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Betty J. Fisher
Western Michigan University

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THE EFFECTS OF AN INFORMATION/COUNSELING SESSION
AND PARTNER PARTICIPATION IN TREADMILL TESTING
ON SEXUAL FUNCTIONING FOLLOWING
MYOCARDIAL INFARCTION

by

Betty J. Fisher

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THE EFFECTS OF AN INFORMATION/COUNSELING SESSION AND PARTNER PARTICIPATION IN TREADMILL TESTING ON SEXUAL FUNCTIONING FOLLOWING MYOCARDIAL INFARCTION

Betty J. Fisher, Ph.D.
Western Michigan University, 1996

The purpose of this research was to assess the effects of an intervention designed to reduce patient and partner anxiety regarding the resumption of sexual activities following myocardial infarction (MI). A multiple baseline across subjects design was employed.

Participants completed self-report measures of sexual functioning, knowledge of psychological and physical sequelae to MI, depression and anxiety on a weekly basis for at least 3 weeks (to a maximum of 12 weeks) prior to participating in treadmill testing, and attending the information/counseling session. Couples also completed these assessments for a 4-week period following the intervention.

Six heterosexual couples in which one partner had suffered an acute MI between 1 and 10 months prior to this study participated. These couples had been married an average of 27.86 years. Participants ranged in age from 52 to 71 years.

A repeated measures analysis of variance (ANOVA) was conducted on each couple's Sexual Interaction Inventory (SII; LoPiccolo & Steger, 1974) Total Disagreement scores, and on each participant's SII Pleasure Mean scores. The effects for time were not significant. Thus, the hypothesis that sexual functioning would improve following this intervention was not supported.

In general, the prediction that participants would report increased comfort with
sexual activity and that accuracy of responding to questions regarding sequelae to MI would improve following the intervention also were not supported. The data suggest that frequency of sexual activity for the sample as a whole did increase in the post-treatment phase.

The results are discussed in terms of the relatively good levels of sexual and emotional functioning at the outset of the study, and the possibility that the sexual difficulties which were present were not MI-related. Concerns regarding measurement of anxiety specific to sexual activities and measurement of sexual activities in older couples are also presented.
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Betty J. Fisher
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CHAPTER I

INTRODUCTION

Each year approximately 1,500,000 North Americans suffer myocardial infarctions (MI). Two thirds of these individuals will survive (American Heart Association, 1991). An estimated 45% of MI survivors are under the age of 65, and 5% are less than 40 years old (American Heart Association, 1991). The cost associated with coronary heart disease (CHD) in 1991 was estimated at $44.5 billion and included $7.1 billion in lost productivity (American Heart Association, 1991). Attempts to minimize costs have resulted in a reduction in the average length of hospitalization and increased utilization of outpatient cardiac rehabilitation programs (Amiro, O'Neil, Barrows, Antonetti, & Jaiswal, 1996; and Gordon & Gibbons, 1990).

Early cardiac rehabilitation programs focused almost exclusively on physical reconditioning; however, increased knowledge of the role of psychological factors in the development of CHD and their effect on recovery from MI, suggested physical reconditioning was not sufficient (Havick & Maeland, 1990; Sykes, Evans, McBoyle McIlmoyle, & Salhathia, 1989; Thompson & Meddis, 1990b; Van Dixhoorn, Duivenvoorden, Pool, & Verhage, 1990; Venema-Van Uden, Zoeteweij, Erdman, Vandenbergh, Smeets, Weeda, Ver Meulen, Van Meurs-Van Woezik, & Ebink, 1989). Thus, the trend in cardiac rehabilitation programs over the past 20 years has been to include interventions which address the psychological sequelae to MI which interfere with recovery and rehabilitation (Amiro, O'Neil, Barrows, Antonetti, & Jaiswal, 1996).

The two most commonly observed psychological or emotional sequelae to MI
are anxiety and depression (McLane, Krop & Mehta, 1980; Thompson, 1989; Thompson, Cordle, & Sutton, 1982; Thompson & Meddis, 1990). High levels of either anxiety or depression have been linked to greater morbidity and mortality of CHD patients (Ben-Sira & Eliezer, 1990; Carney, Freedland, Rich, & Jaffe, 1995; Frasure-Smith, Lesperance, & Talajic, 1995; Havik & Maeland, 1990; and Stern, Gorman & Kaslow, 1983).

The emotional functioning of the spouse is another factor affecting rate and degree of recovery from MI. Patients' perception of spousal support has been associated with better recovery from MI (Ben-Sira & Eliezer, 1990). However, emotional support from the spouse is often lacking because of the spouse's own fear and emotional upset (Levin, 1987). Thompson and Meddis (1990a) reported that anxiety in cardiac patients' wives was higher than that of the patients both before and after supportive-educational counseling sessions. More importantly, this anxiety may be transferred to the patient (Thompson & Meddis, 1990a). Others also have documented the detrimental impact of spousal anxiety and depression on recovery from MI (Cay, 1982a; Mayou, Foster & Williamson, 1978; Mayou, Williamson and Foster, 1978).

Emotional distress in either partner can affect the quality of the marital relationship, another factor which has been associated with rate and degree of recovery. Waltz, Badura, Pfaff and Schott (1988) reported marital conflict was significantly and positively correlated with anxiety at 5-year follow-up and that increased levels of intimacy were correlated with lower levels of depression. Miller and Wikoff (1989) also observed that better marital functioning was associated with lower levels of anxiety.

The detrimental impact of elevated levels of spousal fear and anxiety on
recovery from MI is particularly clear in the literature examining sexual functioning. Patients frequently attributed decreased frequency of sexual activity following MI to spousal fear that sexual activity would precipitate another MI or lead to death (Hellerstein & Friedman, 1970; Johnston, Cantwell, Watt, & Fletcher, 1978; Kavanagh & Shepard, 1977; Mann, Yates, & Raftery, 1981; Papadopoulos, Larrimore, Cardin, & Shelley, 1980; Stern, Pascale, & McLoone, 1976). Some might question the importance of resumption of sexual activity in post-MI patients. However, research assessing the relation of various aspects of the marital relationship to recovery from MI found spousal comfort with sexual activity to be an important factor. Spousal comfort with various sexual activities was positively correlated with better patient recovery (e.g., earlier return to work, absence of emergency room visits for cardiac symptoms, no rehospitalization, and absence of angina) at both 3 and 6 months post-MI (Beach, Maloney, Plocica, Sherry, Weaver, Luthringer, and Utz; 1992). Additional evidence of this association with other samples is clearly necessary, but this work does suggest the importance of addressing the fears and sexual concerns of the spouse/partner.

Spouses and partners are not alone in expressing fears regarding sexual activity. Patients also report considerable anxiety regarding the resumption of sexual activity following MI, and the avoidance or reduced frequency of sexual activity is well documented (Bloch, Maeder, & Haissly, 1975; Hellerstein & Friedman, 1970; Klein, Dean, Willson, & Bogdonoff, 1965; Papadopoulos, 1978; Sjogren & Fugl-Meyer, 1983; Tuttle, Cook, & Fitch, 1964).

Both patient and partner anxieties regarding resumption of sexual activity appear to arise from the belief that coital activities are strenuous and likely to trigger another MI. However, there is research documenting that the energy requirements
of sexual activity are within the mild to moderate range (Hellerstein & Friedman, 1970; Johnston & Fletcher, 1979; and Stein, 1977). Furthermore, research assessing the risks of infarct associated with coital activity suggests the risks are quite low (Muller, Maclure, Mittleman, Sherwood, & Tofler, 1996; and Ueno, 1963).

