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Utilising a Combined Exercise and Counselling Program to Examine the
Relationship Between Emotional Self-Efficacy and Physiological Improvements in
Breast Cancer Survivors

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CHAPTER ONE

Introduction

In recent years, there has been a significant increase in the number of women diagnosed with breast cancer, both in Australia and worldwide. Australia figures have risen from 11,342 cases in 2000 to 12,170 in 2005 (Australian Institute of Health and Welfare [AIHW] & National Breast Cancer Centre [NBCC], 2006), while the worldwide rate has gone from 1,050,000 cases diagnosed between 1996-2000 to 1,290,000 diagnosed in 2007 alone (American Cancer Society [ACS], 2008; Steward & Kleihues, 2003). A recent publication by the AIHW and Australasian Association of Cancer Registries (AACR) projects that Australian figures will have risen to over 14,000 new cases per year by 2010 (2008). In addition, earlier detection and improvements in treatment, especially in developed countries, have also led to an increase in the number of survivors. Though breast cancer accounted for 15.8% of all female cancer deaths in 2005, one-year survival rates for Australian women were up from 93.2% between 1982-1986 to 96.7% between 1998-2004, and five-year survival has increased from 71.8% to 87.8% (AIHW & AACR, 2008; AIHW & NBCC, 2006).

With survival, however, comes a host of debilitating psychological and physical changes that must be addressed. Upon the conclusion of initial treatments, be it surgery, chemotherapy, radiation, or a combination of the above, women need both physical and psychological strength if they are to continue winning their fight against breast cancer. Psychological strength relates to a range of areas, from emotional and relationship issues to self-image and acceptance. Developing an approach that attends to both the psychological and physiological issues becomes essential in addressing the needs of this growing group of survivors, not only to aid in the recovery process, but also to enhance overall quality of life (Battaglini, Dennehy, Groff, Kirk, & Anton, 2006; Markes, Brockow, & Resch, 2006; Pinto, Trunzo, Reiss, & Shiu, 2002) and possibly survivorship (Holmes, Chen, Feskanich, Kroenke, & Colditz, 2005; Mills, Black, Campbell, Cardwell, Galway, & Donnelly, 2009). Psychological issues remain post-treatment, such as decreased body esteem and self-efficacy (Battaglini et al., 2006; Fleming & Kleinbart, 2001; Mosher et al., 2008;

Pinto & Trunzo, 2004; Wilmoth, Coleman, Smith, & Davis, 2004), depression and anxiety (Byar, Berger, Bakken, & Cetak, 2006; Schwartz, 2004), and decreased quality of life (Byar et al., 2006; Ganz et al., 2004; McInnes & Knobf, 2001; Milne, Gordon, Guilfoyle, Wallman, & Courneya, 2007; Milne, Wallman, Gordon, & Courneya, 2008; Pinto, Trunzo, Reiss, & Shiu, 2002).

Research has suggested that psychological distress often remains beyond diagnosis and treatment (Pinto, Clark, Maruyama, & Feder, 2003). The numerous physical changes resulting from breast cancer treatment typically have a psychological impact, with one key issue being decreased emotional self-efficacy. The concept of self-efficacy is defined as “judgements of how well one can execute courses of action required to deal with perspective situations” (Bandura, 1982). A diagnosis of breast cancer emotionally impacts every woman in a unique way. Giese-Davis and colleagues have found three primary areas of concern for most women are communicating emotions in relationships, maintaining focus on the present, and confronting anxieties about death and dying (2002). A woman’s ability to cope with these issues, and healthily regulate emotions in general, refers to her emotional self-efficacy. This concept is important to explore in relation to breast cancer, not only for psychological well-being, but also for its potential link with overall survival. Suppressed, repressed, or dysregulated emotional expression has been linked to increased incidence and progression of cancer (Geise-Davis et al., 2002), as well as greater mood disturbances (Palesh et al., 2006) and decreased physical activity levels (Mosher et al., 2008; Rogers et al., 2005) and overall quality of life (Han et al., 2005). A review conducted by Falagas and colleagues examining studies looking at the link between psychosocial factors and breast cancer survival found constraint of emotions was linked to decreased survival (2007). With the multitude of findings on the physical and psychological importance of high emotional self-efficacy, it becomes necessary to ensure that a biospsychosocial approach is taken in treating breast cancer patients.

