week; control - pre: 3912±625 to post: 4048±662 min/week), and a large intervention effect (F (1,24) = 8.40, p = .008, \( \omega^2 =0.15 \)) was seen on the average time spent in moderate physical activity (intervention - pre: 1291±314 to post: 1468±313 min/week; control - pre: 1235±315 to post: 1151±288 min/week). Small intervention effects were also seen on average scores of psychosocial variables including: self-efficacy for PA (F (1,39) = 6.80, p = .003, \( \omega^2 =0.05 \)) – sticking with it (intervention - pre: 3.38±0.85 to post: 3.61±0.85; p = .003; control - pre: 3.40±0.92 to post: 3.18±0.88) and self-evaluative (F (1,39) = 4.56, p = .039, \( \omega^2 =0.02 \)) – outcome expectations (intervention - pre:21.6±2.8 to post: 22.2±2.5; p = .039; control - pre:21.3±3.7 to post: 20.1±4.4) (Webb & Bopp, 2017b).

Minimal findings have also been reported in another behavior change intervention among clergy. Harmon et al. (2020) administered “Fit with Faith”, a one-arm, 10-week, multiple behavior change intervention (e.g., diet, stress, physical activity) and assessed its feasibility among African-American clergy and their spouses (n = 20) (Harmon, West, Webb, Johnson, & Smith, 2020). The intervention components (e.g., eHealth, traditional) were informed by focus groups (e.g., face-to-face sessions, phone calls, competitions, educational materials, use of the MyFitnessPal app) (Harmon, Strayhorn, et al., 2020). Diet, physical activity (e.g., accelerometer) and psychosocial outcomes were assessed pre- and post-intervention. There were minimal findings for diet-related behavior change and no differences were seen in the number of steps or
MVPA engagement. However, a decrease in BMI reached statistical significance from pre (31.9±1.93) to post intervention (31.5±1.89, $t(19) = 2.65, p = 0.02$). Self-regulation cognitive items also reached statistical significance from pre (17.8±3.63) to post intervention (20.2±3.01, $t(18) = -3.01, p = 0.01$). Of note, significant findings were found among the spouses of clergy, who were all female and younger.

Conclusions

To date, there have only been a few published physical activity-related behavior change interventions aimed at improving physical activity behaviors among clergy. As shown, findings from these interventions have been mixed. While some success has been reported, more research is needed to understand the other factors influencing behavior change among clergy, particularly the social and outside factors (e.g., time demands, church support). Nevertheless, given the poor health outcomes reported and the physical activity specific barriers that exist, physical activity engagement remains a pertinent issue and is still likely in need of intervention (Gwin et al., 2013).

Literature Gaps

Despite the wide range of studies examining clergy, gaps in the literature remain, particularly among clergy physical activity. First, most clergy health and behavior research focuses on overall physical and mental health outcomes, with few studies examining physical activity. Second, clergy beliefs and perceptions related to physical activity behaviors have received little attention (Chiarlitti & Kolen, 2020; Gwin et al., 2017; Harmon, Strayhorn, et al., 2020; Webb & Bopp, 2017b). Additionally, little is known about the cognitive and behavioral strategies clergy use, in the midst of ministry demands, to engage in physical activity. Therefore, this dissertation will fill an existing gap in the literature by providing robust data on the lived
experience of clergy and the strategies some clergy currently use to engage in physical activity. Moreover, this dissertation will work to highlight physical activity-specific barriers among clergy.

Second, we have a limited perspective from clergy who are currently meeting the physical activity guidelines and how their lifestyles and strategies may differ from clergy who are not as physically active. There is only one qualitative study that examined this issue (Chiarlitti & Kolen, 2020). We look to build off this project by including different denominations, more participants, and a guiding framework (e.g., Transtheoretical Model [TTM]) to assess the multiple factors influencing physical activity behavior. Additionally, this dissertation works to better understand clergy physical activity perceptions, particularly among clergy in different stages of change as posited by the TTM (Prochaska & DiClemente, 1982).

Third, there has been a limited use of theory to understand the physical activity behaviors among Christian clergy. For example, only three theories have been applied, including the PEN-3 Model (Harmon, Strayhorn, et al., 2020), Social Cognitive Theory (SCT) (Webb & Bopp, 2017b) and Theory of Planned Behavior (TPB) (Gwin et al., 2017; Gwin et al., 2013; Proeschold-Bell et al., 2017). The use of SCT and TPB among clergy has been used quantitatively (i.e., by administering psychometric instruments to assess theoretical constructs and how they related to health outcomes), limiting our understanding of the complexities and context-specific barriers and motivators influencing physical activity behavior. Unlike other theories previously used, the TTM will allowed us to compare perceptions across a spectrum of physical activity behaviors as well as see how perceptions of TTM constructs (e.g., decisional balance—the relative balance of perceived pros and cons of increasing one’s physical activity) were qualitatively similar or different across the various stages. Therefore, to address this gap,
this dissertation used the TTM as a guiding framework and aimed to further explore differing and universal clergy physical activity habits, barriers, motivations, and beliefs across the five stages of change posited by the TTM (Prochaska & Velicer, 1997).

**Conceptual Framework**

*Transtheoretical Model of Health Behavior Change & Physical Activity*

While originally designed to evaluate smoking cessation (Prochaska & DiClemente, 1983), the TTM has been widely used to understand a multitude of behaviors. For example, researchers have utilized TTM to assess and enact behavior change, particularly among smoking cessation (Aveyard, Massey, Parsons, Manaseki, & Griffin, 2009; Spencer, Pagell, Hallion, & Adams, 2002), weight management (Johnson et al., 2008), diet (de Menezes, Bedeschi, Dos Santos, & Lopes, 2016; Di Noia & Prochaska, 2010) and physical activity (Leonhardt et al., 2008; Marcus & Lewis, 2003; Marcus, Rakowski, & Rossi, 1992; Marcus & Simkin, 1993; Nigg et al., 2011; Nigg et al., 2019; Peterson & Aldana, 1999; Plotnikoff, Hotz, Birkett, & Courneya, 2001).

The TTM has integrated processes and constructs of change from major behavior change theories and models used in clinical psychology (Glanz, Rimer, & Viswanath, 2015). Unlike other behavior change theories like the SCT (Bandura, 1986) and TPB (Ajzen, 1991), the TTM posits that individuals progress through five specific stages of behavior change including: precontemplation, contemplation, preparation, action, maintenance (Prochaska & Velicer, 1997). Each stage of change differs in motivation for change and use of cognitive and behavioral change strategies (Prochaska, 2008; Prochaska & DiClemente, 1982).
Stages of Change

Precontemplation is defined as not intending to engage in or change their current physical inactivity behavior (Glanz et al., 2015; Prochaska & Velicer, 1997). Research suggests individuals in the precontemplation stages may be unmotivated to change as they may have attempted unsuccessfully to change their behavior previously. Consequently, individuals in the precontemplation stage may not be interested in learning more about their unhealthy behaviors or knowledgeable they should change their behavior, further adding to a resistance to change (Prochaska & Velicer, 1997).

In the contemplation stage, while still physically inactive, individuals are intending to change their physical activity behavior within the next six months (Glanz et al., 2015; Prochaska & Velicer, 1997). Unlike individuals in the precontemplation stage, individuals in the contemplation stage are more likely to consider or weigh the pros of changing their behavior (Prochaska & Velicer, 1997). Moreover, since the relative balance favors cons, individuals in this stage usually are not yet sufficiently motivated to change (Glanz et al., 2015).

Individuals in the preparation stage are intending to change their physical activity behavior within the near future, operationalized as within the next 30 days (Glanz et al., 2015; Prochaska & Velicer, 1997). In the preparation stage, decisional balance favors pros of change and individuals have taken steps toward healthy behavior change (Nigg et al., 2011). For example, these individuals may have sought information about how to change their behavior, joined a health course, or sought advice from their doctor (Glanz et al., 2015; Prochaska & Velicer, 1997).

The action stage is comprised of individuals who are currently engaging in the recommended levels of physical activity, but only have been doing so for less than six months.
Individuals in the action stage have made observable changes to their behavior (e.g., inactive to meeting physical activity guidelines) (Glanz et al., 2015; Prochaska & Velicer, 1997). Within the maintenance stage, individuals also have made observable changes to their physical activity behaviors (Glanz et al., 2015; Prochaska & Velicer, 1997). The maintenance stage, however, consists of individuals who have changed their behavior and are attempting to prevent relapse (Nigg et al., 2011; Nigg et al., 2019; Prochaska & Velicer, 1997). Individuals in the maintenance stage have increased self-efficacy to continue their healthy behavior and are less likely to relapse, when compared to individuals in the action stage of change (Prochaska & Velicer, 1997).

Processes of Change

Previous research has identified connections between processes of change and specific behavioral stages (Lipschitz et al., 2015; Nigg et al., 2011; Prochaska & Velicer, 1997). In each stage of change, individuals are likely to use distinct cognitive (e.g., personal experiences) and behavioral strategies to change behavior (Nigg et al., 2011; Prochaska & Velicer, 1997), but these strategies can be used across the stages of change.

Cognitive strategies are more likely to be used in the early stages of change (pre-contemplation, contemplation, preparation) (Marcus & Lewis, 2003; Nigg et al., 2011; Prochaska & Velicer, 1997; Romain & Abdel-Baki, 2017). For example, cognitive strategies such as consciousness raising (i.e., increasing awareness about implications of current behavior) and social liberation (i.e., increasing social opportunities) tend to be used in the progressing from the precontemplation, contemplation, and preparation stages (Burkholder & Nigg, 2002; Nigg et al.,
Moreover, dramatic relief (i.e., anticipated relief if current behavior is changed) and self-reevaluation (i.e., assessment of one’s self-image) are used when progressing from the contemplation and preparation stages (Burkholder & Nigg, 2002; Nigg et al., 2011). Environmental re-evaluation is an assessment of how a current behavior influences one’s social environment (e.g., positive or negative role model) and tends to be used when progressing from the precontemplation to contemplation stage (Prochaska & Velicer, 1997).

Behavioral strategies are more common in later stages (action, maintenance) (Lipschitz et al., 2015; Marcus & Lewis, 2003; Nigg et al., 2011; Prochaska & Velicer, 1997; Romain & Abdel-Baki, 2017). One behavioral strategy is self-liberation (i.e., willpower and belief one can change), which tends to be used when one is progressing from the preparation and action stages (Burkholder & Nigg, 2002; Nigg et al., 2011; Prochaska & Velicer, 1997). Other behavioral strategies are counterconditioning (i.e., learning new to replace a current unhealthy behavior), stimulus control (i.e., removing cues from unhealthy behaviors), and reinforcement management (i.e., providing punishments or rewards for changing behavior) that tend to be used in the action and maintenance stages (Burkholder & Nigg, 2002; Nigg et al., 2011). Another behavioral strategy is helping relationships (i.e., forms of social support) that tend to be used when progressing from the precontemplation stage as well as the action and maintenance stages (Burkholder & Nigg, 2002; Nigg et al., 2011; Prochaska & Velicer, 1997).

Self-Efficacy

Incorporated from Social Cognitive Theory (Bandura, 1977), TTM posits individuals increase their confidence (i.e., self-efficacy) in coping with and engaging in a specific behavior as they progress through the stages of change (Burkholder & Nigg, 2002; Lipschitz et al., 2015; Nigg et al., 2011; Prochaska & Velicer, 1997). This finding was documented in a cross-sectional
study of US adults \((N = 429)\) examining the associations between self-efficacy and stage of exercise behavior change (Marcus, Selby, Niaura, & Rossi, 1992). One-way ANOVA showed self-efficacy for exercise scores were different across the stages of change \((F(4,369) = 36.57, p<.001, \eta^2 = .28)\). Except for the contemplation and preparation stages, self-efficacy scores were significantly different between stages with the highest self-efficacy scores reported in the action and maintenance stages.

**Decisional Balance**

Along with self-efficacy, the TTM posits decisional balance reflects one’s motivation to change. Research supports that individuals weigh the pros and cons of changing their behaviors (i.e., decisional balance) and it differs by stage of change (Hall & Rossi, 2008; Lipschitz et al., 2015; Prochaska & Velicer, 1997; Velicer, DiClemente, Prochaska, & Brandenburg, 1985). For example, individuals in the higher stages of change perceive more pros than cons, but the use of decisional balance may be more pronounced in the initial stages of change (e.g., precontemplation, contemplation) (Hall & Rossi, 2008; Nigg et al., 2011).