Subsequent to the work by Ueno (1963) and Hellerstein and Friedman (1970), many authors outlined recommendations for sexual counseling of post-MI patients. Sexual counseling was reportedly seen as an important component of cardiac rehabilitation (Cole, 1979; Cooper, 1988; Douglas & Wilkes, 1975; Green, 1975; Griffith, 1973; Gupta & Singh, 1982; Koller, Kennedy, Butler, & Wagner, 1972; Kolman, 1984; McCann, 1989; McLane, Krop, & Mehta, 1980; Puksta, 1977; Scalzi, 1982; Seidl, Bullough, Haughey, Scherer, Rhodes, & Brown, 1991; Skinner, 1986). Despite the numerous papers suggesting the importance of providing sexual counseling in cardiac rehabilitation, Schover and Jensen (1988) wrote, "Although the consensus is growing that cardiac patients need sexual counseling, our actual state of knowledge about effective assessment and treatment remain rather primitive" (p. 203).

Increasing the knowledge of the effects of providing sexual counseling to post-MI patients is the primary goal of this project. The purpose and rationale of the present research will, however, be more fully appreciated after a more thorough examination of the relevant literature. The areas covered in this review are as follows: (a) prevalence of sexual concerns in post-MI patients, (b) physical requirements of coitus and associated risks of MI, (c) effects of cardiac rehabilitation on sexual activity, (d) general guidelines and information for sexual counseling of post-MI patients, and finally, (e) the efficacy of sexual counseling.
Review of the Literature

Prevalence of Sexual Concerns Post-MI

Studies which have assessed the prevalence of sexual activity disturbances in individuals (primarily men) following myocardial infarction (MI) date to the mid-1960's. Tuttle, Cook and Fitch (1964) reported that one third of their patient sample had returned to pre-MI levels of sexual activity, one third reported a 50% reduction in frequency, and one third reported a 75% reduction in frequency. Ten percent of their patients reported erectile failure. For this sample, the time elapsed since MI ranged from 12-108 months.

A group of 20 men who were 30-60 months post-MI were followed by Klein, Dean, Wilson, and Bogdonoff (1965). Only 25% of this sample reported resumption of pre-MI levels of sexual activity. Thirty-five percent stated they were totally abstinent since their MI, and 40% reported a decrease, although no specific information is available on the degree of reduction. Fear of sudden death, fear of activity, interpreting pain/discomfort as signaling another heart attack, shifts in spousal roles, and vague instructions from physicians were reasons given for decreased activity.

Hellerstein and Friedman (1970) reported on the sexual activity of 48 patients who were at least 3 months post-MI. From this group of patients, 58% reported a decrease in sexual activity with a 24% reduction in average number of weekly orgasms from an estimate of frequency one year prior to their cardiac event. Reasons given to account for decreased sexual activity included: change in desire (23% - of the total sample), wife's decision (15%), feelings of depression (13%), cardiac symptoms (13%) and fears (10%). Erectile failure was not identified as a contributor as was identified in other samples.
Singh, Singh, Singh, Singh, and Malhotra (1970) compared 50 patients (45 male and 5 female) who were 6-24 months post-MI (group A) to 50 patients (47 male and 3 female) who were more than 24 months post-MI (group B). Twenty-four percent of group A had resumed pre-MI levels of sexual activity as compared to 57.7% of group B. While the percentage reporting "considerable decrease" in sexual activity was similar for both groups (32.7% vs. 37.8%, respectively), 43% of group A had abstained from sexual activity while only 4.5% of group B were abstinent. In addition to the fact that these patients' physicians had instructed them to avoid sexual activity for 3-6 months post-MI, many patients stated that decreased desire, fatigue, and cardiac symptoms during sex were the primary reasons for their reduced sexual activity.

Another sample of 100 post-MI patients (which included 12 women) was evaluated by Bloch, Maeder, and Haissly (1975). Information from this sample was gathered, on average, 11 months post-MI. Of this sample, 36% reported no change in frequency of sexual activity; however, 15% of the total sample were not sexually active pre- or post-MI. Of the total sample, 33% reported a slight decrease and 29% reported a dramatic decrease in sexual activity post-MI. Nineteen percent of the total sample indicated total abstinence post-MI and 10% reported only "some" sexual activity. The reasons given for the decline in sexual activities are similar to those reported in other studies, i.e., loss of desire, depression, anxiety, spouse refusal, fear of reinfarct or sudden death, fatigue, angina and erectile failure. Interestingly, 2% reported a slight increase in frequency of sexual activity following their MI.

A sample of 50 male and 13 female MI patients were followed for one year by Stern, Pascale, and McLoone (1976). Twenty-five percent of that sample
reported decreased sexual functioning. The majority (82.2%) of those sexually active prior to MI had returned to previous levels of activity between 6 and 12 weeks post-MI. Three of the subjects who had returned to pre-MI levels of sexual activity later reported a decline in quantity and quality of sexual functioning, but no explanation for this change was offered. Eleven (17%) reported complete abstinence in the 12 months post-MI. There was no indication of how many subjects were not sexually active prior to MI. Decreased sexual activity was associated with greater emotional distress, but specific reasons for the decrease were not cited.

A follow-up study conducted by Stern, Pascale, and Ackerman (1977) compared poor responders (those who were depressed and anxious) and good responders (those who denied experiencing any anxiety about their MI's) on several factors including resumption of sexual activity. Sixty-two percent of those sexually active pre-MI had resumed some activity by the 6-week follow-up in this sample of 55 men and 13 women. While 91% of the entire sample had resumed some sexual activity at the one year follow-up, only 50% of the poor responders had done so. Twenty percent of the entire sample reported a decrease in sexual activity and the majority of those were rated as either anxious or depressed. A majority of the women who were sexually active pre-MI reported spouse refusal due to fear of reinfarct as a major reason for decreased sexual activity. This was not the case for the male patients. A small number (10%) reported an increase in quantity and quality of their sexual activity post-MI and attributed this change to mutual increase in spousal caring and an improvement in communication.

Amsterdam, Amsterdam, Lee, Riggs, DeMaria and Mason (1977) found 43% of their 107 patients had less or no sexual activity since their MI's. Fifty-two (49%) reported erectile failure. The incidence of erectile failure reported by other authors
was generally in the range of 10-15% (Horgan & Craig, 1978; Papadopoulos, Larrimore, Cardin, & Shelley, 1980; Tuttle, Cook, & Fitch, 1964) with the exception of Wabrek and Burchell (1980) who reported 44% of their subjects experienced erectile failure. It is not clear if this difference is due to inclusion of all subjects who experienced even one incident of erectile failure, if those sampled by Amsterdam et al. (1977) and Wabrek and Burchell (1980) actually had higher rates of erectile failure, or if those sampled were more willing to admit to this very sensitive problem.

Kavanagh and Shepard (1977) gathered data from 161 male patients involved in an exercise-based rehabilitation program. Three years was the average time elapsed since these subjects' MI's. Forty-nine percent of these men reported no change or a slight increase in the frequency of sexual activity following MI. Of the eighty-one subjects reporting a reduction in sexual activity, 35% reported taking a more passive role in sexual activity. Twenty-six subjects (32%) of that group also reported intercourse was less pleasurable than prior to their MI's. Reasons for the decreased pleasure included fear of re-infarct, wife's fear of re-infarct, angina, loss of desire, or some combination of these factors. The men who reported a decrease in sexual activity were compared to those who had resumed pre-MI levels of sexual activity. The major difference between these two groups was that those who reported a decrease in sexual activity also were less compliant with the exercise program.

Horgan and Craig (1978) assessed a sample of 86 men and 14 women. Fifty-seven percent reported a decrease in sexual activity post-MI. Forty-nine percent had resumed pre-MI levels of sexual activity by the 3-month follow-up. After one-year, 25% had not resumed sexual activity (9 more who were sexually inactive prior to their MI's also did not resume any sexual activity). Erectile failure was reported by
15% of this sample. As with most studies, the potentially important issue of etiology (physiological versus psychogenic or some combination of factors) of erectile failure was not addressed. Forty-six subjects admitted that the resumption of sexual activity caused anxiety and 65% responded "yes" to the question "Does sexual activity after infarction cause a recurrence?" (p. 541).

A study of 68 patients who were, on average, 47 months post-MI and involved in an out-patient exercise program, revealed a decrease in sexual frequency from 6.4 times per month prior to the MI to 4.6 times per month post-MI (Johnston, Cantwell, Watt & Fletcher, 1978). They also reported waiting an average of 9.4 weeks post-MI to resume intercourse. The most common reason given for reduced sexual activity for the MI patients was spousal restraint. Other reasons given included decreased pleasure and cardiac symptoms.

