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Of Mindfulness and Men: Mindfulness and Quality of Life of Distressed Prostate Cancer Survivors

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BY

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In memory of my father, Miles Ford.

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ABSTRACT

Many prostate cancer (PCa) survivors experience on-going distress that affects their quality of life (QOL). Psychosocial interventions designed to address such distress frequently include mindfulness components. To better characterize the relation between mindfulness and distress, an ethnically diverse sample (n = 120) of PCa survivors in New Mexico and New Jersey endorsing at least minimal distress completed a one-time survey. Greater mindfulness was related to less psychological distress (r = -.40) and better mental health-related QOL (r = .35). However, mindfulness explained little additional variance after controlling for relevant demographic, medical, and psychosocial variables. Other variables (e.g., social isolation and PCa worry) may be more likely mediators of QOL improvements in PCa survivor psychosocial interventions. Notably, a majority of an ethnically diverse sample of men with PCa were interested in a variety of intervention types, including remote participation, suggesting the suitability of novel adaptations of interventions for this growing population.

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INTRODUCTION

Cancer, the second leading cause of death in the United States, is a significant public health challenge (Siegel, Miller, & Jemal, 2017). Advances in early screening and the development of novel medical interventions have led to a significant decrease in the rates of cancer mortality over the past two decades (Siegel et al., 2017). These advancements have led to a growing population of cancer survivors, defined broadly as those "who remain alive and continue to function during and after overcoming a serious hardship or life-threatening disease"(National Cancer Institute, 2011). Many of these survivors are living with long-term physical and psychological side effects of treatment (Bluethmann et al., 2016; de Moor et al., 2013). There are significant health disparities that exist in those who benefit from medical treatments during and after the cancer experience (Zeng et al., 2015). Overall for men, the incidence rates of cancer are 20% higher and mortality rates are 40% higher than compared to women (Siegel et al., 2017). And as with many other chronic disease states, there are significant racial/ethnic, SES, and geographic disparities among men diagnosed with cancer (Zeng et al., 2015).

For men, prostate cancer (PCa) is the most common cancer site, representing 20% of new cancer cases (Miller et al., 2016). There are projected to be 248,530 new cases of PCa and 34,130 deaths from the disease in the United States in 2021 (American Cancer Society, 2021). There are disparities in the incidence and mortality rates as racial/ethnic minorities, in particular Black or African American men, are more likely to be diagnosed with advanced PCa and are more than twice as likely to die as a result (Stokes et al., 2013; Yamoah et al., 2011).

PCa is a male sex specific cancer that begins with malignant cell growth in the prostate gland and is most commonly a slow growing cancer. The incidence of the disease increases over time with a median age at diagnosis of 66 (Miller et al., 2016). Five-year survival rates vary considerably: localized PCa survival rates approach 100%, while metastatic PCa survival rates are only 28%. PCa is most commonly diagnosed through Prostate Specific Antigen (PSA) tests which can be used for early detection of the disease. However, due to poor sensitivity of these tests, they are not endorsed for routine screening given that early detection has not yet demonstrated improvements in survival or QOL for those diagnosed (Carter et al., 2013; Smith et al., 2016). Given the association of the disease with aging, and high survival rates for those with localized disease, less than 1% of PCa survivors are under the age of 50, while 64% of survivors are over the age of 70 (Miller et al., 2016).

Treatment for PCa varies based on several factors including cancer stage as well as the patient's age and overall health. For localized cancers which are considered slow growing, the most common treatment recommendation is active surveillance. In these cases, tumor growth is monitored to determine if invasive intervention is warranted (Tosoian et al., 2016). Men with localized disease may also choose other treatment options including surgery and radiation for removal of the tumor and/or prostate gland. These treatments come with a risk of impaired sexual functioning and other side effects that may impact QOL (Wilt et al., 2017). For PCa which has spread beyond the prostate gland (i.e., metastatic cancer), there are a number of additional treatment options including hormone therapy for the ablation of

testosterone, which contribute to prostate tumor cell growth (Denmeade & Isaacs, 2002). Hormone therapies, especially androgen deprivation therapy (ADT) are also associated with significant psychosocial and sexual side effects (Rhee et al., 2015).

Given the high prevalence and survival rates for localized PCa, the number of survivors, currently over 3 million, is predicted to grow in the coming decades (Bluethmann et al., 2016). Although medical interventions for PCa (i.e., surgery, radiation, and hormone therapy) increase survival rates, there are a number of deleterious side effects of each of these treatments, with up to 75% of men treated for PCa reporting long-lasting physical side effects including impaired sexual and urological function (Bibbins-Domingo et al., 2017; Chambers et al., 2017). Given these downstream effects of cancer treatment, survivorship care in PCa is a particularly important area of research.

In addition to physical side effects, there are often under-addressed psychosocial stressors both for those in active surveillance as well as for those who have undergone treatment (Castermans et al., 2016; Harrington et al., 2010). Mixed-methods studies have found that personal control and the need to “find a new normal” ranked highly as unmet needs across all cancer sites, with PCa survivors being particularly likely to identify relationship difficulties and psychological distress as their most salient concerns (Burg et al., 2015). Up to half of men with PCa report unmet psychosocial needs, and a significant minority, between 10%-23%, report clinically significant psychological distress, which includes symptoms of anxiety, depression, and psychosomatic complaints (Chambers et al., 2017; Chambers, Zajdlewicz, Youlden, Holland, & Dunn, 2014; Sanda et al., 2008; Watson et al.,

2016). These symptoms negatively impact well-being through an increased occurrence of psychopathology, most notably in higher rates of depression and anxiety in PCa survivors (Andersen et al., 2015; Oancea & Cheruvu, 2016; Zhao et al., 2014).

As is common in other cancer sites, there is a frequent clustering of physical and psychological symptoms in PCa survivors including fatigue, sleep problems, sexual difficulties, and psychological distress (Harrington et al., 2010; Maliski et al., 2008). For instance, sleep problems are common in PCa survivors with up to 1 in 5 men reporting insomnia (Maguire et al., 2019). Treatment-related side effects (e.g., nocturia) can contribute to difficulty sleeping which in turn can introduce or exacerbate symptoms of depression and anxiety (Hoyt et al., 2016). This symptom clustering can contribute to a cycle of distress impacting QOL for many PCa survivors.

As with disease progression and survival, there are racial and ethnic disparities in QOL for PCa survivors that may be a reflection of baseline differences in health (Orom et al., 2018). While disparities between African Americans and non-Hispanic Whites is the most studied racial and ethnic disparity in those with PCa, Hispanic ethnicity has also been associated with worse survival rates and survivorship outcomes (Stokes et al., 2013; Yamoah et al., 2011). Few studies have examined the QOL and unmet needs of Hispanic/Latino PCa survivors specifically, yet the available evidences suggests that there are greater needs and distress for this population as compared to non-Hispanic White populations (Moreno et al., 2018; Penedo, Dahn, et al., 2006). Systematic reviews of PCa survivor well-being

consistently note the need to examine racially and ethnically diverse populations to better understand the unique challenges of PCa survivors with marginalized identities (Chambers, Hutchison, Abbey, & Dunn, 2014; Crawford-Williams et al., 2018).

These physical and psychosocial challenges in PCa survivorship, which impair overall QOL, can be addressed in multiple ways through psychosocial interventions. Typical interventions in supportive cancer care include exercise, lifestyle, and behavioral interventions including aerobic exercise and strength training, peer support, Mindfulness-Based Stress Reduction (MBSR), and meditative movement (e.g., Yoga and Tai chi Qigong) (Chambers et al., 2014; Larkey, Jahnke, Etnier, & Gonzalez, 2009). These intervention types vary in their efficacy in addressing PCa survivor needs (Crawford-Williams et al., 2018). Notably, only one intervention, culturally adapted cognitive behavioral stress management (C-CBSM), has been tailored specifically to address the needs of Hispanic/Latino men with PCa (Penedo, Molton, et al., 2006).

MBSR and Meditative Movement Interventions (e.g., Yoga and Tai chi Qigong) have become increasingly popular both in research and clinical application in addressing cancer survivor needs (Cillessen et al., 2019). However, studies using these Mindfulness Based interventions (MBI) have predominantly recruited breast cancer survivors (Cillessen et al., 2019; Cramer et al., 2012). Recent systematic reviews and meta-analyses of these interventions in breast cancer populations have found medium effect sizes in the reduction of anxiety symptoms and small effect sizes in reduction of depressive symptoms (Haller et al., 2017). MBIs, including

those with meditative movement components (i.e., Yoga and Tai chi Qigong), are hypothesized to reduce psychological distress through increasing tolerance of distressing emotion, reducing rumination and increasing psychological flexibility (Chambers et al., 2016). PCa survivors, a group nearly the same size as breast cancer survivors in the United States, have received significantly less attention in trials of these MBIs, often comprising less than a quarter of participants in mixed sex trials (Wayne et al., 2018). Given the increasing number of cancer survivors across all sites, especially those with PCa, there is a need to understand more about tailoring and disseminating these interventions to other cancer populations beyond breast cancer survivors (Andersen & Dorfman, 2016). And despite the large and growing number of PCa survivors, there is relatively little research on Mindfulness-Based interventions designed to specifically address psychosocial needs for this group (Bower et al., 2014).

Increases in participant mindfulness (i.e., non-judgmental present moment awareness) are considered to be a potential mediator of outcomes in meditative interventions (i.e., Mindfulness-based programs, Tai chi Qigong, and yoga) for supportive cancer care (Bränström et al., 2010; Garland et al., 2013). However, few studies have measured mindfulness in PCa survivors and the attendant relation with psychosocial distress and functional well-being (Chambers et al., 2016; Tamagawa et al., 2013). One study did establish a relation between higher mindfulness and improved QOL in a group of advanced PCa patients in Australia (Chambers et al., 2016). This finding is consistent with research that suggests that higher levels of mindfulness are associated with higher QOL in older adults (de Frias & Whyne,

2015). One study of PCa survivor coping styles found that avoidance methods were associated with worse psychological health (Roesch et al., 2005). This finding is in line with the purported mechanism of change of meditative interventions: reducing psychological avoidance mediates an increased acceptance of internal emotional states (i.e., higher mindfulness) (Arch & Craske, 2008; Keng et al., 2012).