The use of decisional balance across the stages of change was also demonstrated by data from surveying US adults at four worksites \((N = 778)\) examining the association between decisional balance and stage of exercise adoption (Marcus, Rakowski, Rossi, 1992). One-way analysis of variance (ANOVA) revealed significant differences in pros \((F(4,712) = 34.84, p<.0001)\), cons \((F(4,710) = 25.31, p<.0001)\), and decisional balance \((F(4,709) = 49.32, p<.0001)\) by stage of change. Essentially, pros for exercise adoption were significantly higher for individuals in the maintenance and action stages compared to the precontemplation and contemplation stages.
**TTM Constructs Predicting Physical Activity Behavior**

There is evidence that TTM constructs can predict stage transition or retention, particularly in longitudinal studies (Lipschitz et al., 2015; Plotnikoff et al., 2001). This was documented in a study ($N = 683$) that assessed predictors of physical activity stage transition at three different time points (time point 1: baseline, time point 2: 6 months, time point 3: 12 months) (Plotnikoff et al., 2001). Findings showed self-efficacy ($t = 3.08; p = .002$), pros ($t = 2.63; p = .005$), and behavioral processes ($t = 1.99; p = .025$) predicted stage transition out of the precontemplation stage from time-point 2 to 3. At both time-points, stage progression out the contemplation stage was predicted by self-efficacy (time-point 1 to 2: $t = 4.29; p = <.001$; time-point 2 to 3: $t = 1.66; p = .050$), pros (time-point 1 to 2: $t = 1.79; p = .038$; time-point 2 to 3: $t = 2.37; p < .001$), and behavioral processes (time-point 1 to 2: $t = 2.49; p = .004$; time-point 2 to 3: $t = 1.92; p = .028$). From time-point 2 to 3, stage progression out of the preparation stage was predicted by self-efficacy ($t = 4.10; p < .001$) and less cons ($t = 1.96; p = .030$). Additionally, action/maintenance stage retention was predicted by self-efficacy (time-point 1 to 2: $t = 2.93; p = .002$; time-point 2 to 3: $t = 4.06; p < .001$), behavioral processes (time-point 1 to 2: $t = 2.19; p = .015$; time-point 2 to 3: $t = 3.46; p = .001$), pros (time-point 2 to 3: $t = 3.04; p = .002$), less cons (time-point 2 to 3: $t = 4.01; p < .050$), and experiential processes (time-point 2 to 3: $t = 2.01; p = .023$). Interestingly, while the TTM posits experiential and behavioral processes are used in the lower and higher stages, respectively, this study shows that experiential processes had the weakest prediction of stage progression with self-efficacy being the strongest predictor.

Despite model prediction, longitudinal research has found that individuals in a higher stage of change may use more TTM constructs overall to maintain their physical activity engagement (Lipschitz et al., 2015; Romain, Horwath, & Bernard, 2018). This finding was
documented in a longitudinal, population-based physical activity study \( (N = 1,050) \) that examined how individuals used TTM constructs over time (Lipschitz et al., 2015). Findings showed, at 12- and 24-month follow-ups, maintainers (i.e., individuals who progressed from pre-action to maintenance from baseline), when compared to non-changers (i.e., individuals who did not progress from a pre-action stage from baseline) were more likely to perceive more pros and less cons, exhibit significantly higher self-efficacy, and use all experiential (e.g., dramatic relief, environmental reevaluation, self-reevaluation) as well as behavioral processes (e.g., helping relationships, self-liberation). This study highlights variability between different levels of motivational readiness to change and suggests barriers to the use of TTM constructs and to physical activity engagement may be more pronounced in pre-action stages (i.e., precontemplation, contemplation, preparation) (Lipschitz et al., 2015; Romain, Horwath, et al., 2018).

There is also evidence suggesting the importance of using all TTM constructs when being applied to physical activity as the TTM operates in a cyclical nature (Adams & White, 2003; Marshall & Biddle, 2001; Nigg et al., 2019). This finding was demonstrated in a longitudinal TTM-based physical activity study \( (N = 689 \text{ at baseline, } n = 401 \text{ at 24 months}) \) examining the temporal sequencing of TTM constructs (Nigg et al., 2019). Structural equation modeling showed that the model with the best fit indices \( (AIC = 29313.093) \) indicated changes in processes leads to changes in self-efficacy and decisional balance, which then leads to changes in stage of change (Nigg et al., 2019).

Conclusions

Studies have shown how various strategies and constructs can influence an individual’s motivational readiness to change their physical activity behavior (Hall & Rossi, 2008; Lipschitz
et al., 2015; Marcus, Rakowski, et al., 1992; Marcus, Selby, Niaura, & Rossi, 1992; Plotnikoff et al., 2001). Additionally, research shows the importance of using each construct of the TTM to enhance its utility (Nigg et al., 2019). Where these studies lack, however, is providing deeper insight into the variability of barriers (e.g., psychological, social, environmental) influencing one’s motivational readiness to change physical activity behavior. This is important as a large-scale TTM-based physical activity study ($N = 742,636$ – weighted population) found multiple factors (e.g., socio-demographic factors, health impairment) influencing physical activity initiation or maintenance across the stages of change (Garber, Allsworth, Marcus, Hesser, & Lapane, 2008).

**Application of TTM to Physical Activity Behavior Change**

Studies have been useful in identifying how TTM constructs apply to health behaviors, particularly physical activity (Hall & Rossi, 2008; Lipschitz et al., 2015; Nigg et al., 2019; Romain & Abdel-Baki, 2017; Romain, Horwath, et al., 2018). Thus, TTM-based physical activity interventions have the potential to meet individual’s needs in their respective stages (Adams & White, 2003; Marshall & Biddle, 2001; Nigg et al., 2011; Nigg et al., 2019), but the TTM’s effectiveness in physical activity behavior change has been mixed (Rhodes & Pfaeffli, 2010), potentially due to its application. Therefore, in this section, some of the major limitations of TTM’s application to physical activity behavior change are discussed.

One major criticism of TTM-based interventions is the prioritization of the stage of change construct, without accounting for other independent variables of the TTM (e.g., processes of change, decisional balance) as these are important mediators/moderators of physical activity behavior change (Armitage, 2009; Romain, Bortolon, et al., 2018; Romain, Caudroit, Hokayem, & Bernard, 2018). The sole use of the stage of change construct to explain behavior change can
be found in some commonly cited TTM-based interventions (Basler, Bertalanffy, Quint, Wilke, & Wolf, 2007; Marcus, Bock, et al., 1998; Peterson & Aldana, 1999; Plotnikoff et al., 2007). Only using the stage of change construct limits our ability to understand the full utility of the TTM.

Furthermore, neglecting major TTM constructs may lead to the inability for interventions to control and assess for outside factors influencing physical activity behavior change (e.g., worksite culture, pain/injury) (Basler et al., 2007; Leonhardt et al., 2008; Plotnikoff et al., 2007). For example, these criticisms can be made about a TTM-based, three-arm, multi-site cluster-randomized physical activity trial that evaluated the effect of motivational counselling on physical activity engagement among patients with chronic low back pain (Leonhardt et al., 2008). The intervention was not effective in enhancing physical activity, which may have been partially attributable to the significant differences found between participants at baseline (e.g., stage of change, pain perception), use of only the self-efficacy and stages of change constructs and not accounting for the individualized barriers or motivations each patient experienced with chronic low-back pain (e.g., decisional balance, processes of change).

Another major criticism of TTM-based interventions is the lack of a comparable control group (i.e., more intensive intervention for experimental group) (Dallow & Anderson, 2003; Johnson et al., 2008; Scruggs et al., 2018). For example, this criticism can be made of a 12 month, two-arm, TTM-based physical activity intervention among sedentary adults ($N = 58$) (Dallow & Anderson, 2003). The intervention group received face-to-face instruction for 24 weeks, instruction on engaging in physical activity in shorter bouts, tailored curriculum material and the opportunity to take “field trips” to explore various types of physical activity (e.g., self-efficacy). The standard intervention group received individualized exercise prescription, a free
24-week health club pass, and four educational group classes. Regardless of intervention effectiveness on physical activity engagement, the intervention group received a more intensive intervention in combination with material tailored to their respective stages of change. While the authors attempted to create similar intervention groups, it is difficult to understand the true effectiveness of the TTM when intervention groups receive different intervention intensities.

Conclusions

The studies reported above indicate several limitations to how TTM has been applied to physical activity behavior change (Armitage, 2009; Jiménez-Zazo, Romero-Blanco, Castro-Lemus, Dorado-Suárez, & Aznar, 2020; Romain, Caudroit, et al., 2018). Major limitations include an inadequate implementation of TTM constructs and non-comparable intervention groups, which limits the utility of TTM-based interventions to assess and control for factors outside one’s control (e.g., environment, pain/injury). With that said, many TTM-based studies and interventions have also not successfully contextualized the many factors influencing physical activity engagement (e.g., age, environment) (Buchan, Ollis, Thomas, & Baker, 2012), particularly in specific populations (e.g., clergy) (Garber et al., 2008; Shaver, McGlumphy, Gill, & Hasson, 2019). As such, it’s suggested that qualitative inquiry is warranted (Hutchison, Breckon, & Johnston, 2009).

Qualitative Application of TTM

While limited, qualitative inquiry of TTM-specific constructs has proven useful in identifying the complexity of behaviors (e.g., smoking, physical activity) as well as the variability of barriers and facilitators (e.g., physical, psychological, environmental) influencing an individuals’ readiness to change a behavior (Burke, Gielen, McDonnell, O’campo, & Maman, 2001; Fort et al., 2013; Hayotte, Nègre, Gray, Sadoul, & d’Arripe-Longueville, 2020; Planchard,
Corrion, Lehmann, & d'Arripe-Longueville, 2018). Additionally, using the TTM as a guiding framework in qualitative data collection has highlighted its importance in the development, design, and implementation of health promotion programs, especially within specific populations and across health outcomes (Burke et al., 2001; Fort et al., 2013; Hayotte et al., 2020).

For example, one study, using focus groups ($N = 70$), examined the barriers and facilitators of patients receiving care for type 2 diabetes (Fort et al., 2013). Findings showed that self-management barriers varied across the stages of change (precontemplation: not accepting diagnosis; maintenance: difficulty managing multiple medications). Additionally, differing facilitators to self-management were reported across the stages of change (preparation: urgency of taking care of self; action: medical care accessibility). Despite findings showing some differing barriers and facilitators, consistent factors influencing self-management were found across the stages including family, faith, gender, and financial difficulty (Fort et al., 2013).

Regardless of an individual’s motivation readiness to change, findings show the importance for health promotion efforts to focus on individual self-management while also accounting for outside factors influencing this behavior change.

Another study, using in-depth interviews, examined how women ($N = 78$) described their experiences trying to end an abusive relationship. The authors found distinct differences between women when categorized by their stage of change for leaving the abusive partner (Burke et al., 2001). Some representative examples of distinct findings between stages include: “She thought the abuse was love” (Precontemplation); “She is looking for a place to live so that she can leave her current situation” (Preparation); “She fought back by hitting her abuser” (Action); and “When she sees her abuser she does not talk to him” (Maintenance) (Burke et al., 2001). Based
on their findings, the authors portrayed the importance of using qualitative methods to exploring stage-oriented change, particularly for tailored behavior-change programs.

Furthermore, one qualitative study examined how individuals ($N = 12$) with schizophrenia-spectrum disorder utilized concepts from the TTM (e.g., decisional balance) and what factors influence their smoking cessation attempts (Esterberg & Compton, 2005). Nine participants were in the precontemplation stage and three in the contemplation stage. Across stages, chronic schizophrenic patients described the pros (e.g., relief of negative symptoms, mood control) and cons (e.g., risk of disease, low energy, difficulty breathing) of nicotine. Moreover, participants noted that their perception of the pros of smoking influenced their ability to quit and increased the chance of relapse. Across stages, social and environmental influences had negative impacts on smoking cessations (e.g., few smoking cessation programs, acceptance from family and friends). The authors noted that, overall, the schizophrenia-disordered participants reported more perceived benefits to smoking and many barriers to quitting. Additionally, findings show the importance of applying the TTM to their qualitative approach as they garnered rich data pertaining to the decisional balance of quitting smoking, which may have not been possible through quantitative measurement.

While the TTM has been used as a guiding framework to qualitatively assess various health outcomes, it has only been used sparingly to examine physical activity. For example, there have only been a few studies highlighting physical activity beliefs and perceptions across the stages of change. One study, using in-depth interviews, examined the factors influencing long-term physical activity engagement among women ($n = 17$) who had undergone bariatric surgery between the ages of 18 and 25 and at least five years prior to the study. Findings highlighted distinct physical, psychological, and environmental barriers and facilitators across the stages of
change (Hayotte et al., 2020). Individuals in the precontemplation/contemplation stages reported more barriers (e.g., physical: low energy, psychological: lack of motivation, environmental: lack of time/competing responsibilities) than facilitators (e.g., physical: weight maintenance, psychological: positive beliefs of physical activity, environmental: time management). In contrast, individuals in the action/maintenance reported fewer barriers and more facilitators across the three domains and stages of change, as physical activity was perceived as a habitual behavior. The authors posed that, like the TTM posits, behavioral strategies were used at the higher stages of changes (e.g., action/maintenance). The use of qualitative methods allowed the authors to identify the need for developing a theory based physical activity program to enhance weight-loss maintenance after bariatric surgery.

Moreover, one qualitative study examined worksite physical activity barriers and facilitators among 30 French employees (Planchard et al., 2018). Findings highlighted distinct barriers in the three domains (e.g., physical, psychological, and environmental) and across the stages of change. With that said, some similar physical activity barriers were reported across the stages of change (e.g., not enough time). Like previous studies, the authors found that individuals in the action/maintenance stages reported fewer barriers and more physical activity facilitators when compared to individuals in the lower stages of change. The authors noted that their qualitative methodology guided by the TTM highlighted the complexity of workplace physical activity barriers and facilitators, which may not have been found through quantitative measures.

Conclusions

As demonstrated in these qualitative studies, using the TTM as a guiding framework can provide rich and dense information to better understand an individual’s readiness to change their
behavior. Specifically, categorizing participants in a particular stage of change is a valuable feature of the TTM (Buchan et al., 2012) and this may be more so in a qualitative context. Additionally, applying the TTM to qualitative methodology can highlight factors not identified through quantitative measure (e.g., environment, factors outside an individual’s control) influencing physical activity behavior. Identifying these factors may aid in the creation of new hypotheses to be examined in future quantitative studies (Esterberg & Compton, 2005). Further, while not much qualitative work has been applied to physical activity, this dissertation will fill this gap by assessing clergy perceptions of physical activity and identify context-specific physical activity influences according to the stage of change as posited by the TTM (Prochaska & Velicer, 1997).