A significant decline in sexual activity following MI was also reported by Papadopoulous (1978). Participants were one-hundred-thirty-five MI patients (118 men and 17 women) who were at least 6 months post-MI. Twenty-five percent of the subjects who were sexually active pre-MI maintained their previous level of sexual activity. Twenty-one percent of the subjects reported abstinence post-MI. The amount of time elapsed between MI and resumption of sexual activities ranged from 2 weeks to 12 months with an average of 10.7 weeks. Fear of resuming sexual activity was expressed by 31% of the patients and 47% of the partners. Ten percent of the males developed erectile failure post-MI. As in other studies, the issues of medications as contributors to sexual dysfunction were not addressed; however, the authors' focus was on describing sexual activity in post-MI patients subsequent to a change in the medical community's approach to rehabilitation of this population, i.e., earlier physical reconditioning and counseling about safety of sexual activity.
One-hundred males who were at least 6 months post-MI were evaluated by Mehta and Krop (1979). Seventy percent had resumed some sexual activity by 9 weeks post-MI. Fifty-nine percent reported a decrease in sexual activity, 30% had not had intercourse post-MI, 24% had not engaged in any sexual activity since their MIs, and 60% reported experiencing erectile problems more than 50% of the time post-MI. Erectile problems were the primary reason for decreased post-MI sexual activity, followed by chest pain, lack of fitness, lack of desire, and fear of reinfarct. There was no discussion of the number of men who were treated with medications highly associated with erectile failure. On a list of "sexually related problems" lack of sexual desire and anxiety about reinfarct were the primary concerns for 44% and 29% of this sample, respectively. The third concern on the list (expressed by 26%) was desiring more sex than the partner.

Papadopoulos, Larrimore, Cardin, and Shelley (1980) explored the sexual concerns of MI patients' wives. They interviewed the wives of 100 MI patients who were 6-36 months post-MI. Twenty-four percent had not resumed sexual intercourse and 14% reported they had tried but failed, and 10% had not tried. Forty-nine percent reported a decline in frequency of sexual activity from pre-MI levels. Thirty-eight percent attributed the decrease in sexual activity to either their own or their husband's fear of reinfarct. Six percent of the wives feared coital death and 38% reported a decrease in desire in one or both partners.

Mann, Yates, and Raftery (1981) reported on 88 patients who were at least 12 months post-MI. After discharge from the hospital they had been advised to resume sexual activities at 4-6 weeks post-MI. However, of the 68 patients who were sexually active pre-MI, 19% had not engaged in sex in the year since their MI. Fifty-nine percent of the sexually active patients reported a decrease in frequency of
sexual intercourse of at least 25% from pre-MI levels. Seventeen percent of the male participants reported a decrease or loss of libido. Fourteen percent reported that spousal factors (fear, illness, death, and poor marital relations) were the primary reason for decreased sexual activity. Eight patients (9%) attributed decreased sexual activity to fears of reinfarct. Erectile failure on at least one occasion was reported by 6% of the men. The authors presented information regarding the impact of beta-blocking agents and diuretics (two most commonly prescribed types of medications for cardiac conditions) on sexual activity for this sample. The number of patients treated with a combination of these medications who reported a decrease in sexual activity was higher than predicted. However, the number of patients reporting sexual difficulties associated with either beta blocking agents or diuretics was lower than predicted. In discussing this issue, the authors note that it is difficult to determine which effects result from the condition and which from the treatment.

In a sample of 49 married men who had been sexually active up to their MI's, 63% reported decreased functioning with 45% reporting decreased satisfaction (Sjorgren & Fugl-Meyer, 1983). Fatigue, fear, and erectile incompetence were reported as the reasons for decreased sexual pleasure by 45%, 39%, and 22%, respectively. Forty-nine percent of the subjects reported "spectatoring," which the authors defined as "...the subject watches his sexual performance anxiously thus, [sic] not fully being absorbed by the feelings of the moment" (p. 198). Unlike many other studies, this research included an assessment of penile and thumb blood pressure and blood flow acceleration which allowed for an examination of the effects of antihypertensive medications on erectile functioning. Contrary to the findings of Mann, Yates and Raftery (1981), erectile failure was found to be significantly related to treatment with beta blockers. Seventy-one percent of those receiving a beta
blocking agent experienced erectile dysfunction, 38% of those treated with other antihypertensives experienced such difficulties, and only 32% of those not treated for hypertension developed such difficulties.

Papadopoulos, Beaumont, Shelley, and Larrimore (1983) examined sexual activity of post-MI female patients. One-hundred-thirty women who ranged from 4 to 51 months post-MI and were between 38 and 65 years of age were included in this study. Forty-six (35%) reported being sexually inactive prior to their MI. Sixty-four percent of the sample was sexually active prior to their MI and 72% of that subgroup resumed sexual activity an average of 10.8 weeks post-MI. Forty-four percent of the pre-MI sexually active group reported a decrease in frequency of sexual activity. Twenty-three women reported not resuming sexual activity for the following reasons: loss of desire, patient's fear of symptoms of or recurrence of myocardial infarction, partner's fears, sex prior to MI not pleasurable, partner's health, and partner's erectile failure.

Dhabuwala, Kumar, and Pierce (1986) compared the incidence of sexual dysfunction in post-MI males to that in patients referred to a urology clinic for problems unrelated to sexual functioning. The two groups were comprised of subjects who were similar in age and contained a similar number of smokers, diabetics, and hypertensives. One potentially important difference, however, is that the MI men were between 6 and 24 months post-MI (past the acute phase of illness), while the subjects in the control group were undergoing treatment at the time of the interview. Seventy-six percent of the MI group and 68% of the control group reported sexual dysfunction; a difference that was not statistically significant. Due to the differences in stage of disease and treatment between these two groups and the
cross-sectional nature of this study, it is difficult to determine if these similarities would endure over time.

A comparison of pre-MI sexual functioning in 100 women MI patients and 100 women admitted to the hospital during the same time period but with an absence of CHD was conducted by Abramov (1976). Sixty-five percent of the MI patients reported sexual dissatisfaction pre-dating their MI while only 24% of the non-CHD group reported sexual dissatisfaction. The authors discuss this discrepancy in terms of the hypothesized relation among emotional distress, sexual dissatisfaction, and CHD - specifically the development of MI.

An assessment of pre-MI levels of sexual dysfunction in men was conducted by Wabreck and Burchell (1980). Sixty-seven percent of their sample of 131 hospitalized post-MI males reported having significant sexual problems prior to MI. They argued that a sexual problem exists if a person and his or her partner says there is a problem. Because the majority of patients reported sexual problems pre-MI the authors suggested that the goal of returning patients to pre-MI levels of sexual functioning is insufficient. Sexual dysfunction, they argued, may be an additional stressor which interferes with rehabilitation. While the estimate of sexual problems pre-MI was based on post-MI interviews and subject to the difficulties of retrospective self-report data collection, the relation among emotional distress, sexual functioning, the development of MI, and recovery is an important issue for consideration.

In summary, the research examining sexual activity subsequent to myocardial infarction suggests that a decline in the frequency of sexual activity is quite prevalent. Reports of decreased sexual activity range from 20% (Stern, Pascale, & Ackerman, 1977) to 66% (Tuttle, Cook, and Fitch, 1964). It is important to note
that what was assessed (e.g., returned to pre-MI levels, resumed some sexual activity, experienced sexual dysfunction) varied among these studies and may account for the wide variation in prevalence reported. A more precise or refined definition and utilization of a standardized assessment tool may have provided more consistent results. Despite the discrepancies, the majority of these works suggest that more than 50% of post-MI patients who were sexually active pre-MI experience a decrease in sexual activity following MI. Patient and spouse anxiety/fear that the physical demands of sexual activity could trigger another MI were among the most frequently cited reasons for decreased sexual activities.