Past research has linked higher mindfulness with better psychological and physical well-being in cancer patients. One frequently used mindfulness measure, the Mindful Attention and Awareness Scale (MAAS), was validated in a clinical sample of cancer patients, although PCa patients comprised less than 25% of the original sample (K. W. Brown & Ryan, 2003). However, few subsequent studies have measured PCa survivor mindfulness specifically and none have done so with either a focus on those experiencing clinically meaningful distress or in the context of longitudinal research to examine mindfulness as a potential mediator of reductions in psychological distress.

Despite MBIs and meditative movement interventions showing promising results in reducing psychological distress in cancer survivors, there have been challenges in the dissemination of these programs. A practical barrier to better understanding how to tailor these kinds of interventions to reach more diverse groups of cancer survivors are the challenges associated with recruiting diverse populations for behavioral health interventions in general (Ellis et al., 2001; Ford et al., 2008). Several studies have found that men express less interest in participating in behavioral interventions including oncology specific programs (Byrne et al., 2014; Manii & Ammerman, 2008). In addition to gender, older age (those over 65) has also

been shown to be an independent predictor of declining participation in behavioral interventions in cancer care (Roick et al., 2018). Furthermore, the overwhelming majority of those who do participate in randomized trials of behavioral interventions are non-Hispanic White with high socio-economic status (C. G. Brown, 2017; Crawford-Williams et al., 2018). Given that there is a need to examine the longer term impact of cancer in racial/ethnic diverse populations, studies of diverse PCa populations should assess factors associated with willingness to participate in psychosocial trials, especially among those who might benefit most from these interventions (Stanton, 2012). There is little quantitative evidence to date about men with PCa who might benefit from but are not interested in participating in behavioral health interventions (Chambers et al., 2017). Understanding the willingness and barriers that men face to participate in these activities is critical to designing effective and targeted interventions. To more effectively address the needs of distressed PCa survivors, learning more about diverse populations prior to dissemination of behavioral treatments may be particularly important. Few culturally adapted interventions have been developed and little research has focused on distressed survivors.

Given the increasing number of PCa survivors, there is a need to know more about the QOL of this population, particularly in those with diverse racial and ethnic identities. Describing the relation between mindfulness, distress, and QOL can help to identify those who may be most in need of, and benefit from interventions that have a mindfulness component. Given that PCa survivors who experience ongoing distress have the most to gain from psychosocial treatment, a better understanding

of this population's mindfulness, distress, QOL, and willingness to participate, can improve the design and dissemination of these much-needed interventions.

Current Study and Specific Aims

This survey study assessed the relation between mindfulness, psychological distress, health-related QOL, and willingness to participate in psychosocial interventions among a sample of PCa survivors in New Mexico and New Jersey. New Mexico and New Jersey's racial and ethnic diversity presented an opportunity to learn more about the needs of diverse survivors, particularly among Hispanic men (Gilliland et al., 1996). Potential participants were identified through a recruitment database used by an existing study, Health Empowerment and Recovery Outcomes (HERO), that recruited men with PCa in both New Mexico and New Jersey for a mind-body intervention designed to address fatigue (Kinney et al., 2019). Men who did not participate in the parent study were screened for the presence of either fatigue, general distress, psychological distress, or sleep problems. This follow-up survey study, called Survivor Inquiry: Distressed mEn Contributing to Increase Cancer Knowledge (SIDEKICK), offered an opportunity for these men who meet inclusion criteria of at least minimal distress to participate in survey research designed to learn more about the well-being and needs of PCa survivors in New Mexico and New Jersey.

Specifically, the current study had three aims:

Aim 1

Characterize the relation between mindfulness, psychological distress, and health-related QOL in a sample of men diagnosed with PCa in New Mexico and New

Jersey. Specific Hypothesis 1. Higher levels of mindfulness would be correlated with less psychological distress and greater health-related QOL.

Aim 2

Explore racial/ethnic differences in mindfulness, psychological distress, QOL, and medical mistrust among men diagnosed with PCa. Specific Hypothesis 2: Hispanic and African-American men would have worse health-related QOL, higher psychological distress, lower mindfulness, and more medical mistrust compared to non-Hispanic Whites.

Aim 3

Explore racial/ethnic differences in willingness to participate in cancer psychosocial interventions among those who did not participate in the HERO mind-body intervention. Specific Hypothesis 3a: Less willingness to participate in interventions would be associated with lower mindfulness, worse QOL and greater levels of psychological distress. Hypothesis 3b: Hispanic and African-American men would be less willing to participate in interventions compared to non-Hispanic Whites. Hypothesis 3c. Medical mistrust would mediate the relation between ethnicity and willingness to participate in behavioral interventions.

METHODS

Participants and Recruitment

Men with a PCa diagnosis in New Mexico and New Jersey were recruited to participate primarily through recruitment databases used for the HERO study in both locations (see Figure 1) (Kelley et al., 2003). A letter of invitation describing the study was mailed to those in the existing recruitment database. Potential participants could choose to opt-out of further contact. After two weeks, a member of the study team followed up with potential participants to answer any questions and assess eligibility on a brief screener. A maximum number of five calls were made to those sent letters of invitation. The study was also advertised with PCa support group (Prostate Cancer Association of New Mexico) and the VA hospital in New Mexico using IRB-approved flyers. Interested participants could contact the study team to obtain additional information and complete a brief screening survey. Eligibility criteria required that participants: be 55 years of age or older, have a diagnosis of (local, regional, or metastatic) PCa, not have a secondary cancer diagnosis (other than non-melanoma skin cancer) in the past five years, be able to read and speak English, be able to provide informed consent after an initial phone screening, and meet a minimum cutoff on a brief screener for *at least one* of the following:

Sleep*:* A score reporting "fairly bad" or "very bad" overall subjective sleep quality over the past month, on 1 item associated with both depression and fatigue from the Pittsburgh Sleep Quality Index (PSQI). The item uses a four-point Likert-type response ranging from “very bad” to “very good”. (Hann, Jacobsen, Azzarello, & Kronish, 1997).

Fatigue: A score of 13 or lower on the four item vitality sub-scale of the SF-36, representing scores below the population mean (the same cut-off used in HERO screening to qualify for study participation). Scores on the subscale range from 4 to 20, with lower scores indicating more fatigue (Ware, JE, 1993).

Psychological Distress: A score of 9 or higher on four items from the PROMIS-29 anxiety and depression subscales. Scores range from 4 to 20, with higher scores indicating greater distress (Hays et al., 2018).

General Distress A score of 3 or higher out of 10 on the 1-item numeric rating scale distress thermometer (3 or higher is a suggested cut-off for longer term assessment in PCa survivors) (Chambers, Zajdlewicz, et al., 2014).

Upon providing consent, those meeting eligibility criteria completed a one-time survey of their physical and psychological health. Participants could choose to complete the survey either online or using a hardcopy received by mail. Participants received a $25 gift card for completing the survey. Men who participated in the HERO intervention (New Mexico 2017-2018) completed a baseline survey using the same measures as were used in the follow-up SIDEKICK survey. Additional measures were added for the SIDEKICK study to account for additional information about men who had not participated in a mind-body intervention and are noted with an asterisk below. The project received approval from the Institutional Review Boards at the University of New Mexico Health Sciences Center and Rutgers University.

Measures Administered

***Demographics*:** Age, race, ethnicity, household income, marital status, employment, education, and geographic location (i.e., New Mexico or New Jersey).

Medical Factors.

Treatment History: PCa treatment was assessed using patient reported history of current or past use of Androgen Deprivation Therapy (ADT) or other hormones, surgery (i.e., prostatectomy), and/or radiation.

Time Since Last Treatment: Time since final treatment was calculated using the difference between the date of survey completion and the patient reported date of last PCa treatment (if any).

Number of Comorbidities: Participant medical co-morbidities in addition to PCa were assessed using 18 chronic health conditions (e.g., diabetes, arthritis). Total number of comorbidities was used as a continuous variable in the regression models. The list of co-morbidities was adapted from an index used to calculate 10-year patient mortality in medical studies (Charlson et al., 1994).

Regular Exercise: Exercise frequency was assessed using a single item asking if in the past 3 months participants had been engaged in regular exercise for more than 150 minutes per week at any intensity level. Current regular exercise was dichotomized as yes or no in the regression models.

Regular use of Mind-Body Exercise: Participation in mind-body exercise was assessed using a single binary item asking if participants had regularly (i.e., 2-3

times a week over a period of 2 months within the past year) practiced Tai chi Qigong, Yoga, Meditation or any other similar relaxation focused activity.

Psychosocial Characteristics.

Social Isolation: This Patient-Reported Outcomes Measurement Information System (PROMIS) measure is a four-item measure assessing subjective perceptions of being isolated using a five-point Likert-type scale ranging from "Never" to "Always". A sample item is: "I feel that people are around me but not with me". Raw scores are converted to T-scores, using gender and oncology norms, with a possible range of 30 to 80. Higher scores represent more social isolation. Internal consistency in the present sample was excellent (α = .92).

Social Support (Emotional) This PROMIS measure is a four-item measure assessing perceptions of being cared for by others using a five-point Likert type scale ranging from "Never" to "Always". A sample item is: "I have someone who will listen to me when I need to talk". Raw items are converted to T-scores, using gender and oncology norms, with a possible range of 30 – 80. Higher scores represent more social support. Internal consistency in the present sample was excellent (α = .94).

Prostate Cancer Worry (PCa Worry): A three item measure assessing frequency and intensity of worry about PCa including its recurrence using a five-point Likert type scale ranging from "Never" to "All the time" for item one and "not at all" to "extremely" for items two and three. (McCaul & Mullens, 2003). A sample item is: "During the past week, how often have you worried about prostate cancer (or about getting prostate cancer again sometime in your lifetime)"? The three items are

averaged to obtain a summary score with a possible range from one to five with higher scores representing greater PCa worry. Internal consistency in the present sample was excellent (α = .94).

Medical Mistrust*: A seven-item measure of experience of medical mistrust was used. The scale uses a four-point Likert-type scale ranging from "strongly disagree" to "strongly agree". A sample item is: "You'd better be cautious when dealing with health care organizations" (LaVeist et al., 2001). The total score is an average of the seven individual items with possible scores ranging from 1 to 4. Higher scores represent more medical mistrust. Internal consistency in the present sample was good (Cronbach's α = .83).

Mindfulness*:* The Mindfulness Attention Awareness Scale- Abbreviated Version (MAAS) was used to assess participant mindfulness. This "indirect" measure of mindfulness was selected for the parent mind-body intervention study (HERO) to blind participants to other intervention arms that did not include mind-body training components (K. W. Brown & Ryan, 2003; Osman et al., 2016). This five-item measure, a shortened version of the original fifteen-item scale, asks about unawareness in daily life using a six-point Likert-type scale with responses ranging from "Almost Always" to "Almost Never". A sample item is: "It seems I am "running on automatic" without much awareness of what I am doing". Total scores are an average of the 5 items and have a possible range of 1-6 with higher scores representing higher levels of mindfulness. Internal consistency in the present sample was very good (Cronbach's α = .89).