**Rationale for Conceptual Framework and Study Design**

Based on the evidence provided, applying the TTM constructs to better understand factors influencing behavior has been useful, particularly with physical activity. With that said, the TTM has been widely critiqued on its inconsistent application (e.g., use of constructs) in behavior change interventions (Armitage, 2009; Romain, Caudroit, et al., 2018). However, the utilization of the TTM as a guiding framework, particularly in qualitative studies, has been effective in providing evidence of differing behavioral beliefs and barriers across stages of behavior change, which may be beneficial for generating new hypotheses, identifying factors that have the potential to influence behavior over time and intervention development. Therefore, this dissertation will be guided by the TTM to better understand beliefs, motivations, and barriers across the five stages of behavior change, particularly among clergy. These data will be useful to guide the development of tailored behavioral interventions aimed at increasing clergy engagement in physical activity.
**Study Purpose**

Among clergy, poor health outcomes and behaviors still remain and our understanding of how clergy perceive physical activity, specifically, is limited. Therefore, exploring and understanding how clergy perceive physical activity, guided by theory, is vital for the success of future interventions attempting to mitigate the existing poor health conditions and improve health behaviors among clergy.

Knowing this, the purpose of this study is to better understand the perceptions of physical activity barriers, benefits, and motivators among clergy at different levels of readiness to change physical activity behavior. This proposed study will be the first to explore how clergy physical activity behaviors and perceptions differ across the five stages of change as posited by the TTM (Prochaska & Velicer, 1997) (e.g., precontemplation, contemplation, preparation, action, maintenance). This data collection may inform future interventions on how to further address and improve clergy physical activity behaviors.

**Research Questions:**

**RQ1:** How do physical activity barriers, facilitators, benefits, and motivators differ between clergy in various stages of change?

**RQ2:** What are the strategies used among clergy to engage in physical activity behaviors?
CHAPTER TWO: METHODS

Study Design

This dissertation was qualitative and utilized virtual, semi-structured interviews to better understand the perceptions of physical activity barriers, benefits, and motivators among clergy at different stages of readiness to change their physical activity behaviors. The research questions and interview guide were informed by the TTM (Prochaska & Velicer, 1997) and existing faith-based research literature, while the interpretation of findings was driven by both a deductive and inductive analytic strategy (i.e., informed grounded theory). This study was approved by the University of Memphis Institutional Review Board.

Rationale for Informed Grounded Theory

In qualitative research, there are five popular methodological approaches: ethnography, phenomenology, case study analysis, grounded theory, and narrative (Padgett, 2011). The ethnographic and phenomenological approaches require direct observation and long-term immersion with the population, respectively (Padgett, 2011). Case study analysis requires an ethnographic approach with a focus on a specific population (e.g., psychiatric ward, cult), while a narrative approach focuses its analysis on what and how the participant responds to questions (Padgett, 2011).

Unlike other approaches, grounded theory is an iterative process that employs inductive data coding while also incorporating new theoretical concepts throughout the data analysis (Hennink, Hutter, & Bailey, 2020; Padgett, 2011; Ryan & Bernard, 2010). The iterative process of this analytical method allows for the creation of a conceptual framework grounded in qualitative data (Glaser Barney & Strauss Anselm, 1967; Green & Thorogood, 2018; Hennink et al., 2020). Classical grounded theory, however, rejects the idea that researchers use literature
reviews, prior knowledge and experience to inform their data analysis and interpretation of findings (Thornberg, 2012).

With that said, this dissertation utilized “informed grounded theory” (Thornberg, 2012). Essentially, informed grounded theory is an analytical process informed by literature and extant theories and frameworks while being grounded in data (Thornberg, 2012). In contrast to classical grounded theory, informed grounded theory rejects the notion that qualitative data analysis can be purely inductive and recognizes the importance of a researcher’s a priori knowledge and experience (Thornberg, 2012). While relying on extant literature and theoretical concepts, informed grounded theory does not suggest forcing data to fit into pre-existing concepts or theories; instead, it is recommended that these are used as a guide (Thornberg, 2012).

Rather than employing a content analysis based on the TTM, a combined inductive and deductive approach was used in an attempt to capture the many factors influencing physical activity behavior grounded in the words of the clergy participants. Findings were informed by the interview guide and the TTM, but throughout the analysis process the investigators remained critical of extant theoretical concepts (Charmaz, 2006). To enhance rigor, the investigators allowed the data to drive the analysis versus preconceived notions of physical activity, clergy, or the stages of change while also relying on previous knowledge of extant theories and literature (Charmaz, 2006; Thornberg, 2012). This approach allowed for the identification of core categories and themes, which then led to comparing categories based on the participant’s stage of change.

**Study Population and Recruitment**

The participants in this study were Christian clergy. Eligible participants were 18 years or older and identified as a current pastor employed either full-time or part-time. Although clergy
are mostly male, females were not excluded as the percentage of female clergy is growing (Brown et al., 2017).

We aimed to recruit 25-35 clergy nationwide. To achieve this, participants were recruited between November 2021 and April 2022. Multiple recruitment strategies employed by the lead investigator included word-of-mouth and recruitment flyers sent via email and listservs. Additionally, faith-based networks were asked to share recruitment flyers or the purpose of the study with known clergy.

Sample Size Rationale

Recruitment of 25-35 participants was targeted because previous qualitative research identified a range of 20-30 participants as sufficient for maintaining rigor (Charmaz, 2006; Creswell & Poth, 2016), particularly studies using a grounded theory approach (Padgett, 2011). In general, data saturation (i.e., not learning any new information) is usually reached after 20 or more interviews (Green & Thorogood, 2018). In this study, however, participants represented different stages of behavior change; therefore, we attempted to achieve a balance of participants across the stages of change to assess a wide variety of perspectives.

Topic Guide Development

The topic guide was primarily informed by the TTM (Prochaska & Velicer, 1997). The initial topic guide was developed independently (NTW). After initial development, the topic guide was then refined by two co-investigators with content and methodological expertise (KW, BEH). Next, the topic guide was piloted and refined with another co-investigator (JL), who earned a Doctor of Ministry and has experience working with clergy. This process led to rephrasing, reordering, and removing questions, minimizing investigator bias, and enhancing the clarity of the questions asked. Example questions from the piloted topic guided include: “What is
“Would you consider yourself to be physically active?”; “What are the pros of engaging in physical activity?”; “What are the difficulties of engaging in physical activity?”; and “In your opinion, is it important for pastors to engage in physical activity? Why or why not?”. See Appendix A for the complete topic guide.

**Study Procedures & Data Collection**

Interested participants contacted the lead investigator via email or phone. Before any study materials were completed, interested and eligible participants were emailed a Qualtrics link containing a consent form, which contained a full description of study activities. Participant read the description of the study and signed the consent form. The lead investigator then signed the consent form.

After the participant and lead investigator completed the consent form, the participant was sent via email a randomly generated participant ID and a Qualtrics link to a survey where provided their age, sex, height, weight, education level, race/ethnicity, years in ministry, years at current church, and congregation size. Included in this survey was the Physical Activity Stages of Change Scale (Marcus & Forsyth, 2008; Marcus, Rossi, Selby, Niaura, & Abrams, 1992; Marcus & Simkin, 1993), which has a moderate kappa index of reliability, or interrater reliability (0.78) over a two week period (Marcus, Selby, et al., 1992). This questionnaire has also established concurrent validity with the Seven Day Physical Activity Recall (Marcus & Simkin, 1993). The questionnaire was implemented and scored as published.

Semi-structured interviews were conducted to gain a deeper understanding of the perceptions, motivations, barriers and facilitators of the physical activity habits of clergy. The interviews were also used to confirm participant responses to the Physical Activity Stage of Change Scale. Each interview was audio recorded and conducted via Zoom and hand-written
notes were taken during each interview. The interviews were between 25-70 minutes in length and conducted by the lead investigator (NW).

In the case of saturated stages of behavior change (e.g., maintenance), participants were emailed the Physical Activity Stages of Change Questionnaire, which was used to screen out participants representing the saturated stage (Marcus & Lewis, 2003). After completing the questionnaire, if participants represented the saturated stage, they were thanked for their interest in the study but were not added to the sample, their data were not analyzed, nor was the participant interviewed. All data from participants who were screened out of the study were discarded and not used for this study.

**Data Analysis**

Descriptive and frequency reports were provided for all variables (e.g., age, sex, race/ethnicity, years in ministry, church size) using SPSS v.26. Self-reported weight and height were used to calculate BMI using the standard equation: Weight (lb)/(Height (in))^2 x 703 (National Heart Lung Blood Institute [NHLBI], 1998).

All transcribed interviews were coded using NVivo v.12. Identified codes and themes related to physical activity barriers, benefits, and motivators of physical activity were categorized using an inductive and deductive approach (i.e., informed grounded theory analysis of data). Qualitative data coding occurred in three phases: initial, focused, and final coding (Charmaz, 2006; Corbin & Strauss Anselm, 2008).

**Initial Coding**

In the initial coding phase, the analysis began by labelling each participant with a number (e.g., 1,2,3). This process allowed for minimizing biases about how the responses fit within a certain stage of change. Additionally, then enhanced the investigator’s ability to make
connections in the data across the stages of change versus being limited to coding within each respective stage. Prior knowledge and interaction with each participant, however, made this step difficult, yet the investigators still remained committed to being critical of the data and extant theoretical concepts, which allowed the data to tell the story (Charmaz, 2006). Anonymizing each participant allowed the two other coders (TL, FF) to remain unaware of which stage each participant was in.

In this phase, *in vivo* coding was prioritized (Charmaz, 2006), which involves creating codes in the participants own words. Using this analytic approach in the early stages allowed the lead investigator to capture the context, meaning and phrases directly from the participants. Building codes on *in vivo* coding was important as this coding provided accountability on if what was and what was not significant in the data collected (Charmaz, 2006).

*Focused Coding*

The next phase involved focused coding, which required the connecting of codes, meanings, and phrases created in the initial coding phase (Charmaz, 2006). Using focused coding, core categories were developed with which enveloped sub-codes and categories. This phase allowed the data to become open as patterns developed and a greater context of participant responses were revealed. As categories and themes began to emerge, constant comparative analysis through memoing was used to highlight other categories and potential themes emerging within and across transcripts (Krefting, 1991).

*Codebook Development*

In this phase, the initial codebook was developed by the lead investigator. The lead investigator initially coded a subset of transcripts ($n = 6$) to begin developing the codebook. Further, to check for objectivity and subjectivity in the analysis, two additional coders (FF, TL)
were recruited and trained in analyzing qualitative data. The codebook was used as a guide to code each transcript. This research team (NTW, TL, FF) met on a bi-weekly to monthly basis to assess and analyze if the codebook properly explained the findings in the data. Each team member engaged in memoing, which aided the facilitation of each meeting and the confirmation of findings (Krefting, 1991). To address discrepancies in findings from the research team, consultation with an expert in qualitative methodology (BEH) was also used. Codebook formation was an iterative process that required consultation with the research team and consistent revisiting of the data.

**Final Coding**

After creating codes and themes grounded in participant responses, the final phase involved incorporating concepts from the TTM (e.g., stage of change). Based on the scoring algorithm, participants were placed in their respective stage of change posited by the TTM (e.g., precontemplation, preparation, action) (Prochaska, 2008; Prochaska & DiClemente, 1982; Prochaska & Velicer, 1997). In this phase, the lead investigator identified how codes and themes fell within each stage of change. Additionally, following the initial and focused coding phases, the investigator was able to compare and contrast responses, which prompted identification of similar and differing physical activity barriers, beliefs, motivations, and strategies across the stages.

**Rigor/Trustworthiness**

The researcher must ensure rigor, or trustworthiness (Lincoln & Guba, 1985; Padgett, 2011), to have effective qualitative data collection and analysis. As alternatives to quantitative rigor (e.g., external validity, internal validity, reliability, objectivity), the trustworthiness qualitative findings was established by ensuring credibility, confirmability, dependability and
transferability in data collection and analysis (Krefting, 1991; Lincoln & Guba, 1985). Moreover, to further increase the rigor of findings, the lead investigator engaged in memoing (e.g., taking notes of findings) and reflexivity throughout the interview and analytical processes (Krefting, 1991).

_Credibility_

Credibility was the alignment of the participants’ responses and the researcher’s interpretation of the findings (Padgett, 2011). Credibility was achieved through the use of analytic and interdisciplinary triangulation by 1) one trained coder developing a codebook with two trained coders assessing the accuracy of these findings, and 2) having multiple perspectives from four researchers (TL FF, NTW, BEH) with a unique expertise in the public health discipline.

_Confirmability_

Confirmability is providing evidence that interpretation of findings is linked to the data (Padgett, 2011). Developing and maintaining a data codebook linked to participant responses ensured accurate representation of the participant’s views and beliefs. Before presenting to the research team, the lead investigator drafted multiple codebooks. After initial codebook development, the research team met on a bi-weekly to monthly basis to discuss ways to enhance the codebook. These meetings with three research investigators enhanced confirmability of the findings.

_Dependability (Auditability)_

Dependability was achieved through rigorous documentation of study documents (Padgett, 2011). Keeping a detailed audit trail of data collection and procedures ensured dependability (Krefting, 1991). Specifically, all interviews were transcribed using two recorders.
and handwritten notes were taken to document participant responses. Moreover, all datasets and codebooks were saved on a secure hard drive to document study progress.

Transferability

Transferability is achieved through the generalizability of the study findings (Padgett, 2011). Descriptive data (e.g., age, years in ministry, height, weight, congregation size) were collected to increase the transferability of our findings to similar populations (e.g., clergy) (Lincoln & Guba, 1985).