Physical Requirements of Coitus and Associated Risks of MI

Despite the commonly reported fear that coital activity is strenuous and likely to trigger a MI, there is some evidence that sexual activities require only mild to moderate levels of energy (Hellerstein & Friedman, 1970). Changes in respiration and heart rate in healthy subjects engaged in sexual activity in a laboratory setting were assessed by Masters and Johnson (1966) and suggest that the energy requirements are not very great; however, this information was not believed to be applicable to post-MI patients. Hellerstein and Friedman (1970) collected information regarding cardiovascular changes during sexual activity for 14 post-MI males. Patients wore Holter monitors (portable electrocardiogram [ECG] recorders which record cardiac activity continuously for a 24-hour period) thus allowing measures to be taken with each of the patients performing in a familiar setting and with a familiar partner. Patients were instructed to maintain their daily routine and to keep a detailed record of daily activities during the 24-48 hours of Holter monitoring. No instructions regarding sexual activity were given. The patients who
reported engaging in intercourse were married approximately 20 years. An analysis of the rhythm, displacement of S-T segment, and changes in rhythm and heart rate revealed that the average maximum heart rate during sexual intercourse was 117 beats per minute (bpm) compared to an average maximum of 120 bpm for occupational work. Three of the fourteen subjects developed ectopic beats or cardiac arrhythmias during sexual activity. These abnormalities were, however, reportedly similar to abnormalities observed during other activities. Based on the high positive correlation between heart rate and myocardial oxygen uptake, the authors concluded that the "...energy levels and demands placed on the heart are equal to walking briskly on the street or climbing one or two flights of stairs" (p.998). Expressed in quantitative terms, the energy requirement of a resting state is 1 MET or the consumption of 3.5 ml of oxygen per kg of body weight per minute (Douglas and Wilkes, 1975). It has been estimated that foreplay requires approximately 3.5 METs and orgasm 4.7-5.5 METs.

Additional evidence of the energy demands of sexual activity has been provided by subsequent research. A project examining the effects of exercise training on energy requirements during sexual activity was conducted by Stein (1977). Peak coital heart rate was assessed before and after a 16-week aerobic bicycle training program in 22 men who were 12-15 weeks post-MI. All patients had uncomplicated MIs, had been sexually active with the same partner for at least 7 years, and had resumed sexual activity between 6 and 10 weeks prior to the study. Each patient involved in this study was instructed to wear the Holter monitor during sexual activity (after a baseline period to adapt to the device). A significant decrease in peak coital heart rate following training was observed in all subjects with a decrease in average peak heart rate from 127 bpm to 120 bpm. The improvement in
cardiovascular efficiency led the author to conclude that exercise training may result in fewer cardiac symptoms during coitus.

A study involving 9 post-MI men found the average peak coital heart rate was 107.8 bpm (Johnston & Fletcher, 1979). Three of these patients developed rhythmic abnormalities. Two of them experienced these abnormalities more frequently during sexual activity than during other activities. This finding differs from the Hellerstein and Friedman (1970) study but is attributed to the fact that these patients were, on average, 30 days post-MI while Hellerstein and Friedman's (1970) patients were at least 6 months post-MI and had engaged in an exercise program.

Previous epidemiological research conducted in Japan (Ueno, 1963) reported that 0.6% of deaths associated with coitus could be directly attributed to heart disease. More importantly, other conditions which increase demands on the cardiovascular system, for example, being in an unfamiliar setting, with a partner who is not the spouse, and having consumed moderate amounts of alcohol, were simultaneously present in a majority of those cases.

While the previously reviewed research reflects the relative safety of sexual activity following MI, recent research (Muller, Mittleman, Maclure, Sherwood & Tofler, 1996 and Tofler, Mittleman & Muller, 1996) suggests that sexual intercourse is associated with a slight risk for MI. Among 761 sexually active patients, 22 (3%) reportedly engaged in sexual activity within the 2 hours prior to the onset of MI. This was significantly greater than the 10.5 cases predicted. The authors emphasized that while there appears to be a risk of infarct associated with sexual activity, the relative risk remains quite low, i.e., 1/1,000,000 per hour and 2/1,000,000 in the two hours after sexual activity, if other risk factors are absent. Engaging in activities
requiring heavy physical exertion, being angry, and awakening in the morning carry greater risks of triggering a MI than sexual activity (Muller et al., 1996).

Furthermore, those who engaged in regular physical activities were at less risk than sedentary individuals.

There are some discrepancies between Ueno's (1963) work and that of Muller et al. (1996). However, Ueno's (1963) work examined those who had fatal MIs, while the Muller et al. (1996) work focused on MI survivors. Other factors, e.g., culture, time period (30 years separate these studies), and source of information (MI survivor vs. sexual partner), may also account for the discrepancies between these two studies. Despite the differences reported, Muller et al. (1996) concur with previous research which suggested that only moderate levels of energy are required for coital activity and the relative risk of suffering a MI during or after engaging in sexual intercourse is quite low. This work (Muller et al., 1996) also suggests that increased physical conditioning is associated with lower risks.

Effects of Cardiac Rehabilitation on Sexual Activity

Assessment of improvements in physical conditioning and other measures of recovery have been part of the research designed to assess the effects of cardiac rehabilitation programs. Several of these projects have included cursory information regarding sexual activity. Some have also examined the relation between increased work capacity and sexual functioning.

Despite numerous anecdotal reports of a positive correlation between fitness level and sexual functioning, there is little empirical support for this popular belief. Within the cardiac rehabilitation literature, much of the empirical evidence contradicts this popular assumption. Bloch, Maeder, and Haissly (1975), for
example, reported a lack of correlation between physical fitness or work capacity and frequency of sexual intercourse. In their sample of 100 patients, those performing at the lowest and highest work loads reported similar levels of sexual activity (1.9 and 1.7 times per month, respectively). There was considerable variability for individuals performing at various mid-range work capacities so a simple curvilinear relation was not established.

Johnston, Cantwell, Watt, and Fletcher (1978) also noted a lack of correlation between physical capacity and sexual activity. There was, however, a strong association between pre-MI frequency of sexual activity and the frequency of sexual activity post-MI. While more frequent sexual activity was reported in patients involved in exercise rehabilitation, this was attributed to possible psychological benefits rather than increased work capacity because patients with uncomplicated MIs can perform at work loads greater than those required for coitus within two weeks following a MI.

An examination of the effects of a low-level exercise program on several factors was conducted by Stern and Cleary (1981). Assessments of anxiety, depression, sexual functioning, and vocational status were administered prior to and at completion of the exercise program. At the outset of the program 81% of the subjects had resumed sexual activity. Following the 6-week exercise program, significantly more participants (85%) had resumed sexual activity. Twenty-four percent reported improved quality of sexual activity following the program. However, when subjects were assessed by duration of recovery period, those whose infarcts had occurred more than 24 months prior to the exercise program actually showed a decrease in frequency of sexual activity. At the outset, 91% of those 2 years postinfarct had resumed sexual activity, while only 79% of the subjects who
were less than 6 months post-MI had resumed sexual activity. The results suggest that those who most recently experienced MIs gained the most. As with other research, reported improvements in sexual activities after involvement in the exercise program were not closely related to increases in work capacity (i.e., cardiovascular efficiency).

Ewart, Taylor, Reese, and DeBusk (1983) compared correlations between self-efficacy ratings pre- and post-treadmill testing with peak treadmill heart rate. Forty post-MI men underwent treadmill testing and counselling regarding physical capacity 3 weeks after suffering a MI. Patients who performed well on the treadmill testing subsequently reported greater confidence in their ability to perform similar activities such as running and climbing stairs. However, performing well on the treadmill did not result in improved confidence regarding their ability to engage in dissimilar activities, such as sexual intercourse or lifting heavy objects. Counseling by a cardiologist regarding the patient's physical capacity to perform various physical activities was immediately followed by a restatement of the information by a nurse. Self-efficacy ratings for ability to engage in sexual activity, lifting, and general exertion did increase following the counseling session. Efficacy ratings post-treadmill testing, but not peak heart rate during testing, were significantly correlated to subsequent directly measured activity and additional self-reported intensity and duration of activity levels.