Primary Study Variables.

Health Related QOL*:* The SF-36v2 is among the most widely used measures of health-related QOL. This scale has 36 items that cover several domains of physical and mental health, including functional status, emotional status, and pain, to produce eight subscales (physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional, mental health) and two summary scores (Physical component score; Mental component score) (Ware, 1993). Scores are norm based and use t-scores with a possible range of 0 to 100, with the US population norm as 50 (SD = 10). Higher scores represent better health-related QOL in each domain.

Psychological Distress: The Brief Symptom Inventory (BSI-18) assesses distress in the past week using 18 items (Derogatis, 2000). The instrument has three subscales (i.e., depression (DEP), anxiety (ANX), and somatization (SOM)) as well as an overall symptom score (i.e., Global Severity Index (GSI)). The scale uses a five-point Likert-type scale ranging from “Not at all” to “Extremely”. A sample item is: “Feeling hopeless about the future”. Raw items are converted to T-scores, using gender and oncology norms, with a possible range of 30 – 80. Higher scores indicate more psychological distress. Internal consistency in the present sample was very good (Cronbach’s α = .89). Multiple cut-points for the GSI have been suggested including a conservative cut-off (T-score $\geq$ 57) (Zabora et al., 2001) and a more liberal cutoff (T-score $\geq$ 50) for clinically meaningful psychological distress (Grassi et al., 2018).

Willingness to participate in behavioral interventions*: Developed for the current study (SIDEKICK), these questions assess participant willingness to participate in a variety of mind-body and exercise interventions using a six-point Likert-type scale ranging from “not very likely” to “very likely”. The scale includes descriptions of physical activity and mind-body interventions. The overall willingness to participate score is an average of the six individual ratings with a possible range of 1 to 6. Higher scores represent greater willingness to participate in any intervention. Willingness to participate in any intervention was calculated if participants’ response was either "likely" or "very likely" to any of the six possible interventions. Internal consistency in the present sample was excellent (Cronbach’s α = .91). An additional question asks for rank ordering the top two choices of interventions.

Analytic Approach

Aim 1: Characterize the relation between mindfulness, psychological distress, and health-related QOL in a sample of men diagnosed with PCa in New Mexico and New Jersey. Univariate analyses were used to describe all variables of interest. Pearson’s r zero-order correlations were used to examine the relation between mindfulness, health-related QOL, psychological distress, and demographic variables. For the hierarchical linear regression, predictor variables were entered in a blockwise fashion to characterize increasing variance explained with each group of predictors (i.e., block 1: demographic variables and location, block 2: medical factors, block 3: psychosocial factors, and block 4: mindfulness).

***Aim 2 Explore racial/ethnic differences in mindfulness, psychological distress, QOL, and medical mistrust among men diagnosed with PCa*.** Independent t-

tests were used to examine racial/ethnic differences among these variables. Pearson's r zero-order correlations were also separated by race/ethnicity to examine potential group differences and compared using a t-test.

Aim 3 Explore racial/ethnic differences in willingness to participate in cancer psychosocial interventions among those who did not participate in the HERO mind-body intervention. Independent t-tests and chi square analyses were used to examine differences between those who were willing to participate in interventions and those who were not. Willingness to participate in an exercise or mind-body intervention was also included in the regression analyses.

Power Analysis

G*Power v. 3.0.10 was used to calculate power estimates for the proposed analyses (Faul et al., 2007). For the Aim 1 correlations, a minimum of 85 participants were needed to have 80% power to detect a medium effect size (p = .3) of a significant *r* value, assuming a 2-tailed alpha level of 0.05 (Cohen, 1992). Since thirty-five participants completed the baseline HERO survey study, a minimum of 50 additional participants were needed. For the aims related to differences between means of racial/ethnic groups, 26 men per group (52 total) would have 80% power to detect a large effect (d =.8), assuming a 2-tailed alpha level of .05, while 64 men per group (128) would be needed to detect a medium effect (d = .5).

Results

Recruitment

Between the two HERO recruitment databases (New Jersey and New Mexico), 441 opt-out letters were sent to potential participants (see Figure 1 for additional details). Additionally, forty-three potential participants from New Mexico contacted the study team after seeing a flyer. A total of 244 potential participants were contacted (i.e., returned an “opt-in” letter, spoke with by phone) for a contact rate of 55%. Of these, 184 men were screened with 120 eligible and 64 ineligible. The most common reason for ineligibility was insufficient psychosocial distress on each of the four brief screening items. Of the 120 mailed surveys, 86 men (41 from New Mexico and 45 from New Jersey) completed the SIDEKICK survey for a cooperation rate of 72%. Thirty-four men participated in the parent HERO study (in New Mexico) and were included in the present analyses for a total of 120 participants.

Demographics

The sociodemographic characteristics of the 120 participants are presented in Table 1. The average age of the sample was 69.9 years (SD = 7.4). The majority of the sample, 74%, was non-Hispanic White with 22% of the sample identifying as Hispanic ethnicity. The majority of the sample (73%) were married or living with a partner. Ninety-one participants (76%) were retired or no-longer working. Two-thirds of the sample reported receiving at least a bachelor’s degree. For those choosing to report (82%), the modal annual income was between $70,000 and $80,000. Significant differences between the New Jersey and New Mexico recruitment sites

included older age, lower income and greater Hispanic ethnicity in New Mexico compared to New Jersey. Comparing those in the SIDEKICK study to those who participated in the HERO intervention did not produce significant differences on baseline demographic or medical factors. This was the case as well when restricted to New Mexico SIDEKICK participants compared to the HERO cohort from New Mexico.

Medical Factors

The medical factors of the sample are displayed in Table 2. Of the 120 participants, all with a PCa diagnosis, 65% had undergone either prostatectomy (43%), radiation (58%), or both (23%). The average time since radiation or surgery was 3.2 years (SD = 5.2). More than a quarter of the sample (28%) had received ADT/hormones in the past, with 26% currently receiving such treatment. Those who had not had any treatment (e.g., active surveillance) comprised 10.3% of the sample. Participants reported an average of 1.2 (SD = .98) comorbidities, with hypertension, arthritis, and depression being the most commonly reported medical conditions. More than half of the participants (56%) reported at least 150 minutes of weekly physical activity at a mild intensity (e.g., easy walking) or greater.

Psychosocial Variables

The psychosocial characteristics of the sample are displayed in Table 3. The mean participant mindfulness was 5.0 (SD = .9) with nearly a quarter of the sample (n = 29, 24%) reporting the highest possible score of 6 corresponding to being “highly mindful”. For the variables assessing social domains (i.e., social isolation and social support) the overall means were within 1 standard deviation of the general

population. Of those assessed for medical mistrust as part of the SIDEKICK survey, the average mistrust of 2.4 (SD = .55) was comparable to that found in other studies of primarily non-Hispanic White populations (Kinlock et al., 2017). There were significant differences in scores by geography and survey type such that SIDEKICK (New Mexico) had lower mindfulness, higher social isolation, and more medical mistrust than SIDEKICK (New Jersey) and had lower social support than both HERO and SIDEKICK (New Jersey).

Primary Study Variables

Descriptive statistics for the primary study variables are presented in Table 4. For psychological distress as measured by the BSI, 36% of the sample met a conservative cut-off for distress (T-score $\geq$ 57) while a majority of the sample (55%) met a more liberal cutoff (T-score $\geq$ 50). For the QOL measures, of the two summary scores for the SF-36, participants rated slightly higher mental health scores (MCS 49.7$\pm$ 9.9) compared to physical health scores (PCS 47$\pm$ 9.1) both of which were slightly below the oncology specific norm (T-score = 50). For the subscales that comprise the PCS and MSC, all of the means were within a half standard deviation of the population norm and only one mean subscale score (Mental health) was above the population norm. Twenty-seven percent and 38% of participants had scores that were at least one-half standard deviation below the population norm on the MCS and PCS respectively.

Correlations

The correlations of the study variables are displayed in Table 5. Income had the most frequent and strongest relation to the other demographic variables such

that having a higher income was related to being married, having more education, non-Hispanic ethnicity, having more medical comorbidities, and reporting greater isolation. The correlations of the primary study variables, displayed in Table 6, show a predictably strong relation between psychological distress and health-related QOL such that greater distress was negatively related to both physical and mental health QOL scores. Psychological distress was most strongly negatively correlated with the summary mental component score ($r = -.73$, $p < .001$). The correlations of the demographic, medical, and mindfulness variables are described below in the results of the specific aims.

Study Aims

The first aim sought to characterize the relation between mindfulness, psychological distress, and health-related QOL with a specific hypothesis that higher levels of mindfulness would be correlated with less psychological distress and greater health-related QOL. This hypothesis was generally supported as higher scores on the MAAS were negatively correlated with psychological distress (BSI-GSI) ($r = -.40$, $p < .001$) such that those who reported being higher in mindfulness also reported less overall distress (Table 7). The MAAS scores were also significantly negatively correlated with the three BSI-18 subscales: Somatization ($r = -.27$, $p < .003$), Depression ($r = -.38$, $p < .001$, and Anxiety ($r = -.40$, $p < .001$).

The MAAS was also positively correlated with the MCS of the SF-36 QOL measure including each of the four subscales and was most highly correlated with the mental health subscale ($r = .39$, $p < .001$; Table 7). There was not a significant correlation between the MAAS and the PCS of the SF-36, although the MAAS was

significantly positively correlated with the role function ($r = .22$, $p < .02$) and general health ($r = .27$, $p < .00$) subscales of the physical component score.

For the hierarchal linear regression analysis, (see Table 8), predictors were added in a blockwise fashion to characterize increasing variance explained with each block of predictors. For psychological distress (BSI-18), demographic factors (including study site location) explained 27% of the variance in the outcome, medical factors contributed 2%, and psychosocial factors explained an additional 29%. After controlling for these factors, MAAS explained an additional 1% of variance. The significant psychosocial variables in the full model were income, social isolation, and PCa worry.