The psychosocial effects of breast cancer diagnosis and treatment have been well-documented (Falagas, Zarkadoulia, Ioannidou, Peppas, Christodoulou, & Rafailidis, 2007; Fleming & Kleinbart, 2001; Giese-Davis & Spiegel, 2001; Koopman et al.,

2002; Rendle, 1997; Schwartz, 2004), as have the psychosocial benefits of exercise in both the general and breast cancer population (Bicego, Brown, Ruddick, Storey, Wong, & Harris, 2009; Pinto et al., 2002; Pinto et al., 2003). Though studies commonly assess the psychological impact of exercise, few exercise intervention studies have included a component like counselling, focused specifically on inducing psychological benefits. Quality of life has been measured in some studies, with findings suggesting exercise positively influences quality of life, but it is usually examined to see the link with physical improvements and functioning (Bicego et al., 2009; Campbell, Mutrie, White, McGuire, & Kearney, 2005; Ohira, Schmitz, Ahmed, & Yee, 2006; Segal et al., 2001). A few interventions have also examined depression levels (Mutrie et al., 2007) and self-esteem (Campbell et al., 2005; Courneya et al., 2007b; Daley, Crank, Saxton, Mutrie, Coleman, & Roalfe, 2007; Milne et al., 2008), again finding improvement trends favouring the exercise groups.

Further research is needed to explore other psychosocial benefits of exercise though, with a key issue being emotional self-efficacy. Self-efficacy levels have been found to correlate with physical functioning and activity levels, making it imperative to examine if improvement in one area will benefit the other parameter as well (Morris & Ingham, 1988; Mosher et al., 2008; Rogers et al., 2008; Valois, Umstatted, Zullig, & Paxton, 2008). Various types of self-efficacy have been studied in relation to physical activity. A study by Rogers and colleagues found a link between greater barrier and task self-efficacy and higher self-reported physical activity levels (2005). Additionally, positive correlations have been found between improvements in exercise self-efficacy and time spent exercising (Mosher et al., 2008). However, these types of self-efficacy are more related to physical abilities and confidence. Emotional self-efficacy and its response to physical activity has been examined in adolescents (Valois et al., 2008) and found to positively correlate. Those students who exhibited low emotional self-efficacy also tended to exhibit low physical activity levels, often not meeting recommendations for moderate, vigorous, or strengthening activity. As yet, it is unknown if breast cancer survivors with low emotional self-efficacy also exhibit low physical activity levels. This potential relationship is important to identify, as decreased physical activity levels have been linked to lower survival rates (Holmes et al., 2005). As the issues and barriers faced

by the breast cancer population are very different from those of adolescents, the need remains to assess emotional self-efficacy in this group, especially as related to exercise adherence and accrued physical benefits. This study aims to address this gap in the research.

As discussed earlier, some of the key factors found to be associated with lower emotional self-efficacy are low social support, decreased participation in treatment decisions, and increased mood disturbance. With one significant area of participation being treatment selection, women who choose to enrol in complementary therapies, specifically an exercise program, may improve their physical well-being and self-efficacy through becoming more proactive. When patients took a greater participatory role in their recovery, Morris and Ingham found they seemed to adjust better to work, remain optimistic about the future, strengthen self-efficacy, and improve physical and psychological functioning (1988). Engaging in an exercise program may allow women to develop a greater social support network as they interact with others familiar with their situation. Additionally, the positive effects of exercise on mood may assist in increasing emotional self-efficacy.

Providing post-treatment breast cancer patients with counselling may also increase emotional self-efficacy. A variety of intervention styles have been utilised to examine the impact of psychology-based treatments on breast cancer patients. Studies using approaches such as biofeedback (Childre & McCraty, 2001), expressive arts (Devine & Dattilo, 2000), and various recreational activities (Carruthers & Hood, 2004; Groff & Dattilo, 2000; Groff, Battaglini, O'Keefe, Edwards, & Peppercorn, 2007) have aimed to provide women with a way of acknowledging and expressing emotions, revealing mixed results on the impact of such interventions on overall psychological well-being. Supportive-expressive group therapy studies in both metastatic and newly diagnosed breast cancer patients have demonstrated increased emotional expression without greater accompanying hostility (Giese-Davis et al., 2002), decreased traumatic stress symptoms and mood disturbances (Classen et al., 2001), and unchanged or reduced distress and improved emotional regulation (Classen et al., 2007; Spiegel et al., 2007). A peer counselling study by Giese-Davis and colleagues found that newly diagnosed women increased