Memo Writing

Throughout researcher interaction with qualitative data, thoughts and ideas are documented (i.e., memo writing). In this dissertation, memo writing was represented in a few ways (e.g., code memos and theory notes) (Krefting, 1991; Strauss & Corbin, 1990). Code memos were recorded to represent definitions and meanings of codes identified in the data. Theory notes represented personal thoughts of what was or might be occurring in the data. Memoing also aided in the use of a constant comparative analysis to assess participant responses within and across transcripts (Krefting, 1991). After interviews, the lead investigator read over the notes taken to identify how responses aligned with previous responses and extant theoretical concepts, and what patterns might be emerging. Each research team member who was involved in the data analysis engaged in personal memoing to highlight their thoughts of what to look for in the data.

Reflexivity

Given the researcher is the primary instrument in qualitative data collection and analysis, existing researcher bias is inevitable and may influence interpretation of findings. To mitigate existing researcher bias in qualitative research, self-reflection (i.e., reflexivity) must be practiced
(Finlay & Gough, 2008; Hennink et al., 2020). Therefore, throughout this dissertation and interview process, the lead investigator continually reflected on their bias toward the benefits and barriers of physical activity. To increase reflexivity and minimize bias, two qualitative data coders, unfamiliar with study participants and their characteristic, were recruited to assist throughout data analysis.

**Ethical Issues**

*Incentives*

Participants were given a small monetary incentive for participating ($25 Amazon eGiftcard). An Amazon eGiftcard was chosen as it can be redeemed no matter the geographic location.

*Data Security, Privacy, and Confidentiality*

Consent forms, surveys, and transcripts were stored on a locked and password protected computer in the University of Memphis secured server. The name of the participant and any identifiable information were removed and not used in any revised transcripts or when coding transcripts. Further, participants were assigned randomly generated ID numbers to remove any identifiable participant information. The lead investigator conducted all virtual interviews in a secluded setting with doors closed to minimize the risk of loss of privacy. There was a potential risk of the loss of participant’s privacy if they shared with peers that they were participating in this study.

The name of the participant will not be used in any reports or publications of this study and no identifiable contact information will be included. The survey information and recordings were only accessible by the lead investigator. To note, only the lead investigator had access to the file linking participant IDs to surveys and interviews. Additionally, all non-identifiable
documents were maintained in computer records and password protected and were only accessible by study staff.
CHAPTER THREE: RESULTS

Sample Characteristics

Twenty-seven participants completed the online survey and an in-depth interview. See Table 1 for participant characteristics. Participants were on average 44.3 years ($SD = 11.6$) of age and had been serving in ministry for an average of 17.3 ($SD = 11.0$) years. Most clergy were female (52%), White (93%), and represented the Presbyterian denomination (89%). Participants had served their current congregation for approximately 5.7 ($SD = 5.54$) years in suburban (44%), rural (33%), and urban (22%) areas. The most frequently reported congregation size was 101-250 members (48.1%). Additionally, the average BMI among clergy was 29.1 kg/m$^2$. Based on interview responses, most clergy were solo pastors ($n = 15$), and the majority of pastors were not currently bi-vocational ($n = 25$).

According to the Physical Activity Stage of Change Questionnaire, most participants were in the Maintenance stage of change (59%), with participants also representing the Action (11%), Preparation (11%), and the Contemplation (19%) stages. In the interview, however, some participant responses were discordant with their initial stage categorization via the Physical Activity Stage of Change Questionnaire, warranting further recategorization. Based on interview responses, some participants ($n = 7$) were recategorized into another stage of change (See Table 2). After recategorization, most participants were still in the Maintenance (41%) stage, followed by Preparation (26%), Action (19%), and Contemplation stages (15%).
Table 1. Sample characteristics of Christian clergy who participated in the in-depth interviews (N = 27).

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age; Mean (SD)</td>
<td>44.3 (11.6)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>14 (51.9%)</td>
</tr>
<tr>
<td>Male</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>Church Location</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>6 (22.2%)</td>
</tr>
<tr>
<td>Suburban</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>Rural</td>
<td>12 (44.4%)</td>
</tr>
<tr>
<td>Denomination</td>
<td></td>
</tr>
<tr>
<td>Presbyterian</td>
<td>24 (88.9%)</td>
</tr>
<tr>
<td>Non-Denominational</td>
<td>3 (11.1%)</td>
</tr>
<tr>
<td>Years in Ministry; Mean (SD)</td>
<td>17.3 (11.0)</td>
</tr>
<tr>
<td>Years at Current Church; Mean (SD)</td>
<td>5.67 (5.54)</td>
</tr>
<tr>
<td>Congregation Size</td>
<td></td>
</tr>
<tr>
<td>&lt;100 Members</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>101 – 250 Members</td>
<td>13 (48.1%)</td>
</tr>
<tr>
<td>251 – 500 Members</td>
<td>5 (18.5%)</td>
</tr>
<tr>
<td>&gt;500 Members</td>
<td>4 (14.8%)</td>
</tr>
<tr>
<td>Body Mass Index; Mean (SD)</td>
<td>29.1 (5.99)</td>
</tr>
<tr>
<td>Stage of Change*</td>
<td></td>
</tr>
<tr>
<td>Contemplation</td>
<td>4 (15)</td>
</tr>
<tr>
<td>Preparation</td>
<td>7 (26)</td>
</tr>
<tr>
<td>Action</td>
<td>5 (19)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>11 (41)</td>
</tr>
</tbody>
</table>

*Denotes stage of change classification based on interview responses.
### Table 2. Detailed process of recategorizing clergy into a new stage of change ($n = 7$).

<table>
<thead>
<tr>
<th>Participant</th>
<th>Original Stage Classification</th>
<th>New Stage Classification</th>
<th>Reason for Recategorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant #8</td>
<td>Maintenance</td>
<td>Action</td>
<td>Participant described consistent physical activity, but only for the past three months. Participant described they have been working back into their habit that was disrupted due to the COVID-19 pandemic and also had experienced an injury getting back into the habit.</td>
</tr>
<tr>
<td>Participant #21</td>
<td>Maintenance</td>
<td>Action</td>
<td>Participant described they were neither active nor inactive. They also spoke of stepping on the elliptical two-three times per week, but it ebbed and flowed. Participant described they were engaging in physical activity, but it was not regular. Participant described a knee injury causing a significant decrease in their “cardiac load” in the last month.</td>
</tr>
<tr>
<td>Participant #14</td>
<td>Maintenance</td>
<td>Preparation</td>
<td>Participant described engaging in physical activity that met the recommendations but had been doing so for less than six months. Participant described going on regular walks, but not enough to meet the physical activity recommendations.</td>
</tr>
<tr>
<td>Participant #15</td>
<td>Maintenance</td>
<td>Preparation</td>
<td>Participant described they were neither active nor inactive. They also spoke of stepping on the elliptical two-three times per week, but it ebbed and flowed. Participant described they were engaging in physical activity, but it was not regular. Participant described a knee injury causing a significant decrease in their “cardiac load” in the last month.</td>
</tr>
<tr>
<td>Participant #22</td>
<td>Maintenance</td>
<td>Preparation</td>
<td>Participant described engaging in physical activity that met the recommendations but had been doing so for less than six months. Participant described going on regular walks, but not enough to meet the physical activity recommendations.</td>
</tr>
<tr>
<td>Participant #17</td>
<td>Contemplation</td>
<td>Preparation</td>
<td>Participant described they were neither active nor inactive. They also spoke of stepping on the elliptical two-three times per week, but it ebbed and flowed. Participant described they were engaging in physical activity, but it was not regular. Participant described a knee injury causing a significant decrease in their “cardiac load” in the last month.</td>
</tr>
</tbody>
</table>
Qualitative Themes

Across the stages of change, the major themes that emerged from the data were: 1) Physical Activity Relationship; 2) Benefits; 3) Barriers; 4) Strategies Used to Mitigate Existing Barriers; 5) Physical Activity Motivators; and 6) Physical Activity Facilitators; and

Physical Activity Relationship

Physical Activity Perception

There were distinctions of physical activity perception by stage. For example, some contemplators ($n = 2$) and most preparers ($n = 4$) acknowledged they were not physically active with one preparer noting “I am neither active nor inactive” (P14). Two contemplators and three preparers also described themselves as physically active, but two preparers highlighted, they were on “a circumstantial hiatus” (P3) or “not as much [physically active] as I want to be” (P22). In contrast, all clergy in the action stage and maintenance stages described themselves as physically active and were meeting the recommended levels of physical activity but were differentiated by the amount of time meeting the guidelines (action = <6 months; maintenance = ≥ 6 months). Additionally, over the last six months, clergy (preparation: $n = 1$; action: $n = 5$; maintenance: $n = 5$) described their physical activity had increased (e.g., recent death in the family, joining a gym, signing up for a half marathon, safer to go back to the gym after the COVID-19 lockdowns had ended). In contrast, all contemplators ($n = 4$), most preparers ($n = 5$), and one maintainer talked about how their physical activity engagement had decreased over the last six months mostly due to an injury, chronic disease complication, or lack of equipment. Some clergy also described their physical activity had stayed the same over the last six months (preparation: $n = 1$; maintenance: $n = 6$).
“I had shoulder surgery in April and that was six weeks in a sling. I had rotator cuff surgery so, like, you know, fully immobilized sling, recovery from rotator cuff is very long and very difficult and so it's limited a lot of things, probably at about eight weeks I began walking again more gently until I pulled my back out in November.” – Participant 18 (Contemplation)

“[In the last six months] they waned quite a bit, so I was walking 3 miles a day until September, and that's not where I'm at right now and I think probably, you know, trying to get time into work and at the house it's not something that I've fit time into my schedule.” – Participant 22 (Preparation)

“In the past six months, yes, so I basically got out of that habit during COVID, because it wasn't safe to go the gym and I've been working my way back into that habit, so really over that six month period of time was me getting back into, into that habit.” – Participant 21 (Action)

“... during COVID I worked on at home, online and I probably worked out a little bit less. I probably worked out about 75% of what I do now, so when COVID kind of, well it's not over, but when the gym reopened I went up to my current level.” – Participant 4 (Maintenance)

Types of Physical Activity

Across the stages of change, there were also distinctions between the lower and higher stages of change in the types and amounts of physical activities clergy engaged in. For example, in the action \(n = 5\) and maintenance \(n = 9\) stages, most clergy were currently engaged in a variety of activities including: swimming, weightlifting, walking, running, sport-related activities (e.g., basketball, ultimate frisbee), cycling, household chores (i.e., gardening, yardwork,
cleaning), or paddleboarding. In the preparation stage, most clergy noted their current primary activities were walking, yoga, cycling/elliptical, or household chores (e.g., cleaning, yardwork). In the contemplation stage (i.e., not currently engaging in any physical activity), clergy, when they were able, engaged in household chores, walking, body-weight exercises, structured weight-lifting regiments, and swimming. With that said, most clergy (preparation: n = 5; action: n = 5; maintenance: n = 9) described they were currently engaged in more than one physical activity.

Benefits

Physical Health

When asked of the pros of physical activity, clergy, across the stages of change, discussed a range of physical health benefits received (Table 2). Overall, most clergy, regardless of stage, spoke highly of physical activity engagement, particularly the physical health benefits received (n = 22). The physical health benefits discussed included: greater strength (n = 3), reduction of chronic disease symptoms (n = 2) (e.g., asthma, toxin build-up), endorphin release (n = 2), more energy (n = 2), general health and well-being (e.g., sleep, heart, staying in shape, respiratory system, weight-loss, quality of life, body chemistry) (n = 13).

“...weight loss but not just weight loss for aesthetics, but weight loss for better health.” – Participant 19 (Contemplation)

“... in the long run I know that the pro is a healthier heart, healthier body and hopefully, lower weight.” – Participant 14 (Preparation)

“So, us living longer is my biggest hope I think, and having a higher quality of life...when I work out regularly, I feel better, I have more energy, and more flexible...” Participant 21 (Action)
“On a biochemical level just what's going on in your body, there are so many benefits to exercising...” – Participant 2 (Maintenance)

Mental Health

Clergy (n = 19) also described a range of mental health benefits including: relaxing (n = 2), happiness and regulating emotions (e.g., mood) (n = 4), general mental health benefits (e.g., being in nature, mental cool down, “fabulous think time”) (n = 5), stress, tension, or anxiety reliever (n = 8) (Table 2).

“I find them relaxing. For me, they're really times of prayer.” – Participant 10 (Contemplation)

“...mostly stress relief though, that's the big thing.” – Participant 11 (Preparation)

“...when I'm on the treadmill, like I'm realizing that I'm angry, or if I'm punching the punching bag ...I chose that exercise because I'm angry and so it helps release stress.”

Participant 23 (Action)

“So I definitely feel a difference mentally on the days that I do not work out. I am not as happy.” – Participant 7 (Maintenance)

Barriers

Clergy also described cons, difficulties, or barriers to physical activity engagement (Table 3). The most prominent barriers mentioned, across the stages of change were time (n = 18), ministry workload (n = 22), pain/injury (n = 20), and access (n = 10). Other notable barriers were discussed including: the COVID-19 pandemic, family obligations, feeling judged/guilt, and embarrassed. While some prominent barriers were mentioned across the stages of change, experiences with each barrier were not the same.
Time

Regardless of stage, clergy described time as a barrier or con to physical activity engagement (contemplation: n = 3, preparation: n = 4, action: n = 4, maintenance: n = 7). The most prominent factor for time being a barrier was time commitment or the time required to engage in the physical activity itself. One maintainer described the time spent in physical activity as a con but then acknowledged “it really isn’t that much time” (P4).