For physical health-related QOL (SF-36 PCS) (Table 9), demographic factors explained 18% of variance, medical factors explained an additional 8%, psychosocial factors explained 1% and the MAAS did not explain additional variance. The significant variables after controlling for all variables were education, retirement, and current ADT. For mental health-related QOL (SF-36 MCS) (Table 10), demographic factors contributed 15%, medical factors 1%, psychosocial factors 26%, and the MAAS explained an additional 2% after controlling for the first three blocks of predictors. Social isolation was the only significant variable in the full model.

Social isolation and PCa worry were significant variables in the adjusted models. Social isolation was significantly correlated with each of the primary variables as well as their subscales (see Table 11). It was most highly correlated with the depression subscale of the BSI-18 ($r = .68$). PCa worry, which was a

significant predictor in the adjusted model for psychological distress was significantly correlated with both the BSI-GSI and each subscale, as well as with the MCS and associated subscales. It was not associated with overall PCS but was significantly associated with the General health subscale (r = -.37). The highest correlation was with the BSI-GSI and its associated anxiety subscale (r = .52).

The second aim sought to examine possible racial/ethnic differences between scores on mindfulness, psychological distress, QOL, and medical mistrust. Non-White participants comprised only 8% of the sample and were a heterogenous group (see Table 1 key for descriptives). Because of the small number of men in this category further sub-group analysis was not feasible.

In comparing differences by ethnicity, the specific hypothesis that Hispanic participants would have worse outcomes compared to non-Hispanic Whites was only partially supported. Those identifying as Hispanic ethnicity did have significantly higher PCa worry but did not have significantly worse overall distress, overall QOL, or differences in mindfulness and medical mistrust compared to non-Hispanic men (see Table 12). Examining the subscales of the QOL measure showed significantly worse physical functioning, general health, and role limitations due to emotional problems for Hispanic men compared to their non-Hispanic peers.

The third aim examined willingness to participate in different kinds of psychosocial interventions for those who did not participate in the HERO mind-body intervention (n = 86). The first hypothesis of this aim was: *Less willingness to participate in behavioral interventions would be associated with lower mindfulness, worse QOL and greater levels of psychological distress.* Table 13 displays the

results for the association between expressing willingness to participate in interventions and mindfulness, QOL, and psychological distress. Willingness to participate in the specific interventions was only significant for the peer support class and the general severity index of the BSI-18 such that greater distress was associated with higher willingness to participate in a peer support group. Willingness to participate in any intervention as well as intervention specific willingness was not significantly related to any of the other study variables.

Results for the second hypothesis of this aim (*Hispanic and African-American men will be less willing to participate in behavioral interventions compared to non-Hispanic Whites*) are displayed in Table 14. This hypothesis was not supported as those of Hispanic ethnicity were significantly *more* likely to be willing to participate in MBSR classes than those of non-Hispanic ethnicity. There were no significant differences in willingness to participate in any of the other interventions between Hispanic and non-Hispanic participants.

For the final hypothesis of this aim (*Medical mistrust will mediate the relation between ethnicity and willingness to participate in behavioral interventions*), there were no differences in medical mistrust between Hispanic and non-Hispanic ethnicity (see Table 12) and only one significant difference in willingness to participate in a specific intervention (Table 14). For the hierarchal linear regression (Table 15) with willingness to participate in any of the interventions as an outcome, overall variance explained was 27% (demographic factors explained 13% of the variance, medical factors explained 1%, psychosocial factors explained 13%, and MAAS explained an additional 1%). The only significant predictor in the full adjusted model was PCa

worry such that higher worry was associated with increased likelihood to want to participate in at least one of the interventions.

Post-hoc analyses explored interest in participating in the individual intervention types (i.e., aerobic exercise, strength training, peer support, MBSR, Tai chi Qigong, Yoga). A majority of the men (82%) indicated that they were likely to participate in at least one of the intervention types. Table 16 indicates the percentage of men who indicated that they were "likely" or "very likely" to participate in different intervention types. These ranged from as high as 49% (Aerobic Exercise) to as low as 29% (Yoga).

Table 17 displays the ranked preferences of participants. Based on their 1st or 2nd most preferred choices, overall participants preferred Aerobic Exercise (23.5%), Strength Training (22.9%), Tai chi Qigong (16.3%), MBSR (13.7%), Yoga (11.8%) and Peer support (11.8%). Preferences varied by location with men in New Mexico (Table 17 a) expressing a preference (1st or 2nd choice) as Aerobic Exercise (20%) or MBSR (20%) while men in New Jersey (Table 17 b) expressing a preference for either Strength Training (29.5%) or Aerobic Exercise (26.9%). Reasons given for non-interest in classes included lack of interest in participating with others (n = 19), family obligations (n = 6), work obligations (n = 6) and transportation (n = 1).

Table 18 displays the results for percentages of those who were either willing to participate in remote interventions at home as well as those who would prefer remote classes to in-person. Overall, a majority of the participants (63%) would be willing to take classes at home instead of in-person while a significant minority (31%) expressed a preference to take classes at home. There were no significant

differences of either willingness or preference for at-home classes based on survey mode used in the current study (online vs. paper). There was a significant difference in interest in remote delivery of interventions based on location as men from New Jersey were significantly more likely than men from New Mexico to be willing to take classes at home (72% vs. 53%). Table 19 describes the responses for accessibility of remote interventions such that nearly 80% of the sample reported being able to use a computer with internet access.

To account for potentially higher distress during the COVID-19 pandemic, sensitivity analyses were performed to compare those recruited before versus after March of 2020. There were no significant differences in the primary study outcomes (BSI-18, SF-36_PCS, SF-36_MCS). There was a trend ($p = .065$) toward *higher* MAAS scores among men recruited during the COVID-19 pandemic, which likely reflects higher MAAS scores reported by men from New Jersey compared to men from New Mexico.

DISCUSSION

The purpose of the current study was to characterize the relation among mindfulness, psychological distress, and health-related QOL in a sample of PCa survivors endorsing at least minimal distress at screening. The study included an ethnically and demographically diverse sample of PCa survivors. The results demonstrated that higher mindfulness was associated with less psychological distress and better mental health-related QOL Higher mindfulness was not associated with better physical health-related QOL and did not contribute unique variance to psychological distress or health-related QOL after controlling for relevant demographic, medical, and psychosocial factors. Contrary to prediction, mindfulness did not differ significantly between those of Hispanic and non-Hispanic ethnicity.

For those who were asked about their willingness to participate in various psychosocial group-based interventions, interest varied by type. There were no significant differences based on ethnicity although there were geographic differences such that men from New Mexico were most likely to prefer a mindfulness-based stress reduction class while men from New Jersey were most likely to prefer strength training. A majority of participants were willing to participate in remote interventions compared to in-person with a significant minority of participants who would prefer remote instruction.

Several of these findings are particularly noteworthy. While mindfulness was significantly associated with the outcomes of interest, these associations were not consistent across groups, such that men from New Jersey did not exhibit the same relation between mindfulness, distress, and QOL. One of the reasons may be due to

there being less distress reported in the New Jersey sample, despite recruitment occurring entirely during the COVID-19 pandemic for this group. Notably men recruited from New Jersey also had higher SES (e.g., education, household income) compared to those who participated in the SIDEKICK study in New Mexico.

The overall mean for the mindfulness measure was higher than has been reported in other studies. Although there have not been comparable samples of older adult male cancer survivors using the shortened 5-item measure of the MAAS, other studies suggest that mindfulness is reported as higher in older age participants compared to younger adults (K. W. Brown & Ryan, 2003; Prakash et al., 2017). There have also been gender differences observed in some samples such that men score higher on the original 15-item MAAS (Montes et al., 2014). In the current sample, there was a significant minority of men (24%) who had the highest possible score on the mindfulness measure. There may be a paradoxical relationship with regard to measuring mindfulness such that those who engage in practices to increase awareness of their thinking may be better reporters of how often they are "mindless" (Goodman et al., 2017). In the present sample, the small number of men who had a daily meditation practice (n = 6) reported being less mindful than those who did not have a regular meditation practice (M 4.3 vs. 5.1 on, p = .067). Ironically, lower MAAS scores may also indicate *more* attention to being unaware and thus reflect more "mindfulness". These findings suggest caution with using the MAAS 5-item short form as either a clinical endpoint or potential mediator of health behavior change due to possible ceiling effects (Van Dam et al., 2018).

While mindfulness was not significantly associated with the outcomes of interest after adjusting for other predictors, two other variables, social isolation and PCa worry, were significant predictors in the adjusted models. Increased social isolation was significantly associated with worse psychological distress and worse mental health QOL. Social isolation may uniquely contribute to on-going distress as it is a well-established predictor for negative physical and mental health outcomes (Hawkley & Cacioppo, 2010). QOL improvements in psychosocial interventions may be due in part to increasing socialization. Given these non-specific factors, clinical trials of PCa interventions should include active control groups to account for the social benefits of participating with peers in a study.

The other significant predictor of psychological distress and willingness to participate in at least one intervention, PCa worry, may be an important indicator of psychological challenges that negatively impact PCa survivor QOL (Erim et al., 2020). Reducing the frequency and intensity of PCa worry may be an effective target when addressing psychological distress in this population. Given that those with higher PCa worry may be more willing to seek an intervention, there is evidence that mind-body interventions, tested primarily in breast cancer survivors, are effective in reducing fear of cancer recurrence (Hall et al., 2018). Group interventions that include mindfulness components, in addition to physical movement, may be particularly well suited to reducing PCa worry (Victorson et al., 2017).

There are also several important and surprising findings that are particularly relevant to researchers designing psychosocial clinical interventions for PCa survivors. Notably, in terms of willingness to participate in different kinds of

psychosocial and exercise interventions, there was similar interest expressed for each of the intervention types, including mind-body interventions. While more physically active interventions, especially aerobic exercise, were listed as the most preferred overall, there was not a significant difference in willingness to participate in any of the intervention types. For the men in the New Mexico sample, MBSR was the second most preferred intervention. This is a surprising finding given that several mind-body interventions types were listed (i.e., MBSR, Tai chi Qigong, Yoga) in which older men have traditionally been under-recruited for in clinical trials (Bodenlos et al., 2017). These results suggest the acceptability of mind-body interventions, which may be especially helpful in addressing on-going distress, among ethnically diverse PCa survivors.

Another important finding relates to willingness to participate in interventions that are delivered remotely over the internet. A majority of participants (63%) expressed willingness to participate in such classes from home, while a significant minority (31%) expressed a preference for such classes. The COVID-19 public health crisis has accelerated the relevance and need for more flexible modes of intervention that make use of telehealth opportunities (Wosik et al., 2020). The acceptability of remote delivery of interventions may also be a way to address reluctance of some participants to meet with others (listed as the most common reason for unwillingness to meet in person) and may also address larger questions of access for those who face geographic and logistical barriers to attending in-person interventions (Hirko et al., 2020). This latter opportunity is beyond the scope of the current study given that few PCa survivors from rural areas were included.