their emotional well-being and cancer self-efficacy after sessions with a peer who was further post-diagnosis (2006). Although only two of these interventions directly assessed emotional self-efficacy (Giese-Davis et al., 2002; Giese-Davis et al., 2006), with mixed results, all demonstrated promising improvements in a variety of parameters thought to be associated with emotional self-efficacy. More research is needed focused directly on emotional self-efficacy, specifically utilising a one-on-one counselling approach. This type of therapy allows a more individualised treatment to aid in greater recognition of one's emotions and self-understanding, potentially translating into greater self-confidence and assertion (Greenberg & Foerster, 1996) and improved emotional expression (Giese-Davis et al., 2002).

During and following breast cancer treatment, women find themselves facing a multitude of physiological changes as well. Common issues arising are weight gain and altered body composition (Cheney, Mahloch, & Freeny, 1997; Costa, Varella, & Giglio, 2002; Demark-Wahnefried, Kenyon, Eberle, Skye, & Kraus, 2002; Demark-Wahnefried et al., 2001; Freedman et al., 2004; Garreau, DeLaMelena, Walts, Karamlou, & Johnson, 2006; Kroenke, Chen, Rosner, & Holmes, 2005; McInnes & Knobf, 2001; Nguyen, Stewart, Banerji, Gordon, & Kral, 2001; Partridge, Burnstein, & Winer, 2001; Rock et al., 1999; Schwartz, 2000; Wilmoth, Coleman, Smith, & Davis, 2004), decreased strength and functional capacity (Campbell, Mutrie, White, McGuire, & Kearney, 2005; Courneya, Segal, Mackey et al., 2007; MacVicar, Winningham, & Nickel, 1989; Partridge, Burnstein, & Winer, 2001; Segal et al., 2001), and fatigue (Battaglini, Dennehy, Groff, Kirk, & Anton, 2006; Byar, Berger, Bakken, & Cetak, 2006; Partridge, Burnstein, & Winer, 2001; Wilmoth et al., 2004). The number and intensity of side effects will vary for each woman based on factors like her prior health status, cancer staging, and, especially, treatment specifics. Different combinations of surgery, chemotherapy, radiotherapy, and hormone therapy, the primary treatment options, are used in each case of cancer, and all have been associated with their own host of common side effects (Battaglini et al., 2007; Brockstein, Smiley, Al-Sadir, & Williams, 2000; Cimprich, 1993; Helms, O'Hea, & Corso, 2008; Schneider, Dennehy, & Carter, 2003; Truong, Olivotto, Whelan, & Levine, 2004; Winningham et al., 1994

Within the last few years, numerous studies have examined the impact of exercise interventions on various physical parameters related to women with breast cancer, utilising aerobic-based programs (Daley et al., 2007; Irwin et al., 2008), resistance-training programs (Ohira et al., 2006; Schmitz, Ahmed, Hannan, & Yee, 2005), and approaches incorporating both aerobic and resistance training (Battaglini et al., 2007; Campbell et al., 2005; Courneya et al., 2007; Hsieh et al., 2008; Milne et al., 2008; Mutrie et al., 2007; Schneider, Hseh, Sprod, Carter, & Hayward, 2007; Turner, Hayes, & Reul-Hirche, 2004). Meta-analyses have also been conducted in an attempt to summarise the multitude of existing research and make recommendations on effective interventions and future study directions (Courneya, 2003; Kim, Kang, & Park, 2009; Kirshbaum, 2006; Markes, Brockow, & Resch, 2006; McKneely, Campbell, Rowe, Klassen, Mackey, & Courneya, 2006; Visovsky, 2006). Based on findings from the individual studies and general conclusions from the meta-analyses, exercise benefits appear to outweigh the risks in the breast cancer population, regardless of treatment type or completion status, with aerobic and resistance training combination programs providing the widest range of benefits (Battaglini et al., 2007; Campbell et al., 2005; Courneya, 2003; Kim et al., 2009; Kirshbaum, 2006; Markes et al., 2006; McKneely et al., 2006; Mutrie et al., 2007; Visovsky, 2006). Most of the reviews stress the need for larger studies with longer intervention programs (average study length was around 3 months), more long-term follow-up on benefits, and increased discussion on adherence. The few studies that examined the correlation between exercise adherence and study endpoints found greater adherence was positively associated with greater physical improvements (Courneya et al., 2007; Milne et al., 2008). More research is needed in this area, as adherence seems to be important to accrue benefits. When participants are able to see positive changes, they may be more motivated to regularly participate in physical activity and reap the numerous health benefits seen in the research. Additionally, it is imperative to examine the influence of psychosocial parameters like emotional self-efficacy on adherence rates and to see if there exists a link between self-efficacy and accrued physiological improvements.