“...for me it's a time issue and it's a balancing issue that again I'm working on.” – Participant 19 (Contemplation)

“I think probably the time and the additional time. There's extra time that gets involved, and there's planning.” – Participant 3 (Preparation)

“...I mean the cons are that you lose time, and there's, you know, you have to stop what you're doing and do something else. – Participant 8 (Action)

“It's hard to find the time...at the moment, I am sacrificing work time for physical activity under the assumption that it will make me a better pastor to be taking care of myself” – Participant 24 (Maintenance)

Ministry Workload

Regardless of stage, the high workload and demands of ministry was reported (n = 22) as a barrier to physical activity engagement or meeting the physical activity guidelines. Of note, most clergy, across the stages of change (contemplation: n = 4; preparation: n = 3; action: n = 3; maintenance: n = 6), did not feel the barriers reported were unique to their denomination. Moreover, clergy (contemplation: n = 1; preparation: n = 5; action: n = 2; maintenance: n = 7) noted that balancing schedules, constant accessibility, and not working a regular “nine-to-five” job (e.g., addressing emergency needs) were a hindrance to their physical activity engagement.
One maintainer described the “bottomless” nature of ministry by stating “…there’s always something else you ought to be doing.” Moreover, an inconsistent schedule (preparation: n = 2; action: n = 1) was described as a barrier to physical activity with one contemplator stating, “…your schedule isn’t always your own, because of the demands and things that, you know, come up that aren’t planned…” (P18). Clergy (contemplation: n = 2; preparation: n = 1) discussed being “overwhelmed with work” or emotionally drained due to the workload of ministry. Interestingly, one contemplator and one maintainer also highlighted that among clergy there is a “pull to be God,” which leads to a 24/7 accessibility mindset they do not buy into.

“…it is emotionally draining work and so by the time you're done at the end of the day, you're tired, you don't want to go exercise.” – Participant 10 (Contemplation)

“There are times where I'm more physically active and there's times when things are overwhelming at church and that, you know, especially with the holidays right now and we just had an unexpected death yesterday, so any plans of trying to be physically active this week have kind of gone out the window” – Participant 14 (Preparation)

“Well, ministry is bottomless like there's never a moment that there's not something you could be doing, you don't clock out, you don't stop and so every time you exercise you have to say this is important enough for me to do instead of doing something else and that's a big barrier.” – Participant 24 (Maintenance)

Pain/Injury

When describing pain or injury as a con/barrier to physical activity engagement, clergy (n = 20), across the stages of change, had different experiences. For example, most contemplators (n = 3), some preparers (n = 3), and some maintainers (n = 3) noted that an injury/pain (e.g., chronic disease, neuropathy, arthritis, knee, chronic trauma, shoulder/back) prevented them from
engaging in physical activity or meeting the recommended physical activity levels. Given their injury, one contemplator also noted they believed that risk of physical injury was a con to exercising. Some clergy in each of the preparation \((n = 1)\), action \((n = 1)\), and maintenance \((n = 1)\) stages also described the pain received from physical activity (e.g., aches, sore), but this description did not prevent them from engaging in physical activity. In the action and maintenance stages, however, clergy \((n = 7)\) participants spoke mostly of previous pain/injuries.

“I have neuropathy in my feet, and so it's fairly dangerous for me to try to do anything faster than a pretty slow walk.” – Participant 10 (Contemplation)

“And it's [physical activity] painful. Oh, I guess I should put that in. It's painful.” – Participant 3 (Preparation)

“... when you start working out, or when you're like beefing up what you're doing, it hurts, it’s physically painful. Yeah, that's some of the cons.” – Participant 8 (Action)

“... I guess there's potential for injury but I've never actually... I got hurt playing frisbee in college a couple times but I haven't really been hurt a lot...” – Participant 24 (Maintenance)

Access

Further, clergy \((n = 10)\) across the stages of change described how access (e.g., infrastructure, weather, financial cost, location) can negatively influence physical activity engagement or maintenance. For example, some clergy (contemplator: \(n = 1\); preparation: \(n = 4\); action: \(n = 1\); maintenance: \(n = 4\)) described their current physical location (e.g., infrastructure) \((n = 3)\), weather \((n = 2)\), access/cost to a local gym/trainer \((n = 3)\), or a combination \((n = 2)\) as barriers to physical activity engagement. Additionally, a contemplator \((n = 1)\) described how
rurality limits his access to a gym, while also acknowledging he drives by the gym every day (P19).

“... and again, I do live in rural [blinded] and so the closest gym, to me, is 30 minutes away, so that’s another aspect of it...” – Participant 19 (Contemplation)

“I live in an area where winter is very cold and so usually the struggle is like December to March in staying active...” – Participant 16 (Preparation)

“I'd also love to do a triathlon... I mentioned that this is not a great town for walking, well it's way worse for biking...” – Participant 2 (Maintenance)

COVID-19 Pandemic

Some clergy described the COVID-19 pandemic (n = 10) as a barrier to their physical health and/or their physical activity engagement. Most preparers (n = 6), and one maintainer noted the pandemic had previously or was currently having a negative influence on their ability to engage in some physical activities (e.g., symptoms from having COVID-19, not comfortable going to gym, inability to start walking group with church). Some participants, in the action and maintenance stage (n = 3), however, described they were not in their normal routine during the middle of the pandemic, but once the gym reopened, they started “working my way back into that habit” (P21 - action) or “went up to my current level” (P4 - maintenance).

“...the COVID itself lasted 10 days...but the aftermath of the exhaustion...I’m just now getting over that...” Participant 19 (Contemplation)

“I have belonged to Planet Fitness, I have not gone since the pandemic. I've continued to keep my membership there, but I'm still a little concerned about going, even though I do have both vaccines and the booster against COVID.” – Participant 25 (Maintenance)
Family Obligations

Some clergy also spoke of “family obligations” as barriers to spending time in physical activity \( n = 11 \). Specifically, preparers \( n = 3 \) and a maintainer \( n = 1 \) discussed that family commitments or obligations were currently hindering their ability to engage in some of the physical activities they desired. Some clergy \( action: n = 1; maintenance: n = 2 \) highlighted the potential for the obligations to hinder physical activity as two were not married, and the other was in the process of adopting a child. In connection, one clergy in the action stage spoke of physical activity engagement as taking time away “from their children”. Additionally, another clergy in the action stage noted the reason he exercises in the morning is because the evening time is spent with his children due to him being a “solo dad.” Two clergy \( contemplation: n = 1; action: n = 1 \) spoke of how previous family obligations (e.g., when kids were younger) made it difficult for them to be physically active.

“... kind of the reality, the focus was on getting the kids off the school bus and taking care of them and cooking dinner and whatever else as opposed to just going to get on a bike.” – Participant 18 (Contemplation)

“...so my wife works in of town, so I do a lot of household chores...I don't have a chance to get to the gym as much as I want to. I also don't get to ride my bike as much as I want to and so part of part of that is because of we have 3 children that live at home.”

- Participant 22 (Preparation)

“When we were, when, when we had kids that were young, that was an obstacle. And, you know, I figured out how to kind of overcome that, but it was, I had to be creative...”

– Participant 21 (Action)
“...I think it helps right now that you know I'm single I don't have kids so it's easier to prioritize myself...” – Participant 1 (Maintenance)

Other

While not prominent, some clergy (contemplation: n = 1; preparation: n = 4; action: n = 1; maintenance: n = 2) talked about feeling “judged” (n = 1) by congregants, “selfish” (n = 3), “not working hard enough” (n = 1), or “guilt” for spending time away from work (n = 3) being physically active. Moreover, one contemplator and one preparer also described that “intimidation” or “know how” were physical activity barriers, with two clergy in the action stage and two maintainers noting they struggled with feeling embarrassed or the lack of knowledge when they were first starting out.

Strategies Used to Mitigate Barriers

Within this theme, clergy described specific and individualized strategies they used to mitigate existing barriers to maintain their physical activity engagement. See Figure 1 for the strategies that clergy, in the preparation, action, and maintenance stages, used to reduce barriers and engage in physical activity.

Although not meeting recommendations, all contemplators (n = 4) and most preparers (n = 6) discussed strategies they used or had previously used to help prioritize their physical activity engagement. Despite having some strategies, most clergy in the lower stages of change (contemplation: n = 3; preparation: n = 5) also described individualized strategies they needed to put in place to mitigate existing barriers and increase their physical activity engagement. For example, some of these individualized strategies included: research, goal setting, sleep, accountability partner, leaving work, and restructuring schedule. Clergy, in the action stage (n = 3), spoke of different strategies they currently used or would like to use to maintain or increase
their physical activity, with one clergy in the action stage describing that she has tried to “set routines and it’s just been impossible” (P8), but she also described “…I need to join a gym and then hold myself accountable to the money I’m spending” (P8). One clergy in the action stage had some communication strategies with their family, but also noted her physical activity would be better if she scheduled it. All clergy in the maintenance stage (n = 11), spoke of strategies they currently used to help them maintain their physical activity behavior, with only four maintainers describing other strategies they might use (e.g., accountability, stretching, better equipment).

Physical Activity Motivators

Within this theme, clergy noted, across the stages of change, that modeling (n = 11), serving in ministry (n = 22), health (n = 18), and physical activity enjoyment (n = 14) were helpful physical activity motivators (Table 3).

Modeling

Some clergy (n = 11), across the stages of change, understood how their own healthy behaviors influenced others. Specifically, clergy (contemplation = 3, preparation = 2, action = 2, maintenance = 4) viewed engaging in physical activity as a way to model healthy behaviors to family and congregants.

“…how can I sit with somebody in recovery and say hey, it would be really good if you were to start thinking about physical health and exercise and things like that, if I’m not doing the same thing?” – Participant 19 (Contemplation)

…and don’t get me wrong, I will enjoy myself at a church potluck, but I will also go, ‘Okay, I’m going to take the stairs’, or… ‘Okay I had a little too much, I’m going to move
my body a little more than usual, 'and so as a minister...our actions matter, and our actions speak and people watch, people pay attention.” - Participant 9 (Action)

“...I’m very concerned about my health as a pastor, I try to always lead by example.” – Participant 27 (Maintenance)

Serving

Along with modeling positive health behaviors, nearly all clergy (n = 22) described the connection of physical activity engagement and serving in ministry. Across stages (contemplation = 4, preparation = 4, action = 5, maintenance = 9), clergy noted that participation in physical activity helped them manage the demands of ministry and/or influenced their ability to minister to their congregation and community.

“I think it is important that pastors engage in physical activity. I think it's important because we have pretty high stress jobs.” – Participant 11 (Preparation)

“... I think it [physically activity] just makes them more well-rounded and that they take their health as a priority. I've seen a lot of pastors, get burnt out and mostly it's because they don't have any other outlet to put energy into, or they suffer from a health care crisis.” – Participant 13 (Action)

“...pastors are often the terminus for, you know, gossip or people sharing their concerns of for kind of systematic anxiety, and we need to find ways of unloading that stress without dumping it on somebody else...” Participant 4 (Maintenance).

Health

Some clergy (n = 18) described that one motivation for their physical activity engagement was improving or maintaining their own health. Some clergy acknowledged that engaging in physical activity was important for not only physical and mental health, but it was
also important for the connection of the mind, body and spirit (contemplation = 2; preparation = 1; action = 1; maintenance = 3). Nine clergy (contemplation: n = 1, preparation: n = 1, action: n = 4; maintainer: n = 3) also discussed that their own illness or physical health was a primary motivation for physical activity engagement. One preparer and three maintainers described observing family members/congregants with poor physical health (e.g., cancer, osteoporosis) or health behaviors as motivators for their physical activity engagement to improve or maintain their own health.

“... it’s I think, a combination of, you know, probably reasonable fear and a positive desire, both related to physical health and longevity.” – Participant 18 (Contemplation)

“...my mom had osteoporosis. I want to keep my bones strong, I want to be able to continue to be active... not be confined because I can’t walk.” – Participant 20 (Preparation)

“...I want to just keep making it stronger and making myself stronger to be able to get up and move and keep up with a small child.” – Participant 9 (Action)

“... like most Americans, I am a little bit overweight, I try to keep on top of that, with physical activity. I have a desire to be a healthy person and I have a desire to do some of these activities I engage in.” – Participant 24 (Maintenance)

Enjoyment

Some clergy (n = 14) also spoke of their enjoyment, or lack thereof, with engaging in physical activity, with a distinction between clergy in the lower and higher stages of change. For example, clergy in the action (n = 1) and maintenance stages (n = 5) described that an enjoyment in or desire for exercise or certain activities was a motivator. One maintainer described it was difficult to always find “the desire” for physical activity, but they motivated themselves by
“vanity and progress.” One preparer also described that “increasing the fun” was important for her to engage in physical activity. In contrast, some clergy (contemplation: $n = 3$; preparation: $n = 2$; action: $n = 1$) spoke of a lack of motivation or enjoyment when engaging in physical activity (e.g., no passion, boredom, chore, duty) or certain activities (e.g., treadmill).

“…I feel like it’s [physical activity] a chore...it’s not something I delight in doing” – Participant 14 (Preparation)

“I'm still trying to fall in love with the idea of working out. I work out more so as a duty.” – Participant 23 (Action)

“…it’s not about like I’m doing this to better how I look in the world or for these reasons, I do it because I enjoy it” – Participant 5 (Maintenance)

**Physical Activity Facilitators**

Clergy, across the stages of change, described physical activity facilitators including confidence ($n = 27$), support of the church ($n = 19$), family and friends ($n = 18$) and access ($n = 14$) (Table 3). Another notable physical activity facilitator was the COVID-19 pandemic.