That the large majority of the sample also expressed accessibility to a computer with internet access may also be a reflection of higher SES of the group.

Overall, the current study had several strengths. Given that men were pre-screened for distress, the findings are particularly relevant for designing interventions as all participants had clinically meaningful symptoms within a constellation of fatigue, sleep difficulty, psychological, or general distress. The study also included sufficient ethnic diversity (e.g., Hispanic participants) in which to make meaningful conclusions about differences based on an important and understudied diversity factor in PCa survivorship.

Limitations

The current study also had several important limitations. Given the cross-sectional nature of the data, it is not possible to determine a causal relation between the variables of interest. Specifically, it is not possible to determine directionality between mindfulness, distress, and QOL. Another limitation of the study was the lack of racial diversity in the current sample. Although there was nearly a representative sample of men with Hispanic ethnicity in the New Mexico sample, there were only a few Black or African-American men in the New Jersey sample. Although the study included an ethnically diverse sample, given the relatively small size of the Hispanic group, there was limited power to detect small or medium differences between groups. Furthermore, men with high educational achievement and household income were over-represented in the current sample. Future survey studies of racially diverse distressed PCa survivors from different SES backgrounds are needed to better address unmet needs of these marginalized groups. Finally,

while the current study included men of Hispanic ethnicity, the study was restricted to English speakers only. There are potentially important cultural differences (e.g., acculturation) for monolingual Spanish-speaking men which are not reflected in the present study (Stephens et al., 2010).

Conclusions

In conclusion, among distressed PCa survivors, mindfulness is related to psychological distress and overall mental health QOL. However possible ceiling effects of the abbreviated MAAS scale in this population may warrant use of different measures of mindfulness for use in clinical trials. Given their significance in the current study, social isolation and PCa worry may also warrant increased attention as potential mediators of QOL improvements of men who participate in PCa trials. There were no differences seen between those of Hispanic and non-Hispanic ethnicity on primary study variables, although other demographic factors may play a larger role including SES (education, income) and geographic location. Finally, differences between men on ethnicity, mindfulness, distress, and QOL were unrelated to willingness to participate in a variety of interventions, including those delivered remotely, suggesting opportunities for developing novel interventions to address distress in PCa survivors.

APPENDIX A: SCREENING QUESTIONS

[Pittsburgh Sleep Quality Index 1 Item] During the past 4 weeks, how would you rate your sleep quality overall? (Very Good, Fairly Good, Fairly Bad, or Very Bad?) [Eligible if response is "Fairly Bad" or "Very Bad"]

[SF-36 Vitality Subscale] These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks… [Eligible if sum is 13 or lower]

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Did you feel full of life?	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Did you have a lot of energy?	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Did you feel worn out?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Did you feel tired?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

[PROMIS Anxiety and Depression Brief Scale] These questions are about you feel and how thing have been with you during the past 7 days [Eligible if sum is 9 or higher]

	Never	Rarely	Sometimes	Often	Always
I felt fearful	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I felt uneasy	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I felt helpless	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
I felt hopeless	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

[General Distress] Now I am going to ask you a question about any distress you have been experiencing during the past 7 days (distress can include practical, family, emotional, and physical problems). On a scale from 0-10, with 0 being no distress, and 10 being extreme distress, how much distress have you been experiencing in the past week including today? [Eligible if score is 3 or higher]

APPENDIX B: PARTICIPANT SURVEY

[SF-36]

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐	☐	☐	☐	☐

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
☐	☐	☐	☐	☐

3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	☐	☐	☐
b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐	☐	☐
c. Lifting or carrying groceries	☐	☐	☐
d. Climbing several flights of stairs	☐	☐	☐
e. Climbing one flight of stairs	☐	☐	☐
f. Bending, kneeling, or stooping	☐	☐	☐
g. Walking more than a mile	☐	☐	☐
h. Walking several hundred yards	☐	☐	☐
i. Walking one hundred yards	☐	☐	☐
j. Bathing or dressing yourself	☐	☐	☐

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Cut down on the amount of time you spent on work or other activities	☐	☐	☐	☐	☐
b. Accomplished less than you would like	☐	☐	☐	☐	☐
c. Were limited in the kind of work or other activities	☐	☐	☐	☐	☐
d. Had difficulty performing the work or other activities (for example, it took extra effort)	☐	☐	☐	☐	☐

5. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Cut down on the amount of time you spent on work or other activities	☐	☐	☐	☐	☐
b. Accomplished less than you would like	☐	☐	☐	☐	☐
c. Did work or other activities less carefully than usual	☐	☐	☐	☐	☐

6. During the <u>past 4 weeks</u>, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
☐	☐	☐	☐	☐

7. How much <u>bodily</u> pain have you had during the <u>past 4 weeks</u>?

None	Very mild	Mild	Moderate	Severe	Very severe
☐	☐	☐	☐	☐	☐

8. During the <u>past 4 weeks</u>, how much did <u>pain</u> interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐	☐	☐	☐	☐

9. These questions are about how you feel and how things have been with you <u>during the past 4 weeks</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past 4 weeks</u>…

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Did you feel full of life?	☐	☐	☐	☐	☐
Have you been very nervous?	☐	☐	☐	☐	☐
Have you felt so down in the dumps that nothing could cheer you up?	☐	☐	☐	☐	☐
Have you felt calm and peaceful?	☐	☐	☐	☐	☐
Did you have a lot of energy?	☐	☐	☐	☐	☐
Have you felt downhearted and depressed?	☐	☐	☐	☐	☐
Did you feel worn out?	☐	☐	☐	☐	☐
Have you been happy?	☐	☐	☐	☐	☐
Did you feel tired?	☐	☐	☐	☐	☐

10. During the <u>past 4 weeks</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

11. How TRUE or FALSE is <u>each</u> of the following statements for you?

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
a. I seem to get sick a little easier than other people	☐	☐	☐	☐	☐
b. I am as healthy as anybody I know	☐	☐	☐	☐	☐
c. I expect my health to get worse	☐	☐	☐	☐	☐
d. My health is excellent	☐	☐	☐	☐	☐

[PROMIS Social Isolation]

The next sections ask about your social interactions and activities. Please respond to each item by marking one box per row.

	Never	Rarely	Sometimes	Usually	Always
a. I feel left out	☐	☐	☐	☐	☐
b. I feel that people barely know me	☐	☐	☐	☐	☐
c. I feel isolated from others....	☐	☐	☐	☐	☐
d. I feel that people are around me but not with me	☐	☐	☐	☐	☐

[PROMIS Social Support (Emotional)]

	Never	Rarely	Sometimes	Usually	Always
a. I have someone who will listen to me when I need to talk	☐	☐	☐	☐	☐
b. I have someone to confide in or talk to about myself or my problems	☐	☐	☐	☐	☐
c. I have someone who makes me feel appreciated	☐	☐	☐	☐	☐
d. I have someone to talk with when I have a bad day	☐	☐	☐	☐	☐

[Brief Symptom Inventory (BSI-18)]

Next, is a list of problems and complaints that people sometimes have. Please read each one carefully and mark an ☒ in the one box under the response that best describes how much that problem has distressed or bothered you in the past week, including today.

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Faintness or dizziness	☐	☐	☐	☐	☐
2. Feeling no interest in things	☐	☐	☐	☐	☐
3. Nervousness or shakiness inside	☐	☐	☐	☐	☐
4. Pains in heart or chest	☐	☐	☐	☐	☐
5. Feeling lonely	☐	☐	☐	☐	☐
6. Feeling tense or keyed up	☐	☐	☐	☐	☐
7. Nausea or upset stomach	☐	☐	☐	☐	☐
8. Feeling blue	☐	☐	☐	☐	☐
9. Suddenly scared for no reason	☐	☐	☐	☐	☐
10. Trouble getting your breath	☐	☐	☐	☐	☐
11. Feelings of worthlessness	☐	☐	☐	☐	☐
12. Spells of terror or panic	☐	☐	☐	☐	☐
13. Numbness or tingling in parts of your body	☐	☐	☐	☐	☐
14. Feeling hopeless about the future	☐	☐	☐	☐	☐
15. Feeling so restless you couldn't sit still	☐	☐	☐	☐	☐
16. Feeling weak in parts of your body	☐	☐	☐	☐	☐
17. Thoughts of ending your life	☐	☐	☐	☐	☐
18. Feeling fearful	☐	☐	☐	☐	☐

[Mindful Attention Awareness Scale (MAAS) 5 item]

About Your Present Moment Awareness

Below is a collection of statements about your everyday experience. Please indicate how frequently or infrequently you currently have each experience Please answer according to what *really reflects* your experience rather than what you think your experience should be.

	Almost Never	Very Infrequently	Somewhat Infrequently	Somewhat Frequently	Very Frequently	Almost Always
1. It seems I am "running on automatic" without much awareness of what I am doing	☐	☐	☐	☐	☐	☐
2. I rush through activities without being really attentive to them	☐	☐	☐	☐	☐	☐
3. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there	☐	☐	☐	☐	☐	☐
4. I do jobs or tasks automatically, without being aware of what I'm doing	☐	☐	☐	☐	☐	☐
5. I find myself doing things without paying attention	☐	☐	☐	☐	☐	☐

[Cancer Worry Scale]

These next questions ask about your feelings towards cancer. Please mark the one box that best describes your answer.

	Never	Rarely	Sometimes	Often	All of the time
1. During the past week, how often have you worried about prostate cancer (or about getting prostate cancer again sometime in your lifetime)?	☐	☐	☐	☐	☐
	Not at all	**A little bit**	**Somewhat**	**Very**	**Extremely**
2. How bothered are you by thinking about prostate cancer (or about getting prostate cancer again)?	☐	☐	☐	☐	☐
3. How worried are you about prostate cancer (or about getting prostate cancer again)?	☐	☐	☐	☐	☐

About Your Interest in Classes for Well-Being

If free classes were provided at a convenient time and location, how likely would you be to participate in the following group based classes with other men with a history of prostate cancer?