In a related study, Taylor, Bandura, Ewart, Miller, and DeBusk (1985) reported that treadmill testing increased wives' confidence in the physical capacity of their post-MI husbands. Thirty men who were 3 weeks post-MI and their wives participated in this study. Wives' confidence in their husbands' physical capacity was significantly higher for those wives who participated in treadmill stress testing.
compared to the wives who only observed their husbands' stress testing or the wives who were not present during stress testing. Additionally, the confidence ratings increased significantly from pre- to post-treadmill testing only for the participant wives. Both spouse and patient confidence ratings at the 3-week treadmill testing and counseling session were significantly correlated with patient work capacity at 11 and 26 weeks. Efficacy ratings were better predictors of subsequent treadmill performance than peak treadmill heart rate and workload. Efficacy ratings by patients and spouses specific to sexual activity were not reported separately but were included in the rating of physical capacity.

Patients who achieved a work load of less than 7 METs or who were rated as anxious and/or depressed were assigned to one of three conditions: exercise training, group counseling, or no treatment (Stern, Gorman, & Kaslow; 1983). The frequency of sexual activity for the 3 groups did not differ significantly at initial assessment or at subsequent follow-up assessments. While patients assigned to the exercise training experienced significant improvement in work load capacity, changes on other measures did not differ significantly from those of patients assigned to group counseling. By the one-year follow-up there were no significant differences among groups on measures of work capacity, fatigue, depression, anxiety, independence, friendliness, sociability or interpersonal friction.

Roviaro, Holmes, and Holmsten (1984) assigned patients to either routine care or an exercise-based cardiac rehabilitation program following MI. While cardiovascular efficiency improved for patients in the exercise group, there was no statistically significant difference in frequency of sexual activity or sexual satisfaction for the two groups. No significant differences were found on measures of anxiety, depression, or marital adjustment.
Taylor, Houston-Miller, Ahn, Haskell and DeBusk (1986) assigned patients to one of 4 groups: treadmill testing plus home exercise, treadmill testing plus medically supervised exercise, treadmill testing without training, or a control condition (i.e., exercise testing at 6 months post-MI). At baseline 25% of all subjects reported dissatisfaction with sexual activity and this did not change for the sample as a whole after training despite improved work capacity.

The results of the above studies suggest that exercise-based cardiac rehabilitation results in improved cardiovascular functioning. Additionally, treadmill testing as an intervention resulted in increased efficacy ratings and the efficacy ratings were better predictors of subsequent performance on physical activities than physical capacity. In the majority of these studies there was no evidence to suggest that increased physical capacity was related to improved sexual functioning in post-MI patients.

General Guidelines for Sexual Counseling of Post-MI Couples

As a result of the research which documented the prevalence of decreased sexual activity post-MI and the research which suggested sexual activity is safe, there have been numerous articles outlining the guidelines for sexual counseling of post-MI patients and partners. Friedman (1978) and others (Eliot & Miles, 1975; Kappagoda, 1984; and Stein, 1976) reviewed the research on prevalence and energy requirements and other factors affecting sexual functioning of the cardiac patient and suggested that prevention by provision of information is the best approach.

General suggestions offered for clinicians have emphasized utilization of common counseling techniques such as providing emotional support (Cole, 1979; McClane, Krop & Mehta, 1980) and encouraging communication (Cooper, 1988;
McCann, 1989). Inclusion of the patient's partner was another general strategy which was emphasized by many authors (Cole, 1979; Cooper, 1988; Kolman, 1984; McCann, 1989; McClane, Krop, & Mehta, 1988; and Scalzi & Dracup, 1979).

More specific recommendations included Cole's (1979) suggestion that clinicians provide accurate information about the effects of MI on sexual functioning. Scalzi and Dracup (1979) recommended initiating counseling early in the hospitalization and having three sessions—one with each partner and a joint session. McClane, Krop, & Mehta (1980) reported that marital conflict is high for the first three months following MI and suggested that the sooner sexual activity is resumed the sooner the patient will recover. McClane, Krop, & Mehta (1980) also recommend assessing the various modes of presentation—verbal, printed, or group therapy format to determine which is most effective.

Specific steps are outlined by Cooper (1988) who recommended that MI patients begin with self masturbation only and gradually, over a 3-6 week period, involve the partner and resume previous activities. McCann (1989) provided a fairly detailed and specific list of recommendations for health care workers which included (a) involve the partner in touching care, (b) encourage walks together, (c) remind couple that sex is no more stressful than other daily activities, and (d) recommend alternative means of sexual pleasure such as masturbation. Finally, Gordon and Gibbons (1990) in a cardiac rehabilitation book for cardiac patients provided clear information for those recovering from MIs. They outlined the research on energy requirements and reiterated previous conclusions (i.e., sex is a safe activity). Recommendations for post-MI patients included: (a) start with simple demonstrations of affection, (b) don't rush into sex, (c) resume sex in a familiar setting, (d) reduce alcohol intake prior to sexual activity, (e) spend extra time on
foreplay, (f) don't try new positions, (g) don't misinterpret normal responses, (h) pay attention to your heart, (i) be aware of medication side effects, and (j) ask your physician questions when in doubt.

Efficacy of Sexual Counseling

While there is an abundance of information available for professionals who wish to provide sexual counseling to post-MI couples, there remains a paucity of research assessing the impact of providing that information.

One study which did address this issue was conducted by Mann, Yates and Raftery (1981). This study involved 55 patients who were sexually active prior to MI. These patients received sexual counseling as part of their rehabilitation program and were interviewed one year post-MI. The sexual counseling included informal group discussions about social and sexual rehabilitation and a formal session which included spouses was led by a cardiologist and included general information about sexual activity. Patients were encouraged to resume sexual activity between 4 to 6 weeks following MI as long as physical capacity was adequate. At the one year follow-up, 72% recalled having received information about sexual activity. Nineteen percent had not resumed sexual activity and 59% were having sex less frequently. The authors concluded that the intervention (sexual counseling as part of the rehabilitation program) was successful because only 8 participants attributed the decrease in coital frequency to fears of reinfarct or death. However, this study lacked a control group and the frequency of sexual concerns due to fears for this sample was compared to the sexual decline related to anxiety reported in previous studies not related to this work.
Allen (1989) conducted a study of 26 cardiac patients who ranged from 2-48 months post-cardiac event (MI, coronary artery bypass, or angioplasty). Participants were questioned about their sexual functioning pre- and post-cardiac event. Seventy-three percent had resumed some sexual activity. Fifty-two percent reported dissatisfaction with post-MI sexual activity. A 45-minute group session in which information regarding the safety of sexual activity post-MI was provided for all participants. Immediately following the sexual counseling session, participants completed a rating of the session's utility. One hundred percent of the sample rated the program informative and said they would recommend it to another person. Ninety-five percent of those who had resumed sexual activity thought the information would help them engage in sex with less fear and anxiety. A follow-up questionnaire weeks or months after the intervention would have provided a more accurate assessment of the efficacy.

The two projects which addressed the efficacy of providing information regarding the resumption of sexual activity were quasi-experimental in design. In the Mann, Yates, and Raftery (1981) research, the effects of providing information were assessed only one time and this was one year after the intervention. At the other extreme, Allen (1989) assessed the effects within minutes of introducing the intervention. Neither of these projects involved control groups for comparison. While these are important contributions to the literature, additional research of an experimental nature would greatly enhance the knowledge needed to provide sexual counseling in the most efficacious manner.
Summary of Relevant Literature

In summary, sexual concerns in post-MI couples appear to be quite prevalent. These concerns often arise from unfounded fears that sexual activity is strenuous and likely to result in reinfarction or death. There is research documenting the energy requirements and relative safety of sexual activities in post-MI couples, and this information is widely available for clinicians to provide to this population. What appears to be lacking is empirical evidence of what, when, and how information should be provided for maximum anxiety reduction, return to satisfying sexual activity, and expedition of recovery. Clearly, well-controlled experimental research is needed to assess the efficacy of providing sexual counseling to post-MI couples.