**Confidence**

Clergy were asked if they had the confidence to prioritize themselves or their physical activity engagement over other demands. There were distinctions, across the stages of change, in the level of confidence clergy reported ($n = 27$). For example, some clergy (contemplation: $n = 2$; preparation: $n = 3$; action: $n = 4$; maintenance: $n = 10$) highlighted they had the confidence in their ability to prioritize their physical activity. Some clergy ($n = 3$), in the action and maintenance stages, also discussed having the mindset or discipline to engage in physical activity, with one clergy stating “…regardless of how I feel...just to make a commitment within myself to make it happen” (P13). One contemplator noted they did not have the confidence nor
the discipline “in that area” (P10). One contemplator and three preparers noted they had the confidence to prioritize themselves or their physical activity, but later described they “struggled with it” \( (n = 1 \text{ - contemplation}) \) or lacked discipline or willpower for physical activity \( (n = 3 \text{ - preparation}) \).

“Yeah, I do. I'm not saying I don't struggle with it but I'm saying I do have, I absolutely have the ability...” – Participant 19 (Contemplation)

“Do I have the confidence? Sure, I have the confidence. Do I have the willpower? Do I have the desire? Probably not all the time. The confidence? Sure, I could do anything I want.” – Participant 14 (Preparation)

“Do I have the confidence? I don’t know if confidence is the word, it would be discipline maybe for me, more than confidence...” – Participant 9 (Action)

“... in ministry like to be able to say, look, my self-care is important, I actually have to do this.” – Participant 2 (Maintenance)

Support of the Church

Clergy \( (n = 17) \), across the stages of change, described the importance of church support in relation to them prioritizing their physical activity engagement. Overall, while some clergy described high ministry work demands, one contemplator, one preparer, and two maintainers described that the clergy vocation allows for a flexible work schedule, when compared to other professions. Additionally, some Presbyterian clergy \( (\text{contemplation: } n = 1; \text{ preparation: } n = 4; \text{ action: } n = 2; \text{ maintenance: } n = 5) \) also described feeling support from their denomination. Moreover, some clergy \( (\text{preparation: } n = 3; \text{ action: } n = 1; \text{ maintenance: } n = 6) \) described how their churches/congregations provided support for their health or physical activity behaviors (e.g., “reasonable expectations,” accommodating, more time for self-care). One participant in the
preparation stage described and action stages active congregation was a helpful physical activity facilitator. Additionally, two participants in the action stage noted being “surrounded” by people who prioritize physical activity or receiving reimbursements for a gym membership were helpful physical activity facilitators. In contrast, a contemplator described the “frequency with which ministers move” was an inhibitor for physical activity as well as one participant in the action stage described that a co-worker makes fun of her for walking to work (P8).

“The congregation understands my need for self-care and taking time off and so it's still hard, and I still need to fight for it but it's not an uphill battle as much as it is in the South.” – Participant 16 (Preparation)

“... in this call, what I appreciate about my call is that you know I have a, money that I can choose where it goes to through reimbursements, and I chose physical activity as one of the things that I want the church to pay for, so that has been a huge helper in my physical activity.” – Participant 9 (Action)

“My predecessor wrote her job description that then got passed down to me...one of the first things in it, is that it is part of my job to take care of myself, my like physical self, and that the church is supposed to support me in that.” – Participant 24 (Maintenance)

Family and Friends

Clergy also discussed how support from family and friends, or the lack thereof, influenced their physical activity engagement (n = 18). Across stages (preparation: n = 2; action: n = 3; maintenance: n = 6), clergy described support from their spouse/partner as a helpful physical activity motivator or facilitator. Clergy (contemplation: n = 1; preparation: n = 2; action: n = 2; maintenance: n = 5) also spoke of support, accountability, and the ability to share an experience with friends/other family members (e.g., parents, children) as positive
influences on their ability to maintain their physical activity behaviors. In contrast, several contemplators and one preparer noted not having a consistent partner \((n = 1)\) or an active spouse \((n = 3)\) made engaging in physical activity more difficult.

“I have a really supportive partner and that is helpful...he is like on board for us being physical enough to getting outside together. He's just really supportive and lovely and wonderful overall.” – Participant 17 (Preparation)

“...the fact that both my spouse and myself prioritize this [physical activity] is crucial.” – Participant 21 (Action)

“... the support of my spouse. She's been absolutely wonderful in supporting physical activity things, even when it's been difficult for her because of some health challenges that she has. I really appreciate that she encourages me.” – Participant 5 (Maintenance)

Access

Clergy \((n = 14)\) discussed how access or environmental factors aided in their physical activity engagement. In the contemplation \((n = 1)\), action \((n = 2)\), and maintenance \((n = 1)\) stages, for example, clergy spoke of previous environmental (e.g., weather) and/or access barriers (e.g., financial/cost, gym access). Additionally, clergy across stages (preparation: \(n = 3\); contemplation: \(n = 1\); action: \(n = 1\); maintenance: \(n = 2\)) highlighted their current location had good infrastructure for walks or cycling, making them more willing to engage in physical activity outside. One clergy in action stage and two maintainers discussed that belonging to gym helped them meet their physical activity goals, but emphasized the importance of convenience and affordability. For example, one clergy in the action stage discussed that the cheaper gym was farther away, but their family chose to pay for an expensive gym membership that was close by (P21) to prevent distance being a barrier. Some clergy in the maintenance stage \((n = 3)\) also
noted having access to gym equipment \((n = 2)\) (e.g., resistance bands, treadmill) and a trainer \((n = 1)\) were helpful facilitators to them maintaining their physical activity.

“We have a really great little neighborhood with nice sidewalks and it's a very walking community. So, you know, like, especially, well right now it's dark in the morning and dark at night, but you know when it's not, we're more apt to walk too.” – Participant 11 (Preparation)

“So, now I'm working in a town with a YMCA, a great facility and a pool. So, that makes it easier to get to it, I have time and the money.” – Participant 13 (Action)

“...I live in a very rural area, but it's a nice place to walk and it's fairly safe.” – Participant 25 (Maintenance)

COVID-19 Pandemic

Some clergy \((n = 6)\) described the beneficial effects the pandemic had on their own personal physical activity engagement. For example, a few clergy \((contemplation: n = 2; maintenance: n = 1)\) noted, due to less demands from the church (e.g., meetings, going into work), the pandemic helped them increase or maintain their physical activity. One preparer noted the pandemic “normalized” going for a walk with people. Additionally, one contemplator and one maintainer spoke of how the pandemic changed their viewpoint of how they were living, with one clergy noting “it took the pandemic to…change my point of view and actually be intentional about being physically active…” (P5).
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<tr>
<th>Stage of Change/Description*</th>
<th>Benefits</th>
<th>Barriers</th>
<th>Motivators</th>
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<tr>
<td><strong>Contemplation (n = 4)</strong> – Participants not currently physical active but intend to change behavior in the next six months.</td>
<td>Physical Health (n = 4) &lt;br&gt;Mental Health (n = 3)</td>
<td>Lack of time (n = 3) &lt;br&gt;Ministry Workload (n = 4) &lt;br&gt;Current Pain/Injury (n = 4) &lt;br&gt;Current Access (n = 2) &lt;br&gt;Previous Family Obligations (n = 1) &lt;br&gt;Judged/Guilt (n = 1) &lt;br&gt;Current Knowledge (n = 1)</td>
<td>Modeling (n = 3) &lt;br&gt;Serving (n = 4) &lt;br&gt;Health (n = 2)</td>
<td>Confidence (n = 2) &lt;br&gt;Church Support (n = 2) &lt;br&gt;Denominational Support (n = 1) &lt;br&gt;Family and Friends (n = 1) &lt;br&gt;Access (n = 1) &lt;br&gt;COVID-19 Pandemic (n = 3)</td>
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<tr>
<td><strong>Preparation (n = 7)</strong> - Participants currently engaged in physical activity, but not on a regular basis.</td>
<td>Physical Health (n = 7) &lt;br&gt;Mental Health (n = 7)</td>
<td>Lack of time (n = 4) &lt;br&gt;Ministry Workload (n = 6) &lt;br&gt;Current Pain/Injury (n = 3) &lt;br&gt;Current Access (n = 4) &lt;br&gt;COVID-19 Pandemic (n = 6) &lt;br&gt;Current Family Obligations (n = 3) &lt;br&gt;Judged/Guilt (n = 4) &lt;br&gt;Current Knowledge (n = 1)</td>
<td>Modeling (n = 2) &lt;br&gt;Serving (n = 4) &lt;br&gt;Health (n = 3) &lt;br&gt;Enjoyment (n = 1)</td>
<td>Confidence (n = 3) &lt;br&gt;Church Support (n = 5) &lt;br&gt;Denominational Support (n = 4) &lt;br&gt;Family and Friends (n = 5) &lt;br&gt;Access (n = 3) &lt;br&gt;COVID-19 Pandemic (n = 1)</td>
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<td>Maintenance (n = 11) - Participants currently engaged in physical activity that meet the physical activity guidelines and have been doing so for six months or longer.</td>
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<tr>
<td><strong>Access</strong></td>
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<td>“I live in an area where winter is very cold and so usually the struggle is like December to March in staying active” – Participant 16 (Preparation)</td>
<td>“I mean the physical location of where I am has been a definite deterrence/con of my physical activity. Fortunately, my wife and I did invest in getting a used treadmill…” – Participant 6 (Maintenance)</td>
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<td>“…or it's a windy day or it's snowing and raining and you can't get that walk in like you want.” – Participant 14 (Preparation)</td>
<td>“… that [acquiring gym stuff] totally makes all the workouts possible because now I don't have to drive somewhere, like I'm usually done in the time it would take to commute alone and you know it was a motivating factor, especially when it's cold out…so I don't have any of that, I just have my workout area and get it done.” – Participant 26 (Maintenance)</td>
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<td>“I do live in rural [blinded] and so the closest gym to me is 30 minutes away, so that's another aspect of it…” – Participant 19 (Contemplation)</td>
<td>“I purposely made it a convenience is like even just where your gym is located, or wherever a park is located near you…So I chose on purpose a gym, it's literally like I don't have to drive down the street” – Participant 23 (Action)</td>
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<td><strong>Time/Ministry Workload</strong></td>
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<td>“… just again that ridiculous schedule, I work too many hours…our gym is not that far away but it's just, you know, I'm not always going to mess with it on a weekday.” – Participant 11 (Preparation)</td>
<td>“I don't know how much detail you want yet, but I have a walking desk in my office, which is a treadmill…I also have a little recumbent bike in my office too, that if I'm just reading a book, commentaries or whatever I'll sit there and pedal.” – Participant 2 (Maintenance)</td>
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<td>“I think probably the time and the additional time. There's extra time that gets involved, and there's planning. So, if you're going to go do something you always have to kind of think how does this fit in with everything else?” – Participant 3 (Preparation)</td>
<td>“…I learned a long time ago, I just need a couple hours in the afternoon, so I'll get in at seven or work till two or three, I'll come back at six or seven, but that time in the afternoon is my time to walk the dog or whatever….” – Participant 12 (Maintenance)</td>
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“…it is emotionally draining work and so by the time you're done at the end of the day, you're tired, you don't want to go exercise. I think that it's a lot of hours and so the idea for some clergy of getting up early is not exciting because we're often still at work at eight or nine o'clock at night.” – Participant 10 (Contemplation)

“I just think the demands of ministry, you know, sometimes if I really want to prioritize working out but something comes up, you know, you just kind of got to go with it and so that can be hard.” – Participant 15 (Contemplation)

“…you learn that if an interruption is important then you need to go with that, but if it's something urgent, and it's not important, then you just need to have the grace to say, ‘I can't do that now, but I will give you time when it's important to us.’” – Participant 25 (Maintenance)

“…knowing that I have a funeral this week, I realize there is very little margin, extra margin of time this week…I've got to already be putting stuff on the schedule for next week on my to do list and so to feel like I can work out, or take an extra walk just for me, it feels like a luxury I just don't have.” – Participant 14 (Preparation)

“I'm structuring my week ahead of time. Planning for the week helps me focus on, you know, this is what I need to accomplish for today, so I don't get distracted and allows me to have that time in the evening for myself…and also planning for emergencies….” – Participant 13 (Action)

“…there's some of that and the fact that, you know your schedule isn't always your own, because of the demands and things that, you know, come up that aren't planned.” – Participant 18 (Contemplation)

“Part of why I shifted from trying to complete my graduate program [Seminary] by the three-year timeframe to a four-year timeframe, was because I was finding myself cutting out physical activity…” – Participant 21 (Action)

“…when I drop my son off at school, I go straight to the gym, I don't stop and get breakfast, I don't schedule any morning meetings that early. So, what control I have over my schedule that doesn’t involve like central meetings, then I just make sure I time block and I'm intentional about that space being dedicated to working out. – Participant 23 (Action)

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<tr>
<th>Family Obligations</th>
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<td>74</td>
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“…I don't have a chance to get to the gym as much as I want to. I also don't get to ride my bike as much as I want to and so part of that is because we have 3 children that live at home. We have 4 children all together.” – Participant 22 (Preparation)

“I would get up in the morning before anyone else and I would spend 30 minutes on the elliptical and watch the TV and have time to myself and I've gotten away from that habit because I'm just so tired…because when everyone's awake it's near impossible to have a time to myself to actually physically engaged.” – Participant 14 (Preparation)

“… you clearly state to, if you're married, to your spouse, I need to go to the gym. Well, then they know that's a priority and so instead of making you feel guilty about it, they will support you, and you, you have those clear expectations with them…” – Participant 9 (Action)

“And anything that you do can be judged as selfish…so when I walk, I worry that somebody will call me if I'm too far away from my house and I won't be able to get to my car and go. When I ran, I could get back faster, but if I walked three miles out, so now I walk in circles and I hate walking in circles.” – Participant 10 (Contemplation)

“I don't literally do this, but I figuratively mark off my calendar on those hours on days when I go to the gym and someone wants to meet when I normally go, I just say I'm busy.” – Participant 4 (Maintenance)