	Very Unlikely	Unlikely	Slightly Unlikely	Slightly Likely	Likely	Very Likely
Aerobic Exercise (classes that use movement (ex. Walking) to increase heart rate and endurance, and reduce stress)	☐	☐	☐	☐	☐	☐
Strength Training (classes that use weight lifting to increase muscle mass and reduce stress).	☐	☐	☐	☐	☐	☐
Peer Support Class (education provided by men with prostate cancer about what has been effective in reducing stress and increasing health)	☐	☐	☐	☐	☐	☐
Mindfulness Based Stress Reduction (teaches breathing exercises, guided imagery, and simple movements. The goal is to increase present moment awareness in order to reduce the impact of stress)	☐	☐	☐	☐	☐	☐

	Very Unlikely	Unlikely	Slightly Unlikely	Slightly Likely	Likely	Very Likely
Yoga (teaches simple postures and stretches to improve flexibility and strength while reducing stress)	☐	☐	☐	☐	☐	☐
Tai chi Qigong (teaches standing and seated gentle movements and uses guided imagery in order to increase flexibility, strength, and reduce stress)	☐	☐	☐	☐	☐	☐

Of the classes listed above, which would be your top 2 (two) choices if they were offered:

1. _____

2. _____

If you marked unlikely for at least three of the classes above, what would prevent you from attending classes? (please check all that apply)

Transportation to classes

Work Obligations

Family Obligations

Not interested in attending groups with others

Other (please explain):

Would you prefer class sessions to be offered in a language other than English?:

☐ Yes

☐ No

If yes, which language?:_____

Would you be *willing* to take classes at home instead of attending in person?

☐ Yes

☐ No

Which of the following classes would you be willing to take at home: (check all that apply):

- ☐ Aerobic Exercise
- ☐ Strength Training
- ☐ Peer Support Class
- ☐ Mindfulness Based Stress Reduction
- ☐ Yoga
- ☐ Tai chi Qigong

Would you *prefer* to take classes at home instead of attending in person?

- ☐ Yes
- ☐ No

If classes were made available at home, which of the following could you use to access class materials? (check all that apply)

- ☐ Computer with internet access
- ☐ Smartphone
- ☐ DVDs
- ☐ Landline Phone

If classes were offered at home on the internet, would you prefer to participate using: (check all that apply)

- ☐ a computer
- ☐ a computer tablet or smart phone
- ☐ a television
- ☐ a DVD player
- ☐ none of the above

If classes were offered at home on the internet, what would be your preferred method to receive feedback? (check one)

- ☐ to receive live feedback from the instructor (via video call)
- ☐ to send recordings of yourself exercising/participating and receive feedback from the instructors at a later time
- ☐ no preference

If classes were offered at home on the internet, would you prefer to: (check one)

- ☐ participate at a regularly scheduled time with a group of men with a history of prostate cancer
- ☐ participate individually on your own schedule
- ☐ no preference

About Your Medical History

These next questions ask about your cancer history, some medical conditions you might have had:

Are you currently receiving chemotherapy, hormone therapy, or androgen deprivation therapy (ADT)?

☐ No
☐ Yes

A. What is the name of the drug(s)? *[Check all that apply]*

Have you ever received chemotherapy, hormone therapy, or androgen deprivation therapy (ADT) in the past (that is, drugs/drugs you are not currently taking)?

☐ No
☐ Don't know
☐ Yes

A. What was the name of the drug(s)? When did you stop taking it? (MM/YYYY) *[Check all that apply*

B. Why did your treatment end?

☐ Remission (i.e. decrease in or disappearance of signs and symptoms of cancer)
☐ Intermittent therapy (i.e. stopping for a time, then beginning again)
☐ Failed treatment / Disease Progression
☐ Other _____

Have you ever had radiation therapy?

☐ Yes ☐ No

When does/did your radiation therapy end?

Have you ever had surgery to remove your prostate gland?

☐ Yes ☐ No

If yes, when was the surgery?

Is your PSA level elevated or high?

☐ Yes
☐ No
☐ Don't know

Within the last 6 months, have you *regularly* practiced Tai chi, Yoga, Meditation, Qigong or any other similar relaxation focused activities? ("Regular practice" is defined as 2-3 times a week over a period of two months that is not interrupted, within the past year).

☐ Yes ☐ No

A. Please specify activity and frequency:_____

On average, in the past 3 months, have you been engaged in *regular exercise* for more than or equal to 150 minutes (2.5 hours) per week (ex. 30 min for 5 days each week)?

☐ Yes ☐ No

A. Please specify activity: _____

B. Intensity of activity:

☐ Mild	(**Minimal effort)** Ex. bowling, golf, easy walking, archery, fishing
☐ Moderate	(**Makes you feel tired some of the time)** Ex. dancing, gymnastics, fast walking, easy swimming, baseball, tennis, easy bicycling, volleyball, weightlifting, skiing
☐ Vigorous	**(Heart beats fast- makes you breathe hard and feel tired most of the time)** Ex. running, aggressive skateboarding, jump rope, martial arts, vigorous swimming, vigorous bicycling, football, soccer, basketball, hockey, jogging

Have you ever been treated or told by a doctor that you had any of the following:

	Yes	No
a. Heart attack or myocardial infarction	☐	☐
b. Congestive heart failure	☐	☐
c. High blood pressure or hypertension	☐	☐
d. Peripheral vascular disease or venous stasis	☐	☐
e. Stroke or cerebrovascular disease	☐	☐
f. Diabetes	☐	☐
g. Peptic ulcer disease/stomach ulcer	☐	☐
h. Arthritis Please specify type such as osteoarthritis [specify type]_____	☐	☐
i. Lung disease or chronic obstructive pulmonary disease (example: COPD, chronic bronchitis, emphysema).	☐	☐
o. Depression	☐	☐
p. Moderate to severe chronic kidney disease	☐	☐
q. Hemiplegia or paralysis of arm and/or leg	☐	☐
r. Leukemia	☐	☐
s. Malignant lymphoma	☐	☐
t. Cancer – [specify _____]	☐	☐
u. Liver disease	☐	☐
v. AIDS	☐	☐

[Medical Mistrust Index]

We would like to ask you a few questions about how you feel about healthcare organizations. When we say healthcare organizations, we are not asking about an individual doctor or nurse or any other person like that. We are asking about organizations where you might get healthcare, like a hospital or a clinic, the healthcare system in general.

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. You'd better be cautious when dealing with health care organizations.	☐	☐	☐	☐
2. Patients have sometimes been deceived or misled by health care organizations.	☐	☐	☐	☐
3. When health care organizations make mistakes they usually cover it up.	☐	☐	☐	☐
4. Health care organizations have sometimes done harmful experiments on patients without their knowledge.	☐	☐	☐	☐
5. Health care organizations don't always keep your information totally private.	☐	☐	☐	☐
6. Sometimes I wonder if health care organizations really know what they are doing.	☐	☐	☐	☐
7. Mistakes are common in health care organizations.	☐	☐	☐	☐

About You

Next are some questions about you and your background. These questions will help us describe the people who participated in this project.

Are you currently married, divorced, widowed, separated, never married, or a member of an unmarried couple?

- ☐ Married
- ☐ Divorced
- ☐ Widowed
- ☐ Separated
- ☐ Never married
- ☐ A member of an unmarried couple

Are you of Hispanic, Latino, or Spanish origin?

- ☐ No, not of Hispanic, Latino, or Spanish origin
- ☐ Yes, Mexican, Mexican Am., Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino, or Spanish origin – *[Specify origin, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, etc.]*

_____

What is your race? *[Mark one or more boxes]*

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native – *[Specify name of enrolled or principal tribe]*
- ☐ Asian Indian
- ☐ Japanese
- ☐ Chinese
- ☐ Korean
- ☐ Filipino
- ☐ Vietnamese
- ☐ Other Asian *[Specify race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian]*
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander – *[Specify Race, for example, Fijian, Tongan, etc.]*

☐ Some other race – *[Specify race]*

What is the highest grade or year of school that you have completed?

☐ Some high school or less
☐ High school graduate or GED
☐ Some college, associate degree, or vocational/technical school
☐ Graduate of vocational/technical school
☐ College graduate (BA/BS)
☐ Postgraduate/professional degree (MA, MS, PHD, MD, etc.)

Do you speak more than one language?

☐ Yes
☐ No

If yes, what language(s)?

How well do you speak English?

☐ Excellent
☐ Good
☐ Fair
☐ Poor

If you speak more than one language, how well do you speak a second language?

☐ Excellent
☐ Good
☐ Fair
☐ Poor

How often do you have someone help you read written materials from your healthcare provider?

☐ Never
☐ Occasionally
☐ Sometimes
☐ Often
☐ Always

Are you currently employed for wages, self-employed, out of work for more than one year, out of work for less than one year, a homemaker, a student, retired, or unable to work?

- ☐ Employed for wages
- ☐ Self-employed
- ☐ Out of work for more than one year
- ☐ Out of work for less than one year
- ☐ Homemaker
- ☐ Student
- ☐ Retired
- ☐ Unable to work

Which of the following categories best describes your TOTAL household income before taxes during the last calendar year?

- ☐ Less than $15,000
- ☐ $15,000-$29,999
- ☐ $30,000-$49,999
- ☐ $50,000-$69,999
- ☐ $70,000-$79,999
- ☐ $80,000-$99,999
- ☐ $100,000 or more
- ☐ I would rather not report this