Aims of Present Investigation

The present investigation was developed in an effort to further the knowledge of the effects of providing sexual counseling to post-MI couples. More specifically, this research was designed to assess the effects of an intervention aimed at reducing patient and spouse anxiety and increasing comfort with sexual activity for post-MI couples. It was hypothesized that the combination of treadmill testing (to allow the spouse to experience physical demands similar to that which the patient could withstand), and providing couples with information regarding the energy requirements and relative safety of sexual activity post-MI, would reduce anxiety or fears related to physical capacity or limitations. Reduced anxiety, it was hypothesized, would result in significantly better sexual functioning overall and increased pleasure in sexual activity. Changes in overall sexual functioning and
reported pleasure were expected to occur only after the treadmill testing and information/counseling session had taken place.

As with the measures of sexual functioning, reduced anxiety was expected to result in increased post-MI comfort with sexual activity and post-MI frequency of sexual activity. These changes were expected only after the intervention was introduced. Additionally, improved accuracy of responding to questions regarding the effects of MI on the patient's emotional and physical functioning and risks associated with sexual activity was anticipated following the information session in which these items were addressed.

Furthermore, any pre-intervention elevations on assessments of anxiety and/or depression were expected to decrease following the treadmill testing and information/counseling session. These were, however, of secondary interest.

This study differs from previous examinations of sexual functioning in post-MI patients and couples in several ways: (a) a standardized assessment of sexual functioning was utilized, (b) both partners were assessed, and (c) length of time post-MI was limited to a maximum of ten months. Size and location of infarct, indications of active ischemia, treatment with medications associated with sexual dysfunction, and physician instructions regarding sexual activity were other factors monitored in this study.
A multiple baseline across participants design was utilized. This is an experimental design which requires few participants to demonstrate the effects of an intervention because each participant (or couple) serves as their own control. Each participant is in a monitoring only or no treatment baseline condition during which repeated assessments are conducted (Johnston & Pennypacker, 1980). Unlike group designs in which some participants serve as no-treatment controls, a multiple baseline design allows all participants to receive the intervention. Stable responding on the variable(s) being assessed is required prior to introducing the intervention. This is necessary so that changes observed following the interventions are more likely attributable to the intervention and not to extraneous variables. The minimum number of acceptable baselines or participants is two; however, replication of results with additional participants increases the degree of certainty with which inferences regarding the intervention's effectiveness can be made (Kazdin, 1982). Subsequent to the intervention, additional repeated assessments are conducted to assess for changes.

Participants

Participants were recruited through cardiac rehabilitation programs and medical offices in London, Ontario, Canada. Nineteen patients expressed an interest in participating in this research. Of the 19 patients expressing an interest, 4 were
excluded because their partners reportedly were not willing to participate. Other couples were excluded from the study by the investigator because (a) this was not the patient's first MI, (b) patient had coronary artery bypass surgery, (c) the patient could not obtain medical clearance for treadmill testing, and (d) the patient was not literate at a 6th grade level. A variety of factors contributed to self-exclusion. The following reasons were given for couples excluding themselves: (a) time demands too great, (b) unable to arrange transportation, (c) feeling the intervention would have been beneficial several weeks earlier but no longer needed, and (d) being uncomfortable with the sexually explicit questions. After investigator and self-exclusion, 6 couples qualified and agreed to participate.

Patients were at least four weeks but not more than 10 months (43 weeks) post-MI upon entering the study. All patients had suffered a myocardial infarction without complications. Four of the patients were male, and two were female. Patients ranged in age from 53 to 71-years-old. All were married with the length of marriage ranging from 11 to 47 years. English was the preferred language of all patients, and all had graduated high school.

None of the partners had personally experienced any cardiac event. The partners ranged in age from 52 to 71-years-old. All had at least a high school education, and the preferred language of all partners was English.

Three of the patients who participated were actively involved in the exercise-based outpatient cardiac rehabilitation program at the Cardiac Fitness Institute based at Victoria Hospital. One patient was engaged in a self-administered comprehensive (i.e., exercise, diet, stress management) rehabilitation program with exercise activity prescribed by the staff of the Cardiac Fitness Institute. One couple was involved in a cardiac rehabilitation program with a focus on psychosocial aspects of recovery. The
remaining patient was not involved in a formal cardiac rehabilitation program at acceptance into this study, but began participating in a comprehensive rehabilitation program three weeks after joining the study.

Instruments and Equipment

General demographic information including age, education level, marital status, employment status, annual income, length of relationship, and current rehabilitation interventions was collected from both partners via the General Information Form (Appendix A).

Sexual functioning and satisfaction were assessed with the Sexual Interaction Inventory (SII) an instrument developed by LoPiccolo and Steger (1974). This self-report inventory consists of a booklet which describes 17 heterosexual behaviors. Fifteen of the behaviors are illustrated with explicit line drawings of a heterosexual couple involved in the behavior described. Drawings are not included for sexual intercourse. For each of the seventeen behaviors there are 6 questions which are answered using a 6-point scale. The 6 questions assess current frequency of the behavior, desired frequency, level of pleasure derived from the behavior, perception of mate's pleasure derived from the behavior, ideal level of satisfaction for self, and ideal level of satisfaction for mate. An 11-scale profile is produced. Scales 1-5 are derived from the male's responses and scales 7-11 from the female's responses. Scales 1 and 7 are measures of satisfaction with the current frequency of sexual activity. Scales 2 and 8 provide information regarding self-acceptance (i.e., difference between current pleasure and ideal pleasure derived from the activity). The "Pleasure Mean" is reported on scales 3 and 9 and is simply an average of ratings for current level of satisfaction derived from each of the sexual activities.
identified. Scales 4 and 10 provide a measure of how accurately each partner perceives the other's level of pleasure for each activity. Mate acceptance is measured on scales 5 and 11. Scale 6 is the total disagreement between male and female regarding sexual activity and is derived by summing scores on scales 1, 2, 4, 5, 7, 8, 10, and 11. The total disagreement score is considered the best measure of sexual adjustment (LoPiccolo & Steger, 1974).

The test-retest coefficients for the SII range from .533 to .902 (Talmadge & Talmadge, 1990). Cronbach's alpha coefficients for the eleven scales range from .795 to .933 and indicate good internal consistency (LoPiccolo & Steger, 1974). Validation studies by LoPiccolo and Steger (1974) found the SII capable of discriminating between sexually functional and sexually dysfunctional couples. In addition to the SII's ability to discriminate sexually dysfunctional couples from sexually satisfied couples, all 11 scales are reactive to treatment (Talmadge & Talmadge, 1990).

Spielberger, Gorsuch, and Lushene (1970) developed the State-Trait Anxiety Inventory (STAI) which was used to assess anxiety. Two scales consisting of twenty items each make up the STAI. One scale assesses Trait anxiety or the subject's general anxiety level, while the State scale assesses situational anxiety. Each item is given a weighted score of 1 to 4. Ten of the State items and 11 of the Trait items are scored with a rating of 4 indicative of high levels of anxiety. For the remaining items, a rating of 4 reflects an absence of anxiety and for these items the scoring is reversed, i.e., responses marked 1, 2, 3, or 4 are scored 4, 3, 2, or 1, respectively. The State Anxiety items for which scoring is reversed are 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20. For the Trait Anxiety scale, the items for which scoring is reversed are 21, 23, 26, 27, 30, 33, 34, 36, and 39. The scores for each scale are derived by
summing the weighted scores of the 20 items comprising each scale.