“I feel like because it's early in the call, I'm letting people know this [physical activity] is a priority in my life, and they know that and so I'll have my gym clothes and I get ready before I leave the office, and it feels good.” – Participant 9 (Action)
<table>
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<tr>
<th>&quot;I think there's guilt, sometimes around spending time away.&quot; – Participant 12 (Maintenance)</th>
<th>“… I could constructively say a part of that is exercising with parishioners has meant that, you know, I don't feel guilty because I'm going on a ride with people and so it's both work and physical exercise.” – Participant 24 (Maintenance)</th>
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<td>Knowledge</td>
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<td>“I have no idea how to use equipment the right way and so it's intimidating, and I mean it just comes from insecurity. It's intimidating when you’ve got insecurities to go in and do something, you don't want to look like a fool…I don't want people to laugh at me…” – Participant 19 (Contemplation)</td>
<td>“…I actually hired a trainer, because I felt I needed somebody to hold me accountable, and to be able to figure out like nope I can't do jumping things because that hurts my knees too much and being able to figure out what I can do and what I can't do.” – Participant 7 (Maintenance)</td>
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<td>“I had to make a habit of it first, but I had to kind of get in shape first. I think like when you're not in shape, showing up in a gym can be intimidating…kind of overcoming some kind of out of shapeness was a barrier. And then finding a gym that worked for me in terms of like the culture of the gym and, you know, finding classes that fit my schedule was a barrier…I kind of just needed that extra social support to keep going, to make it interesting.” – Participant 4 (Maintenance)</td>
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Figure 1. A depiction of the strategies clergy were using to mitigate or reduce existing barriers ($N = 27$).
CHAPTER FOUR: DISCUSSION

Overview of Study Purpose and Findings

The purpose of this study was to qualitatively assess how clergy’s perceptions of physical activity benefits, barriers, and motivators differed as well as identify strategies clergy use to mitigate existing barriers to physical activity according to their stage of readiness to change, as posited by the TTM (Prochaska & DiClemente, 1983; Prochaska & Velicer, 1997). To our knowledge, this was the first study to use the TTM as a guiding framework to better understand physical activity engagement among clergy. Our findings suggest that clergy, across the stages of change, perceive similar physical activity benefits as well as some similar barriers to physical activity engagement (e.g., pain/injury, access, time, ministry workload). However, it was apparent clergy in the later stages of change spoke of physical activity barriers in the past tense, particularly pain/injury, access, and knowledge of physical activity. Further, clergy, mostly in the later stages of change, highlighted various motivations and facilitators of their physical activity behavior (e.g., church, family, access). The confidence to prioritize their physical activity habits also differed across the stages of change, which may play an important role in maintaining positive health behaviors over time.

Findings from this study have important implications for future health promotion efforts among clergy, as it is evident there are many negative and positive factors, influencing physical activity initiation and maintenance. Among clergy, specifically, it is important for future health promotion efforts to better understand how support (e.g., church, family, friends) access (e.g., geographic location, gym affordability, equipment) and policy-level factors (e.g., denomination, congregation) influence physical activity engagement and maintenance. Additionally, future research should continue to examine how clergy perceive their vocation (e.g., 24/7 accessibility).
and how this influences their physical activity engagement. Thus, future clergy health behavior change intervention should utilize frameworks that acknowledge multiple levels (e.g., SCT, Socio-Ecological Model [SEM]) to account for the many factors influencing physical activity across the stages of change.

**Physical Activity Perception**

In the current study, the majority of action and maintenance staged clergy, compared to the lower stages of change, perceived themselves as physically active aligning with how the TTM conceptualizes motivational readiness differs across the stages of change (Marcus & Lewis, 2003; Nigg et al., 2011; Nigg et al., 2019). While the Physical Activity Stage of Change Questionnaire validly captures current physical activity behavior compared to a comprehensive assessment of past-week physical activity (Seven Day Physical Activity Recall; Marcus & Forsyth, 2008; Marcus & Lewis, 2003; Marcus, Rossi, et al., 1992; Marcus & Simkin, 1993), qualitative inquiry into clergy’s physical activity habits highlighted some discordance between their actual behavior and their scores on the stage of change questionnaire. For example, some participants were classified as being physically inactive (i.e., contemplation, preparation) based on the scoring algorithm from the stage of change questionnaire, but during the qualitative interview described themselves to be physically active.

Additionally, some participants scored in the action/maintenance stage, but after further probing, their description on physical activity habits did not match their self-reported scores on the questionnaire. With that said, findings from this study suggest there is a need for future efforts to assess clergy’s knowledge of what it means to be physically active and how this knowledge may influence their perceptions of their physical activity engagement over time. This future work is needed because many clergy report high engagement in physical activity; yet,
most literature shows clergy may also struggle with a high prevalence of obesity, non-communicable diseases, or mental health problems (Duke Clergy Health Initiative, 2014; Ferguson et al., 2015; Proeschold-Bell & LeGrand, 2012; Proeschold-Bell & LeGrand, 2010; Webb & Chase, 2019).

**Decisional Balance**

Further, the TTM posits that decisional balance (i.e., weighing the pros and cons) is different across the stages of change, with the lower stages of change reporting fewer benefits/pros of engaging in physical activity (Hayotte et al., 2020; Lipschitz et al., 2015; Marcus, Rakowski, et al., 1992; Planchard et al., 2018). Moreover, the TTM posits that individuals in the lower stages of change will report more cons or barriers to changing a behavior (Lipschitz et al., 2015; Marcus, Rakowski, et al., 1992; Nigg et al., 2011; Prochaska & Velicer, 1997). In the current study, the majority of clergy spoke of physical and mental health benefits regardless of their stage of change. Clergy in the action and maintenance stages reported some similar barriers to that of participants in lower stages, aligning with previous TTM-based qualitative studies showing similarities of some barriers across the stages of change (Hayotte et al., 2020; Planchard et al., 2018). However, some of the barriers (e.g., pain/injury, access, COVID-19 pandemic, vocation) were mostly described in the past tense or as pros (facilitators), particularly among clergy in the action and maintenance stages.

**Pain/Injury & the TTM**

Among the general population, pain and injury have been cited as common barriers to physical activity (CDC, 2020). The TTM posits that individuals, particularly in the preparation stage, may describe pain as a barrier to engaging in physical activity (Marcus & Lewis, 2003). In this study, this was true of some clergy in the preparation stage but also contemplation and
maintenance stages. Overall, it was apparent that a current injury was hindering most contemplators and preparers from engaging in any or regular physical activity, respectively. In contrast, clergy in the action and maintenance stages mostly spoke of pain/injury as previous barrier not currently influencing their physical activity engagement. Therefore, this finding has important implications for future theory-based interventions as individuals across the stages of change may perceive pain or injury differently, further influencing their ability to engage or maintain physical activity over time.

For example, previous TTM-based physical activity trials had no significant intervention effect on physical activity engagement of patients with chronic low back pain (Basler et al., 2007; Leonhardt et al., 2008). While the interventions may have been limited by its sole use of the stage of change construct, the complexities of pain and how this uniquely influenced each individual was not taken into account when designing tailored material. Knowing this, future work applying theory to physical activity promotion should aim to identify how to meet the needs of individuals regardless of motivational readiness, as some individuals may be physically unable to engage in the activities they desire.

Environment & the TTM

In the current study, environmental factors were described as cons or barriers as well as facilitators to physical activity engagement. Of note, similar to the general population, access (e.g., affordability of gym memberships, geographic location, family obligations) and the COVID-19 pandemic appeared to have some influence on physical activity engagement among clergy (Cerin et al., 2010; Lesser & Nienhuis, 2020; Plotnikoff et al., 2001; Sallis et al., 2016; Salmon et al., 2003; Tison et al., 2020; van Stralen et al., 2009). These findings suggest the environment clergy are in may play a larger role in the success or failure of behavior change
(e.g., COVID-19 pandemic, family obligations, access, vocation). TTM-based interventions to-date, however, have focused mostly on individual-level behavior modification (Marcus, Bock, et al., 1998; Marcus, Emmons, et al., 1998; Peterson & Aldana, 1999). For example, a TTM-based worksite RCT found little to no intervention effect on physical activity behavior (Plotnikoff et al., 2007). While tailoring material to an individual’s stage of change, the authors did not account for the outside factors influencing behavior change at this specific worksite such as worksite culture, access to a fitness center, and supervisor support (Plotnikoff et al., 2007).

Of note, time commitment to physical activity was described as a barrier, which may have been influenced by the various environmental factors clergy described (e.g., family obligations, access, ministry workload). Across the stages of change, we found ministry workload (e.g., constant accessibility) as a prominent barrier hindering physical activity engagement (Chiarlitti & Kolen, 2020; Harmon, Strayhorn, et al., 2020; Proeschold-Bell et al., 2011). Moreover, clergy have commonly cited as their workload to be a nine-to-five job and accessible 24/7 (Harmon, Strayhorn, et al., 2020; Proeschold-Bell et al., 2011). This finding reinforces the notion that the environment plays a role in the health and behaviors of clergy; therefore, future health promotion efforts should work to reduce individual as well as environmental barriers (e.g., access issues, infrastructure, COVID-19 related barriers).

These barriers can be mitigated by applying a theory-based approach to equip clergy with the skills necessary to adapt to their environment (e.g., environmental reevaluation). Further, an interesting finding was that most preparers also spoke of feeling guilt or being judged as selfish for prioritizing their physical activity. Previous literature has also described that clergy feel guilt for taking time for themselves (LeGrand, Proeschold-Bell, James, & Wallace, 2013; Oswald, 1991). This is an important finding because a perceived or an actual lack of denominational or
Congregational support may have a negative influence on clergy health, particularly among clergy who are attempting to increase their physical activity (Harmon, Strayhorn, et al., 2020; Proeschold-Bell et al., 2011). However, it was evident clergy in the action and maintenance stages had strategies in place to mitigate the high ministry work demands (e.g., structuring week ahead of time) or feeling of guilt for spending time away (e.g., exercising with congregants).

Future health promotion efforts should continue to help equip clergy with the necessary tools to develop individualized strategies to prioritize their own physical activity, despite the high demands of ministry. To inform the development of future behavioral interventions, however, future researchers should follow a cohort of clergy, with differing physical activity behaviors, and examine how and where they allocate their time in relation to self-care behaviors. Findings from this exploration might provide insight on how much perceived and actual time demands influence behavior and what real-time decisions clergy are employing to engage or not engage in proper self-care behaviors (e.g., 150 minutes MVPA/week).

**Strategies Used to Mitigate Barriers**

While some similar barriers were reported across the stages of change, these barriers were not impacting all clergy the same way (See Figure 1). For example, although ministry workload, intimidation, feeling guilt, accessibility, time demands, and family obligations were cited across the stages of change, some preparers and most action/maintenance staged clergy discussed strategies they were currently using to mitigate these barriers (e.g., exercising with congregation, planning ahead, building physical activity into the foundation, communication with family/congregation, financial investments). We also found that the majority of participants in the lower stages of change (e.g., contemplation, preparation) had barrier mitigating strategies, while also recognizing ways they could improve (e.g., research, join a local gym, at-home
exercises), further aligning with TTM’s premise that contemplators and preparers are intending to and finding ways to change behavior in the future (Marcus & Lewis, 2003; Nigg et al., 2011). Overall, findings from this study highlighted how barriers and strategies for prioritizing physical activity vary from person to person; therefore, future health promotion efforts should continue to help equip clergy with the necessary tools to develop individualized strategies to prioritize their own self-care. To date, there have only been two published, health behavior change interventions among clergy which produced small intervention effects on psychosocial variables (e.g., self-efficacy, self-regulation) (Harmon, West, et al., 2020; Webb & Bopp, 2017b). Therefore, future clergy health promotion efforts should continue to target psychosocial outcomes and other processes that enhance behavior change (e.g., knowledge, self-efficacy, processes of change).

**Physical Activity Motivators & Facilitators**

*Confidence*

The TTM posits that “self-efficacy” for behavior change differs across the stages of change; therefore, having a different influence on one’s motivational readiness according to their stage of change (Marcus, Selby, et al., 1992; Nigg et al., 2011; Nigg et al., 2019). In the current study, nearly all clergy in the higher stages of change were confident in their ability to prioritize their physical activity engagement. In the current study, there were examples of clergy in the lower stages of change (e.g., *contemplators, preparers*), while confident, noting they lacked the willpower or discipline to prioritize physical activity engagement as well as highlighting a lack of enjoyment or motivation for physical activity. This finding is congruent with previous studies using TTM showing individuals in the higher stages of change utilize self-efficacy and self-liberation more so than individuals in the lower stages of change (Lipschitz et al., 2015; Romain, Horwath, et al., 2018). Additionally, current study findings are consistent with previous
qualitative work based on the TTM, as individuals in higher stages of change consider physical activity to be a part of their daily habit or routine (Hayotte et al., 2020). Given findings were cross-sectional, future health promotion efforts should assess longitudinal associations between self-efficacy and physical activity among clergy to examine how this influences behavior over time. For example, longitudinal, TTM-based studies have shown self-efficacy to be an important predictor in stage progression and retention over time (Lipschitz et al., 2015; Plotnikoff et al., 2001), suggesting that self-efficacy may aid in physical activity maintenance over time.

Processes of Change

In the current study, it was evident environmental factors played a large role in physical activity engagement and maintenance, but personal motivation had a large influence as well. For example, clergy were motivated to engage in physical activity to maintain good health, role model positive behaviors, and serve their ministry well. TTM posits that consciousness raising (i.e., awareness about implications of current behavior), self-reevaluation (i.e., self-image with and without the current unhealthy behavior) and environmental reevaluation (i.e., positive or negative role model) are processes that an individual uses to progress from one stage to the next (Burkholder & Nigg, 2002; Nigg et al., 2011; Nigg et al., 2019; Prochaska & Velicer, 1997). In the current study, across the stages of change, clergy understood their role, and the importance of using physical activity to serve the ministry well and model positive behaviors for their family and congregations. Previously, clergy have discussed being a role model as a motivator to change or maintain their behavior (Baruth et al., 2015; Harmon et al., 2013; Harmon et al., 2018; Harmon, Strayhorn, et al., 2020; Webb, Bopp, & Fallon, 2013b).