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Figure 1

Study Recruitment Flow Chart

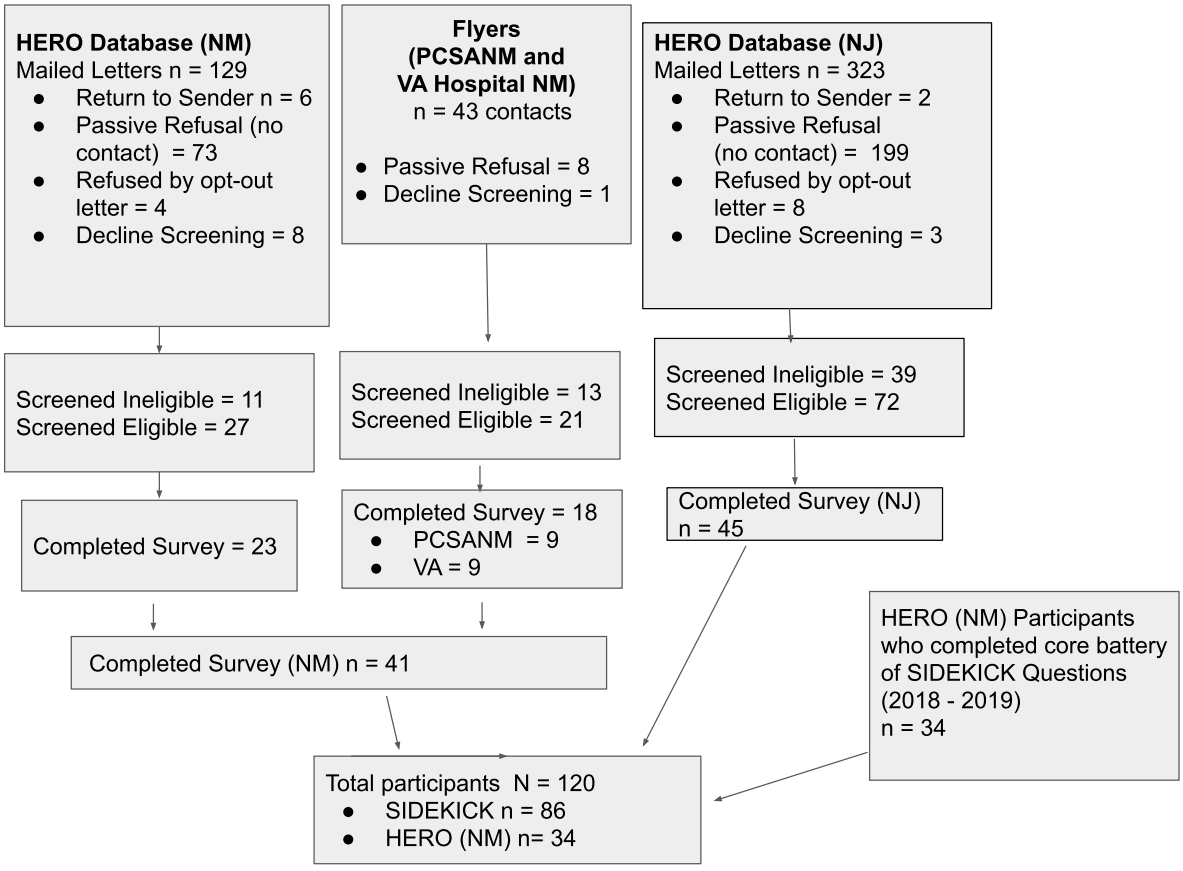

Table 1

Demographic Characteristics of the Sample

	Total N=120 (%)	New Mexico (HERO) N=34 (%)	New Mexico (SIDEKICK) N=41 (%)	New Jersey (SIDEKICK) N=45 (%)
Age (Mean (SD))	69.9 ± 7.4	70.3 ± 8.4	71.9 ± 6.9	67.9 ± 6.7
Race				
White	110 (91.7)	31(91.2)	37 (90.2)	42 (93.3)
Non-White*	10 (8.3)	3 (8.8)	4 (9.8)	3 (6.7)
Ethnicity				
Non-Hispanic	94 (78.3)	25 (73.5)	25 (61.0)	44 (97.8)
Hispanic	26 (21.7)	9 (26.5)	16 (39.0)	1 (2.2)
Household Income (Thousands)[1]				
0 – 49,999	21 (21.4)	5 (14.7)	13 (31.7)	3 (6.6)
50,000 – 70,000	16 (16.3)	5 (14.7)	6 (14.6)	5 (11.1)
70 - 100	24 (24.5)	7 (20.6)	7 (17.0)	10 (22.3)
100,000 +	37 (37.8)	11 (32.4)	10 (24.4)	16 (35.6)
Chose Not to Report	22 (18.3)	6 (17.6)	5 (12.2)	11 (24.4)
Marital Status[2]				
Married/Partnered	87 (72.5)	27 (79.4)	28 (68.3)	32 (71.1)
Non-Married	30 (25.0)	6 (17.6)	13 (31.7)	11 (24.4)
Missing	3 (2.5)	1 (2.9)	—	2 (4.4)
Employment[3]				
Employed	29 (24.1)	4 (11.7)	8 (19.5)	17 (37.7)
Retired or Not-Working	91 (75.8)	30 (88.2)	33 (80.5)	28 (62.3)
Education[4]				
Some College or Less	41 (34.2)	12 (35.3)	18 (43.9)	11 (24.4)
Bachelor's Degree	26 (21.7)	4 (11.8)	10 (24.4)	12 (26.7)
Graduate Degree	53 (44.2)	18 (52.9)	13 (31.7)	22 (48.9)

Note. * Black (n = 3); American Indian (n = 1); Asian Indian (n = 1); Filipino (n = 1); Other Race (n = 4)

[1] Trichotomized as < 50k, between 50k and 100k, or >100k in subsequent analyses.

[2] Dichotomized as yes or no in subsequent analyses.

[3] Dichotomized as retired yes or no in subsequent analyses.

[4] Trichotomized as some college, bachelor's degree, or at least some graduate professional education in subsequent analyses.

Table 2

Medical Characteristics of the Sample

	Total N=120	New Mexico (HERO) N=34	New Mexico (SIDEKICK) N=41	New Jersey (SIDEKICK) N=45
Treatment History				
Watchful Waiting	12 (10.3)	1 (2.9)	4 (9.8)	7 (15.6)
ADT/Hormones (Current)	30 (25.0)	11 (32.4)	9 (22.0)	11 (24.4)
ADT/Horomones (Past)	33 (28.4)	13 (38.2)	11 (26.8)	9 (20.0)
Surgery	50 (43.1)	14 (41.2)	13 (33.3)	26 (59.1)
Radiation	69 (57.8)	16 (48.5)	29 (76.3)	25 (55.6)
Surgery and Radiation	28 (23.3)	5 (14.7)	10 (24.4)	13 (28.9)
Time Since Last Treatment (Years)	3.2 ± 5.2	4.7 ± 4.27	7.2 ± 6.6	3.8 ± 4.4
Number of Comorbidities				
0	38 (31.7)	12 (35.3)	11 (26.8)	15 (33.3)
1	34 (28.3)	11 (32.4)	9 (22.0)	14 (31.1)
2	37 (30.8)	9 (26.5)	16 (39.0)	12 (26.7)
3+	11 (9.2)	2 (5.9)	5 (12.2)	4 (8.9)
Regular Exercise Past 3 Months >150 Minutes a Week				
No	53 (44.2)	19 (55.9)	15 (36.6)	19 (42.2)
Yes	67 (55.8)	15(44.1)	26(63.4)	26 (57.8)
Regular Use of Mind-Body Exercise Past 6 Months				
No	114 (95.0)	34 (100)	38 (92.3)	42 (93.3)
Yes	6 (5.0)	0 (0)	3 (7.3)	3 (2.2)

Note. Percentages do not add up to 100% given multiple categories are possible.

Table 3

Psychosocial Characteristics of the Sample

	Overall Mean ± SD N=120	New Mexico (HERO) N=34	New Mexico (SIDEKICK) N=41	New Jersey (SIDEKICK) N=45
Mindfulness (MAAS)	5.0 ± 0.9	5.1 ± .82[ab]	4.7± 1.0[a]	5.2 ± .73[b]
Social Isolation	46.6 ± 8.8	46.6 ± 8.6[ab]	49.9 ± 7.9[a]	43.6 ± 8.6[b]
Social Support (Emotional)	52.9 ± 8.6	55.7 ± 9.1[b]	49.5 ± 8.1[a]	53.9± 7.7[b]
PCa Worry	2.2 ± 1.1	2.0 ± .96[a]	2.5 ± 1.2[a]	2.0 ± 1.0[a]
Medical Mistrust[1]	2.4 ± .55	*na*	2.5 ± .6[a]	2.2 ±.4[b]

Note. Means that do not share superscripts (*a* and *b*) differ by $p < .05$ using a bonferroni-controlled alpha.

[1] Medical Mistrust was only assessed in SIDEKICK surveys (n = 89).

Table 4

Descriptive Statistics of Primary Study Variables

	Mean	SD	Range
BSI-18 General Severity Index (GSI)	52.6	9.6	34 - 74
BSI-18: Depression	52.9	10.5	42 - 81
BSI-18: Anxiety	49.2	9.1	39 - 78
BSI-18: Somatization	52.1	8.9	40 - 72
SF-36 Physical Component Score (PCS)	47.0	9.1	21.2 – 63.9
Physical Functioning	48.3	8.1	25.0 – 57.5
Role Physical	45.8	9.5	21.2 – 57.2
Bodily Pain	47.6	9.6	21.7 – 62.0
General Health	48.4	9.4	26.1 – 66.5
SF-36 Mental Component Score (MCS)	49.7	9.9	24.5 – 65.9
Vitality	49.8	9.3	31.8 – 70.4
Social Functioning	47.7	10.0	17.2 – 57.3
Role-Emotional	47.8	9.9	14.4 – 56.2
Mental Health	50.5	9.3	27.3 – 63.9

Table 5

Zero Order Correlations of Predictor Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	—														
2. Income	-.05	—													
3. Marriage	.21	.35**	—												
4. Education	.19	.32**	.15	—											
5. Retired	.44**	-.24	-.02	.09	—										
6. Hispanic	.06	-.28**	-.11	-.15	.11	—									
7. NM vs. NJ	-.21	.21	.00	.13	-.25	-.37**	—								
8. Comorbidities	.06	-.34**	-.11	-.09	.22	.01	-.05	—							
9. Current Exercise	.05	-.10	-.02	.10	.09	-.02	.03	-.05	—						
10. Current ADT	.12	.01	-.02	.20	.11	.03	.02	.03	-.10	—					
11. Time Since T/x	.10	-.40**	-.12	-.13	-.04	.05	.04	.18	.04	-.23**	—				
12. Social Isolation	-.08	-.28**	-.33**	-.21	.24**	.07	-.26**	.05	.12	-.08	.10	—			
13. Social Support	.11	.20	.41**	.10	-.07	-.15	.09	-.05	-.05	-.09	.04	-.48**	—		
14. PCa Worry	-.19	-.06	-.16	-.11	.04	.28**	-.14	-.01	.11	-.21	.13	.43**	-.20*	—	
15. Mindfulness	.07	-.02	.03	-.07	-.06	-.02	.21	-.01	-.06	-.08	.01	-.36**	.18	-.32**	—

Note. **p<.01 as threshold for significant correlation for error correction given multiple comparisons.