Test-retest coefficients for the Trait scale range from .73 to .86, and the State scale's test-retest coefficients range from .16 to .54 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The lower coefficients for the State scale are expected given that the purpose of this scale is to assess anxiety fluctuation resulting from changes in environmental demands. Internal consistency is considered good with alpha coefficients for Form Y State Anxiety ranging from .86 for male high school students to .95 for female military recruits (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). For working adults the alpha coefficient was reported to be .91 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). The alpha coefficients for Trait Anxiety ranged from .89 to .91 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Correlation of the Trait Anxiety Scale with the other measures of anxiety range from .73 to .83 (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The Self-Rating Depression Scale (SDS) developed by Zung (1965) is comprised of 20 items. Each of the items is related to a specific aspect of depression (i.e., each item assesses the signs and symptoms of depression along one of four dimensions: somatic, psychological, psychomotor, and mood). For 10 of the items a weighted score of 4 suggests the presence of the depressive symptom. Items 2, 5, 6, 11, 12, 14, 16, 17, 18, and 20 are worded such that a rating of 4 indicates the absence of that symptom. Scores are derived by summing the weighted responses to each item. An SDS Index is calculated by dividing the raw score by 80 (the highest score possible) and multiplying by 100 producing a range from 25 to 100 with higher scores reflecting greater depression. Validation of this scale was initially conducted with inpatient psychiatric patients (Zung, 1965) and later with an outpatient sample (Zung, Richards, & Short, 1965). Correlation between the SDS and the Depression
scale of the MMPI was found to be .70 for the outpatient sample (Zung, Richards, & Short, 1965). Later work, also in an outpatient setting and assessing the relation between the SDS and MMPI D-Scale scores, reported a correlation of .59 (Zung, 1967). The correlation coefficient increased to .75 in a subgroup of patients comprising the 40 to 65-year-old group (Zung, 1967). This scale was designed for use in psychiatric research and has good known-groups validity (Corcoran & Fischer, 1987; Rehm, 1988; Zung 1967).

The Beck Depression Inventory (BDI) developed by Beck, Ward, Mendelson, Mock, and Erbaugh (1961) was also utilized in this research. The BDI is a self-administered scale which consists of 21 statements (scaled from 0 to 3) each relating to a particular symptom of depression. Scores are derived by summing the weighted response to each item. Good internal reliability has been demonstrated with split-half coefficients ranging from .78 - .93 (Corcoran & Fischer, 1987). Test-retest reliability was .75 for 23 undergraduates tested with a 3 week delay between testing (Miller & Seligman, 1973). Discriminant validity is reported to be good for both clinical and normal populations (Beck & Beamesderfer, 1974; and Blumberg, Oliver, & McClure, 1978).

The Cardiac Risks of Sexual Activity Scale (CRSAS) was developed by the author to assess participants' beliefs and level of knowledge about the limitations and commonly reported experiences regarding sexual activity post-MI (Appendix B). Items are rated on a 5-point scale ranging from "completely false" to "completely true". Scores are derived by summing the difference between the respondent's answer and the most accurate response. The psychometric properties of this instrument have not yet been established.

Assessment of emotional comfort with, and frequency of various sexual
activities both pre- and post-MI was assessed with the Comfort and Frequency Index (CFI) for each partner (Appendix C). This instrument was also developed by the author. The first page of this scale consists of questions regarding any pre-MI history of any sexual problems, the nature and outcome of any previous treatment for sexual problems, any changes in sexual activity post-MI, and the instructions regarding resumption of sexual activities provided by the physician post-MI. The next section of the scale consists of 10 questions about sexual activity pre-MI (5 regarding frequency and 5 regarding emotional comfort). Questions 11 - 20 ask about current frequency and emotional comfort with sexual activities. A 5-point scale is provided for each item. Scores are derived by summing the responses to yield (a) comfort pre-MI, (b) frequency pre-MI, (c) comfort post-MI, and (d) frequency post-MI. The difference between Comfort post-MI and Comfort pre-MI provides a Change in Comfort score. Negative values reflect a decrease in comfort, while positive values reflect increased comfort post-MI. Likewise, the difference between the post-MI frequency score and the pre-MI frequency score yields a Change in Frequency score. Negative values reflect a decreased frequency of sexual activity post-MI, and positive values reflect an increase in activities post-MI. Research establishing reliability and validity of this instrument has not yet been conducted.

A consumer satisfaction form (Appendix D), also developed by the author, was given to participants as a method of gaining anonymous feedback regarding the value of the intervention and recommendations for future sessions.

Treadmill stress testing or graded exercise tests (GXTs) were conducted on Quinton 55 Treadmills. One treadmill was driven by a Quinton 4000 stress testing computer, and the other by a Quinton 5000 stress testing computer. The treadmills
were located in separate stress testing labs at the Cardiac Fitness Institute. Each testing lab contained a desk, an examination table, and other standard medical supplies and equipment (e.g., cotton swabs, rubbing alcohol, scales, and sphygmomanometer). Resuscitation equipment was located immediately adjacent to the testing labs. A six-lead ECG was used to monitor heart rate and rhythm changes throughout the testing. A twelve-lead ECG was used for the partners' testing to provide more accurate diagnostic information and as a service to the participants. The ECG record was used to compare resting with peak exercise heart rate and cardiac wave forms. Interpretation of the ECG was provided by the physician. Patients' hospital charts were reviewed by the nurse and principal investigator to obtain information regarding size, location, and severity of infarct. Information regarding length of hospitalization, any unusual responses to treatment, and medications were also obtained from their medical records, if available.

Procedure

Flyers (Appendix E) which briefly described the study and the requirements were distributed to various cardiac rehabilitation programs and interested individuals were instructed to contact the principal investigator. Once a patient expressed an interest, additional details of the study were provided over the phone. If the patient remained interested, a screening interview with the couple was scheduled and took place in the conference room at the Cardiac Fitness Institute or the group therapy room in the Psychology Department. At the outset of the interview session couples were provided with brief information regarding the principal investigators background, training, and clinical and research interests. During the screening interview couples were questioned about the date of the MI, length of relationship
(to ensure it pre-dated the MI), and about post-MI changes in the marital relationship. Couples were invited to participate if either partner reported a change in frequency or quality of sexual activities subsequent to the MI.

The patient and partner then read the letter of information (Appendix F). Any questions regarding the study were answered and participants then signed the appropriate informed consent (Appendix G). The letter of information and informed consent for both patient and partner were approved by the Ethics/Institutional Research Review Boards of Western Michigan University, University of Western Ontario, and Victoria Hospital. (The research approval forms for the three institutions are contained in Appendix H). Participants kept the letter of information for future reference and the informed consents were placed on file with the principal investigator.

After signing the informed consent each participant was informed of the assigned code number which was used to identify all assessment materials completed by that individual. The master code list matching code numbers with participant names was placed in a secure file away from data files. Each participant was then given a packet of questionnaires with his/her code number inserted in the "name" blanks. They were instructed to follow instructions on each form and to answer questions according to how they currently felt or how they felt on average for the previous week. At this time they were cautioned about the graphic nature of the questions and drawings contained in the SII. They were also reminded that the answer sheets were identified with a code number and not a name. Participants were strongly encouraged to answer all items but instructed that if they found any item particularly objectionable they could opt to leave that item blank.

Participants were then reminded that the forms must be completed for at
least 3 weeks before treadmill testing and the information session could be scheduled. They were also instructed to obtain medical clearance (Appendix I) for the treadmill testing as soon as possible because treadmill testing could not be conducted until this was on file.

Participants completed the packet of assessments (SII, SDS, BDI, STAI, CFI, and CRSAS) each week they were in the baseline or monitoring phase. Packets were completed at home and mailed to the principal investigator in the Psychology Department at Victoria Hospital in pre-addressed stamped envelopes provided by the investigator.

A multiple baseline across subjects/couples design was employed so all participants received the intervention (i.e., treadmill testing and information/counseling session). Subjects were recruited and entered baseline monitoring within a 6 week period between the end of February and mid-April with the exception of one couple who completed treatment and follow-up assessments approximately two months prior to entry into the study by the remaining couples. Treatment was introduced to couples sequentially as the medical clearances were obtained. Each subsequent couple remained in baseline for a longer period to a maximum of 12 weeks, before starting over with shorter baseline periods. The final two couples were expected to complete 3 and 6-week baseline periods but completed 5 and 8 weeks of baseline. The baselines were extended for these couples, in part, to ensure stable responding on the SII because previous couples showed considerable fluctuation in scores during the first 3 weeks. Conflict in scheduling treadmill testing was also a factor in extending the baselines for these two couples.