We also know clergy play a vital role in the congregations and communities they serve; therefore, their health and behaviors have an impact on those around them (Webb & Bopp,
suggesting that engagement in self-care positively influences clergy’s ability to serve and clergy who engaged in healthier behaviors (e.g., meeting physical activity and dietary guidelines) were more likely to share health promotion messaging from the pulpit (Webb & Bopp, 2017a). Given study findings were cross-sectional, further investigation warrants a longitudinal assessment of how the processes of change, particularly consciousness raising, self-reevaluation, environmental reevaluation, might influence clergy physical activity behaviors over time.

**Strengths**

This study has several strengths. 1) Most work examining clergy physical activity behaviors has not been theoretically informed. In contrast, this study used TTM—a widely used health behavior theory that has been used for decades to explain and change physical activity behavior—as a guiding framework to understand how clergy perceive physical activity. Additionally, to our knowledge, this is one of the first studies to include in-depth perspectives of clergy with different physical activity habits, which allowed us to compare perspectives across the stages of change as posited by the TTM (Prochaska & Velicer, 1997). 2) Additionally, unlike other studies, we were able to assess the strategies that physically active clergy use to mitigate commonly reported barriers and how these differed from less active clergy. 3) We were able to assess clergy physical activity behaviors through quantitative measure and qualitative inquiry, which allowed us to gain deeper insight into their perceptions of physical activity.

**Limitations**

As with any study, there were limitations. 1) We had mostly White clergy from the Presbyterian denomination, which reduces our ability to generalize to clergy from other denominations. 2) Most participants were representative of a highly physically active category
(e.g., maintenance), which aligns with most physical activity studies among clergy. Future research, using the TTM, should discuss topics that would be of interest to clergy who are not thinking about physical activity and within those topics include physical activity questions to increase the chance of acquiring a balance of participants across the stages of change. 3) We relied solely on self-report data, further increasing the risk of social desirability bias.

**Conclusions**

This study provided insight into the perceptions clergy have of physical activity benefits, barriers, and motivators across the stage of change as posited by the TTM (Prochaska & Velicer, 1997). The pros/benefits of and some barriers/cons to physical activity were similar across the stages of change. With that said, qualitative inquiry allowed us to identify how confidence, the environment, perception of role, and social support play in clergy physical activity engagement and maintenance. Moreover, this study identified various strategies clergy use to reduce barriers and maintain their physical activity behavior. Based on our findings, it is evident that future work should consider how access, the support clergy receive and policy-level factors (e.g., denomination) influence physical activity engagement. Moreover, a longitudinal assessment of these factors is needed to examine how they influence behavior change (e.g., physical activity) or self-care prioritization over time. Additionally, our findings show the need for future behavior change interventions to utilize theoretical frameworks (e.g., TTM, TPB, SCT, SEM) that account for the multiple levels of influence on clergy physical activity behaviors.
REFERENCES


weight management: Effectiveness on a population basis. Preventive Medicine, 46(3), 238-246.


Measure 1. Basic demographic survey providing background information on the sample*

What is your participant ID?
1. What is your age?
2. What is your gender?
3. What is your race/ethnicity?
4. What is your education level?
5. How long have you been in ministry (years)
6. How long have you been at your current church (years)
7. Do you live in an urban or rural location?
8. What is your denomination?
9. Approximately, how many congregation members do you serve?
10. What is your weight? Please list in pounds.
11. What is your height? Please list in inches.

Measure 2. Physical Activity Stages of Change Scale*

What is your participant ID?
For each of the following questions, please circle Yes or No. Please be sure to read the questions carefully.
Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.
1. I am currently physically active. (Yes/No)
2. I intend to become more physically active in the next 6 months. (Yes/No)
For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.
3. I currently engage in regular physical activity. (Yes/No)
4. I have been regularly physically active for the past 6 months. (Yes/No)

Scoring Guide
Precontemplation: Question 1 = No; Question 2 = No
Contemplation: Question 1 = No; Question 2 = Yes
Preparation: Question 1 = Yes; Question 3 = No
Action: Question 1 = Yes; Question 3 = Yes; Question 4 = No
Maintenance: Question 1 = Yes; Question 3 = Yes; Question 4 = Yes

*Adapted from the Marcus et al. 1992 Stage of Change Questionnaire
Measure 3. Interview Guide with Questions and Probes

-How would you define your church role?

-What is your church structure?
  Probe: How many leaders (i.e., associate pastors, youth pastors) are working alongside you?
  Probe: Do you have other paid or unpaid staff?
  Probe: Are you bi-vocational?

-In your opinion, would you consider yourself to be physically active?
  Probe: In the past 6 months, have you experienced any changes in your physical activity habits?
  Probe: If any, what type of physical activities do you mostly engage in?
  Probe: What are the pros of physical activity or engaging in physical activity behaviors?
  Probe: What are the difficulties of physical activity or engaging in physical activity behaviors?

-Over the course of your ministry, what has your relationship with physical activity been like?
  Probe: Do you have the confidence to prioritize yourself or engagement in physical activity?
  Probe: Within yourself, what do you think allows you to maintain or not maintain physical activity behaviors (e.g., motivation, will)?
  Probe: Outside of yourself, what do you think allows you to maintain or not maintain physical activity behaviors (e.g., social support, resources, diagnosed medical condition)?
  Probe: In your opinion, is it important for pastors to engage in physical activity? Why or why not?

-In your experience, what barriers keep you from physical activity?
  Probe: To what extent are these barriers unique to ministry?
  Probe: To what extent are these barriers unique to your Denomination?
  Probe: Have you tried to do anything about the barriers?
  Probe: What strategies do you currently use or would you like to use? (e.g., scheduling, not answering calls?) If possible, please describe each strategy for each barrier.
  Probe: If you were to install a new practice/activity/behavior, how would you, what would help you, or what would you need to maintain that?

- If we were to design a physical activity program for pastors/clergy, what would make this one different?
  Probe: What do you think about including instructions for setting priorities or behavior change and priority setting?
  Probe: What resources would allow you to engage in the physical activity program (e.g., educational seminars, class courses, access to fitness center, strong social support)?

-Lastly, do you have any questions for me?
APPENDIX B
Institutional Review Board
Division of Research and Innovation
Office of Research Compliance
University of Memphis
315 Admin Bldg
Memphis, TN 38152-3370

October 18, 2021

PI Name: Nathan West
Co-Investigators: Latrice Pichon
Advisor and/or Co-PI: Kenneth Ward
Submission Type: Modification
Title: Pastors’ Readiness to Accept a Physical Activity Program
IRB ID: #PRO-FY2022-61
Level of Review: Exempt

Approval: October 18, 2021
Expiration: --*

The University of Memphis Institutional Review Board, FWA00006815, has reviewed your submission in accordance with all applicable statuses and regulations as well as ethical principles.

The modification is approved.

Approval of this project is given with the following obligations:

1. This IRB approval for modification has an expiration date, an approved renewal must be in effect to continue the project prior to that date. If approval is not obtained, the human subjects consent form(s) and recruiting material(s) are no longer valid and any research activities involving human subjects must stop.
2. When the project is finished a completion form must be submitted.
3. No change may be made in the approved protocol without prior board approval.
4. Human subjects training is required every 2 years and is to be kept current at citiprogram.org.

*Modifications do not extend the expiration of the original approval
Informed Consent for Research Participation

Title
PRO-FY2022-61: Pastors’ Readiness to Accept a Physical Activity Program

Researcher(s)
Nathan West, MS, University of Memphis, School of Public Health
Kenneth D. Ward, PhD, University of Memphis, School of Public Health

Researchers Contact Information
Nathan West – Phone: 901-651-2698; Email: ntwest@memphis.edu

You are being asked to participate in a research study. The box below highlights key information for you to consider when deciding if you want to participate. More detailed information is provided below the box. Please ask the researcher(s) any questions about the study before you make your decision. If you volunteer, you will be one of about 25 to 35 people to do so.

Key Information for You to Consider

Voluntary Consent: You are being asked to volunteer for a research study. It is up to you whether you choose to participate or not. There will be no penalty or loss of benefit to which you are otherwise entitled if you choose not to participate or discontinue participation.

Purpose: The purpose of study will be to better understand the perceptions of physical activity barriers, benefits, and motivators among clergy with differing physical activity behaviors. Findings from this study will have important implications for future clergy health promotion programs.

Duration: It is expected that your participation will last 5 to 10 minutes during a brief survey and approximately 60 minutes during one interview.

Procedures and Activities: You will be asked to complete one survey and engage in one interview.

Risk: Risks in this study are minimal and not greater than what would be expected in everyday life. However, you may become uncomfortable when talking about the barriers and benefits of engaging in physical activity. There also is a risk of losing privacy or confidentiality. To minimize this risk, all survey responses and interview transcripts will be confidential to the extent possible by law.

Benefits: There will be no direct benefits for your participation in this study, but the researchers hope to learn more information about your physical activity behaviors to design health promotion programs to meet the specific needs of Christian clergy.

Alternatives: Participation is voluntary, and the only alternative is to not participate.
Who is conducting this research?
Nathan West of the University of Memphis School of Public Health in the Division of Social and Behavioral Sciences is in charge of the study. He is being guided by Dr. Kenneth Ward. There may be other research team members assisting during the study.

Why is this research being done?
The purpose of study will be to better understand the perceptions of physical activity barriers, benefits, and motivators among clergy with differing physical activity behaviors. You are being invited to participate because you are 18 years or older, identify as a current senior Christian pastor and employed as either full-time or part-time.

What happens if I agree to participate in this Research?
If you agree you will be asked to complete one brief demographic survey. The survey will take approximately 5 to 10 minutes to complete. This survey will contain questions including information about your: age, sex, height, weight, education level, race/ethnicity, years in ministry, years at current church, and congregation size. You may skip any questions that make you uncomfortable and you can stop at any time. After completion of the survey, the lead investigator will contact you to schedule an interview at a time that is most convenient to you. As described above, the interview will last approximately 60 minutes, will be audio recorded, and take place over Zoom or Webex. During the interview, you may skip any questions that make you uncomfortable and you can stop at any time. The purpose of the interview will be to learn more about you and your physical activity behaviors.

What happens to the information collected for this research?
No identifiable information will be used for any publication or presentation purposes. Your name will not be used in any reports associated with study (e.g., academic papers, conferences). Further, we may publish/present the results of this research. However, we will keep your name and other identifying information confidential.

How will my privacy and data confidentiality be protected?
We promise to protect your privacy and security of your personal information as best we can. Although you need to know about some limits to this promise. The lead investigator will conduct all virtual interviews in a secluded setting with doors closed to minimize the risk of loss of privacy. Further, you will receive a randomly generated ID number as to remove any identifiable information. Your unique ID number will be used to identify your specific surveys and interviews. As described above, your name will not be used in any reports or publications of this study and no identifiable contact information will be included. Additionally, all completed consent forms, survey responses, interviews, and interview transcripts will be maintained in computer records and password protected, and all study materials will be accessible only to study staff. There is potential risk of the loss of your privacy if you share with peers that they will be you in this study. All audio recordings will be stored on a secured, password protected computer. These recordings will only be accessible by the PI and will be properly destroyed once the study has concluded.
The risk or discomforts of participating in this research may include: stress, emotional distress, inconvenience and possible loss of privacy and confidentiality associated with participating in a research study.

**What if I want to stop participating in this research?**

It is up to you to decide whether you want to volunteer for this study. It is also ok to decide to end your participation at any time. There is no penalty or loss of benefits to which you are otherwise entitled if you decided to withdraw your participation. If you decide to withdraw from the study, please let the lead investigator, Nathan West, know. Your decision about participating will not affect your relationship with the researcher(s) or the University of Memphis.

**Will it cost me money to take part in this research?**

There are no costs associated with participation in this research study.

**Will I receive any compensation for participating in this research?**

For taking part in this research you will compensated a total of $25 (Amazon eGiftCard). You will receive your eGiftCard after the completion of the demographic survey.

**Who can answer my question about this research?**

Before you decide to volunteer for this study, please ask any questions that might come to mind. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the lead investigator, Nathan West, via phone: 901-651-2698 or email: ntwest@memphis.edu. You may also contact the study faculty advisor, Dr. Kenneth Ward, via phone: (901) 678–1715 or email: kdward@memphis.edu. If you have any questions about your rights as a volunteer in this research, contact the Institutional Review Board staff at the University of Memphis at 901-678-2705 or email irb@memphis.edu. We will give you a signed copy of this consent to take with you.

**STATEMENT OF CONSENT**

I have had the opportunity to consider the information in this document. I have asked any questions needed for me to decide about my participation. I understand that I can ask additional questions through the study.

By signing below, I volunteer to participate in this research. I understand that I am not waiving any legal rights. I have been given a copy of this consent document. I understand that if my ability to consent for myself changes, my legal representative or I may be asked to consent again prior to my continued participation.

As described above, you will be audio recorded while performing the interviews as described above. Audio recordings will be used for Initial the space below if you consent to the use of audio recordings as described

____ I agree to the use of audio recordings
Name of Adult Participant | Signature of Adult Participant | Date

Researcher Signature (To be completed at the time of Informed Consent)

I have explained the research to the participant and answered all of his/her questions. I believe that he/she understand the information described in this consent and freely consent to participate.

Name of Research Team Member | Signature of Research Team Member | Date