The combination of exercise and counselling may not only result in physical benefits, but also further improve emotional self-efficacy by helping the participant

learn healthy ways of expressing emotions and coping. It also provides another form of social support commonly seen to be lacking in those women with low emotional self-efficacy (Han et al., 2005). However, no studies have been conducted utilising both a psychological and physical type of treatment, making this study essential to determine the benefits of this kind of treatment approach.

Purpose of Research

The overall aim of this study is to investigate the impact of a combined exercise and counselling program on post-treated breast cancer patients' overall physical and psychological well-being. Specifically, it seeks to explore if participation in a combined program will improve emotional self-efficacy more than partaking in either exercise or counselling alone. It also seeks to explore if a link exists between baseline self-efficacy levels and resulting physiological and psychological changes.

Significance of Research

The immediate and lasting symptoms observed in women post-breast cancer diagnosis have gained attention in the oncology arena, especially as survival rates have improved. Conventional exercise has been shown to assist in ameliorating both physical and psychological side effects developed following diagnosis and treatment. Additionally, psychosocial interventions such as counselling and group therapy have been demonstrated to assist in improving the psychological health of women with breast cancer. However, there is limited research taking a biopsychosocial approach and combining exercise with counselling. As psychosocial issues like low self-efficacy appear to have a link with physical health, it is imperative to develop a program that examines that link between mind and body. Findings from this study increased knowledge on the efficiency of a combined exercise and counselling program on addressing both physical and psychological side-effects of breast cancer. These findings can provide guidance for the implementation of such programs in the healthcare setting. Assisting post-treatment breast cancer patients to strengthen both their minds and bodies may help improve their overall quality of life and, ultimately, survivorship.

Research Questions

- Would combining exercise and counselling yield greater improvements in emotional self efficacy compared to the exercise-only protocol?
- Would combining exercise and counselling yield greater improvements in emotional self efficacy compared to the counselling-only protocol?
- Would the four treatment groups exhibit catch-up results in emotional self-efficacy scores after all are enrolled in exercise and counselling after the first eight weeks?
- Was there a correlation between physical and psychological improvements and baseline emotional self-efficacy levels?
- Was there a correlation between exercise adherence and emotional self-efficacy?

Hypothesis

As little research exists on the effect of either exercise or one-on-one counselling on emotional self-efficacy in breast cancer patients, it was difficult to make an evidence-based hypothesis. However, based on the factors that seem to constitute and influence emotional self-efficacy, it was hypothesised that the exercise and counselling combination groups would exhibit greater improvements over the first eight weeks than the exercise only, counselling only, or usual care control group. This hypothesis was based on the expectation that counselling would help ease distress by allowing for healthy expression of emotion and providing a form of social support, while exercise would further benefit emotional self-efficacy due to the positive effects of physical activity on mood. Additionally, the exercise only and counselling only groups would improve more than the usual care control group, but not significantly differ from one another. By the conclusion of the 20-week program, after all individuals had been enrolled in both exercise and counselling for at least 12 weeks, it was expected that all groups would have significantly improved emotional self-efficacy, with no significant differences between any of the groups

Based on recent research, it was hypothesised that, during the first eight weeks, the exercise-only and combination exercise and counselling group would significantly improve physical fitness compared to the counselling-only and usual care groups. At

the conclusion of the five-month intervention, all four groups would significantly improve physical fitness. However, the exercise-only group and combination group would still have improved significantly more than the counselling-only and usual care groups due to 20 weeks of exercise compared to just 12 weeks.

Finally, it was hypothesised that higher self-efficacy levels would correlate with both greater exercise adherence and larger overall improvements, based on the existing research on self-efficacy and physical activity.