Table 6

Zero Order Correlations of Primary Study Variables

	BSI-GSI	PCS	MCS
BSI-GSI	—		
PCS	-.32**	—	
MCS	-.73**	.14	—

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 7

Correlations of Mindfulness with the Primary Study Variables

	MAAS
BSI-GSI	-.40**
Somatization	-.27**
Depression	-.38**
Anxiety Subscale	-.40**
PCS	.10
Physical Function	.14
Role Function	.22*
Bodily Pain	.16
General Health	.27**
MCS	.35**
Vitality	.22*
Social Functioning	.21*
Role Emotional	.30**
Mental Health	.39**

Note. ** Significant at the .01 level, * Significant at the .05 level

Table 8

Hierarchical Multiple Regression of the Demographic, Medical, and Psychosocial Variables on Psychological Distress (e.g., BSI-18 General Severity Index)

	Regression 1	Regression 2	Regression 3	Regression 4
Age	-.33**	-.31**	-.13	-.13
Income	-.20	-.20	-.21*	-.21*
Marriage	.02	.02	.02	.13
Education	-.21	-.21	-.21	-.15
Retirement	.27**	.25**	.25	.13
Hispanic Ethnicity	-.01	.01	.01	-.06
NM or NJ	-.06	-.05	-.05	-.05
Comorbidities		.06	.06	.10
Current Exercise		-.09	-.09	-.11
Current ADT		.13	.13	.02
Time Since Tx		-.04	-.04	-.05
Social Isolation			.32**	.29**
Social Support			-.11	-.13
PCa Worry			.38**	.35**
MAAS				-.11
R^2	.27	.29	.58	.59
ΔR^2		.02	.29	.01

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 9

Hierarchical Multiple Regression of Demographic, Medical, Psychosocial Variables on Physical Health Quality of Life (e.g. SF-36 PCS)

	Regression 1	Regression 2	Regression 3	Regression 4
Age	-.03	-.01	-.03	-.03
Income	.02	-.02	-.04	-.04
Marriage	-.13	-.12	-.11	-.11
Education	.28*	.22*	.24*	.24*
Retirement	-.35**	-.33**	-.34**	-.34*
Hispanic Ethnicity	-.05	-.07	-.03	-.03
NM or NJ	-.01	-.04	-.05	-.05
Comorbidities		-.15	-.15	-.15
Current Exercise		.08	.08	.08
Current ADT		-.26*	-.24*	-.23*
Time Since Tx		.03	.04	.05
Social Isolation			.06	.05
Social Support			.03	.02
PCa Worry			-.11	-.12
MAAS				-.03
R^2	.18	.26	.27	.27
ΔR^2		.08	.01	0

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 10

Hierarchical Multiple Regression of Demographic, Medical, Psychosocial Variables on Mental Health Quality of Life (e.g., SF-36 MCS)

	Regression 1	Regression 2	Regression 3	Regression 4
Age	.16	.16	.01	.01
Income	.10	.11	.08	.08
Marriage	.10	.12	-.04	-.03
Education	.11	.10	.01	.02
Retirement	-.15	-.18	-.01	-.02
Hispanic Ethnicity	-.06	-.06	-.06	-.07
NM or NJ	.11	.13	.00	-.02
Comorbidities		.09	.05	.04
Current Exercise		.02	.05	.05
Current ADT		-.06	.01	.01
Time Since Tx		-.05	-.05	-.08
Social Isolation			-.48**	-.44**
Social Support			.12	.14
PCa Worry			-.14	-.09
MAAS				.16
R^2	.15	.16	.42	.44
ΔR^2		.01	.26	.02

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 11

Correlations of Selected Predictors with the Primary Study Variables

	PCa Worry	Social Isolation
BSI-GSI	.52**	.60**
Somatization	.31**	.28**
Depression	.50**	.68**
Anxiety Subscale	.52**	.54**
PCS	-.13	-.21**
Physical Function	-.19*	-.24**
Role Function	-.22*	-.44**
Bodily Pain	-.15	-.29**
General Health	-.37**	-.35**
MCS	-.40**	-.58**
Vitality	-.26**	-.39**
Social Functioning	-.45**	-.51**
Role Emotional	-.29**	-.41**
Mental Health	-.45**	-.66**

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 12

Means Comparisons of Psychosocial and Primary Study Variables by Ethnicity

	Hispanic N= 25	Non-Hispanic N= 93	P-value
Social Isolation	47.8 ± 6.3	46.2 ± 9.3	.44
Social Support (Emotional)	50.5 ± 8.4	53.6 ± 8.6	.10
PCa Worry	2.8 ± .97	2.0 ± 1.1	.01**
Medical Mistrust[1]	2.4 ± .64	2.4 ± .53	.88
Mindfulness (MAAS)	5.0 ± .88	5.1 ± .86	.87
BSI-18 General Severity Index	54.2 ± 10.4	52.1 ± 9.5	.33
Depression Subscale	54.0 ± 10.8	52.6 ± 10.5	.54
Anxiety Subscale	50.5 ± 10.5	48.9 ± 8.7	.42
Somatization Subscale	53.5 ± 10.1	51.7 ± 8.5	.38
SF-36 QOL Physical Component Score	44.2 ± 9.9	47.8 ± 8.8	.08
Physical Functioning Subscale	45.0 ± 9.2	49.2 ± 7.6	.02*
Role-Physical Subscale	43.3 ± 9.9	46.5 ± 9.3	.14
Bodily Pain Subscale	44.6 ± 10.6	48.4 ± 9.2	.08
General Health Subscale	45.1 ± 9.0	49.3 ± 9.3	.05*
SF-36 QOL Mental Component Score	47.0 ± 9.2	50.5 ± 10.0	.12
Vitality Subscale	48.0 ± 7.3	50.3 ± 9.7	.26
Social Functioning Subscale	44.5 ± 10.1	48.6 ± 9.9	.07
Role-Emotional Subscale	43.9 ± 12.2	48.8 ± 9.1	.03*
Mental Health Subscale	48.0 ± 8.4	51.1 ± 9.5	.15

Note. ** Significant at the .01 level, * Significant at the .05 level.
[1] Only asked of those in the SIDEKICK survey (n = 84).

Table 13

Correlations of Primary Study Variables and Intervention Types

	BSI-GSI	PCS	MCS	MAAS
Likely to Participate (overall)	.18	-.01	-.07	-.17
Aerobic Exercise	.07	-.04	-.00	.09
Strength Training	.12	.07	.02	.04
Peer Support Class	.22*	-.04	-.13	-.09
MBSR	.18	-.07	-.13	-.08
Yoga	.05	-.06	-.02	-.03
Tai chi Qigong	.07	-.21	-.05	-.01

Note. * Significant at the .05 level.

Table 14

Willingness to Participate in Intervention Type by Ethnicity

	Overall Mean ± SD (n = 84)	Hispanic (n = 17)	Non-Hispanic (n = 67)	P-value
Overall Willingness	3.6 ± 1.4	4.0 ± 1.5	3.5 ± 1.5	.19
Aerobic Exercise	3.8 ± 1.7	4.1 ± 1.3	3.7 ± 1.8	.49
Strength Training	3.6 ± 1.8	3.8 ± 1.4	3.6 ± 1.8	.74
Peer Support Class	3.7 ± 1.6	4.3 ± 1.5	3.5 ± 1.7	.08
MBSR	3.6 ± 1.7	4.3 ± 1.2	3.4 ± 1.7	.05*
Yoga	3.4 ± 1.6	3.5 ± 1.5	3.4 ± 1.7	.68
Tai chi Qigong	3.4 ± 1.6	4.1 ± 1.4	3.3 ± 1.6	.07

Note. * Significant at the .05 level.

Table 15

Hierarchical Multiple Regression of the Demographic, Medical, Psychosocial and Mindfulness Variables on Willingness to Participate in Any of the Interventions

	Regression 1	Regression 2	Regression 3	Regression 4
Age	-.11	-.12	-.03	-.04
Income	.23	.19	.15	.13
Marriage	-.10	-.09	-.16	-.16
Education	-.02	.01	-.02	-.02
Retirement	-.04	-.03	-.07	-.07
Hispanic Ethnicity	.30*	.31*	.27	.28
NM or NJ	.05	-.01	.16	.15
Comorbidities		-.10	-.03	-.02
Current Exercise		-.10	-.05	-.04
Current ADT		.04	-.10	-.10
Time Since Tx		-.04	-.16	-.18
Social Isolation			-.02	-.02
Social Support			.12	.13
PCa Worry			.42**	.44**
Medical Mistrust			.07	.06
MAAS				.05
R^2	.13	.14	.26	.27
ΔR^2		.01	.13	.01

Note. ** Significant at the .01 level, * Significant at the .05 level.

Table 16

Interest in interventions by Type (Likely or Very Likely to Participate)

	Overall %	New Mexico	New Jersey
Aerobic Exercise	49.4	42.5	55.8
Strength Training	41.7	35.0	47.7
MBSR	41.7	48.8	34.9
Peer Support	38.1	48.8	27.9
Tai chi Qigong	33.3	34.1	32.6
Yoga	28.9	22.0	35.7

Table 17

Preference for Intervention Type (1st and 2nd Most Preferred)

	1st	2nd	Total (n)	%
Aerobic Exercise	23	13	36	23.5%
Strength Training	18	17	35	22.9%
Tai chi Qigong	8	17	25	16.3%
MBSR	6	15	21	13.7%
Peer Support	12	6	18	11.8%
Yoga	10	8	18	11.8%

Table 17 a

New Mexico Preference for Intervention Type (1st and 2nd Most Preferred)

	1st	2nd	Total (n)	%
Aerobic Exercise	10	5	15	20.0%
MBSR	4	11	15	20.0%
Tai chi Qigong	6	8	14	18.7%
Strength Training	5	7	12	16.0%
Peer Support	9	3	12	16.0%
Yoga	4	3	7	9.3%

Table 17 b

New Jersey Preference for Intervention Type (1st and 2nd Most Preferred)

	1st	2nd	Total (n)	%
Strength Training	13	10	23	29.5%
Aerobic Exercise	13	8	21	26.9%
Yoga	6	5	11	14.1%
Tai chi Qigong	2	9	11	14.1%
Peer Support	3	3	6	7.7%
MBSR	2	4	6	7.7%

Table 18

Interest in Remote Interventions

	Total %	New Mexico (SIDEKICK) %	New Jersey (SIDEKICK) %
Willing to Participate at Home	63	53	72
Prefer to Participate at Home	31	24	37

Note. Only SIDEKICK participants answered these questions (n = 84).

Table 19

If classes were made available at home, which of the following could you use to access class materials? (check all that apply)

	n (%)
Computer with Internet Access	61 (78.2)
Smartphone	29 (37.1)
Access to a Device to Play DVDs	26 (33.3)
Landline	10 (12.2)

Note. Only SIDEKICK participants answered these questions (n = 84).