When treadmill testing was scheduled, participants were provided with
routine written instructions regarding preparation for stress testing regarding caffeine consumption, medication, exercise that day, etc. (Appendix J). After examining the patient, the physician director of the Cardiac Fitness Institute conducted treadmill testing. The physician was assisted by the female nurse on staff. An abbreviated Bruce protocol was employed with 2 minutes at each stage. The speed and grade (incline) of each stage of the test were as follows: (a) Stage I was 1.7 miles per hour [mph] on a 10% grade; (b) Stage II was 2.5 mph on a 12% grade, (c) Stage III was 3.4 mph on a 14% grade, (d) Stage IV was 4.2 mph on a 16% grade, and (e) Stage V was 5 mph on an 18% incline. Increases in treadmill rate and degree of incline occurred automatically as part of the computerized program. Testing was discontinued when the individual met his/her target heart rate for submaximal stress test, i.e., 85% of estimated maximum heart rate, or if the individual indicated s/he could not continue. The patient was tested first while observed by the partner and principal investigator. ECG and blood pressure were monitored throughout treadmill activity and for 5 minutes after the treadmill was stopped. An identical procedure was used for testing the partner (i.e., they were tested in the same room, with the same treadmill, and the same protocol). The patient and principal investigator observed the partner's testing. The information/counseling session was then scheduled with the requirement that it occur within the next 7 days.

The information sessions were held in the conference room at the Cardiac Fitness Institute or in the group therapy room in the Psychology Department of Victoria Hospital. The counseling sessions were scheduled to last 90 minutes. At the outset of the session couples were provided a handout (Appendix K) and the contents of the session briefly outlined. The couple was then asked to describe the MI experience in some detail, to discuss the recovery process, and to express any
current concerns. Their experiences were then discussed in the context of what is known about the experiences of other cardiac couples, in general. The final portion of the session was devoted to discussion of sexual concerns and providing the couple with information regarding the safety of sexual activity post-MI, estimated energy requirements, and guidelines for safely resuming or continuing sexual activities. A list of general resource literature was provided and couples were encouraged to discuss additional concerns with their physician. Couples were also encouraged to request a referral from their physician to the appropriate therapist if concerns persisted.

At the conclusion of the information/counseling session couples were given the next packet of questionnaires and assessments to complete. Assessments were completed weekly for four weeks after the intervention.

After all couples had received the intervention, a consumer satisfaction form was mailed to all participants with a business-size, pre-addressed, stamped envelope. All participants were instructed to complete the forms and return them during the same week to ensure anonymity of those completing the forms.

When the intervention had been introduced to all couples and they had all completed four weeks of post-treatment assessments, each couple was contacted and provided with preliminary results of the research.
CHAPTER III

RESULTS

Data Analysis

The effects of partner participation in treadmill testing and an information/counseling session on sexual functioning following MI was assessed by examining participants' responding on several self-report measures. The SII Total Disagreement, SII Pleasure Mean (patient), and Pleasure Mean (spouse) T scores were the variables of primary interest. These scores were plotted weekly for each couple during baseline and post-treatment phases as seen in Figure 1 and Figure 2. In addition to the visual analysis, a repeated measures analysis of variance (ANOVA) was conducted on the SII Total Disagreement scores. A separate repeated measures ANOVA was conducted on the patient and spouse Pleasure Means. Descriptive statistics were calculated on the remaining self-report measures.

Participant Characteristics

Six heterosexual couples in which one partner had experienced an acute MI within the previous 10 months participated in this research. All couples had been married at least 11 years ($M = 27.86, SD = 15.62$). Participants ranged in from 52 to 71 years of age ($M = 60.5$). At acceptance into the study each member of three couples had retired from employment, one partner was employed part-time, and each of the remaining participants was employed full-time. Four of the six couples reported annual incomes of greater than $63,000 (Canadian). Eight of the twelve participants
Figure 1. Weekly SII Total Disagreement Scores for Each Couple.
Figure 2. Weekly SII Pleasure Mean Scores for Each Couple.
reported obtaining some post-secondary education. Three participants had obtained graduate degrees.

Measures of Sexual Functioning

The SII Total Disagreement and Pleasure Mean scores were the variables of primary interest. A visual analysis of the plotted weekly scores did not reveal significant changes from baseline to post-treatment phases of this project. The results of the ANOVA on the last 3 baseline and the four post-treatment Total Disagreement scores are seen in Table 1. A variance covariance matrix was constructed and revealed that the assumption of homogeneity of variance was not met (Stevens, 1990). However, the obtained F was not significant at the p ≤ .05 level using the critical value associated with the most liberal degrees of freedom. A correction for the violation of the assumption of homogeneity was not necessary (Huitema, 1991). The contents of Table 2 are the results of the ANOVA on the final three baseline and four post-treatment Pleasure Mean scores. Again, the obtained F was not significant at the p ≤ .05 level using the critical value associated with the most liberal degrees of freedom. While the assumption of homogeneity of variance

Table 1
ANOVA Summary Table for SII Total Disagreement Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks</td>
<td>6</td>
<td>80.95</td>
<td>13.49</td>
<td>0.89</td>
<td>.512</td>
</tr>
<tr>
<td>Residual</td>
<td>30</td>
<td>452.76</td>
<td>15.09</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2
ANOVA Summary Table for SII Pleasure Mean Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks</td>
<td>6</td>
<td>300.48</td>
<td>50.08</td>
<td>1.38</td>
<td>.253</td>
</tr>
<tr>
<td>Residual</td>
<td>30</td>
<td>1085.81</td>
<td>36.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

was not met, it was not necessary to compare the obtained F value to a more conservative value. If the obtained F for either ANOVA had been significant using the liberal degrees of freedom, the Geisser-Greenhouse correction would have been employed.

The other measure assessing sexual functioning was the CFI. Each participant's average change from pre-MI levels of comfort with various sexual activities for both baseline and post-treatment periods is listed in Table 3. Scores for 7 of the 12 participants suggest a decrease in comfort following the intervention. In couple D both the patient and partner reported decreased comfort from pre-MI levels, overall, following the intervention. When all patient scores are combined, there appears to be a decrease in comfort following treatment. The partners' scores, however, suggest an increase in level of comfort from that reported in baseline (i.e., there was less discrepancy between ratings of pre-MI and post-MI levels of comfort during the post-treatment phase of the study).

The average change in frequency of sexual activity from pre-MI levels as assessed by the CFI is reported for each participant by baseline and post-treatment phases in Table 4. The scores for patient B and partner A suggest decreases in
Table 3
Average Change in Comfort With Sexual Activity From Pre-MI Levels as Reported on the Comfort and Frequency Index

<table>
<thead>
<tr>
<th></th>
<th>Patient</th>
<th></th>
<th>Partner</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Post-Treatment</td>
<td>Baseline</td>
<td>Post-Treatment</td>
</tr>
<tr>
<td>A</td>
<td>+0.33</td>
<td>0.00</td>
<td>+0.67</td>
<td>0.00</td>
</tr>
<tr>
<td>B</td>
<td>+0.66</td>
<td>+5.00</td>
<td>+1.17</td>
<td>+1.00</td>
</tr>
<tr>
<td>C</td>
<td>+0.11</td>
<td>+0.25</td>
<td>-1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>D</td>
<td>-2.25</td>
<td>-8.50</td>
<td>-5.50</td>
<td>-9.25</td>
</tr>
<tr>
<td>E</td>
<td>-3.20</td>
<td>-1.75</td>
<td>-7.20</td>
<td>-1.75</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td>-2.50</td>
<td>-0.88</td>
<td>-2.00</td>
</tr>
<tr>
<td>Totals</td>
<td>-0.73*</td>
<td>-0.88</td>
<td>-2.12</td>
<td>-2.00</td>
</tr>
<tr>
<td></td>
<td>(1.46)**</td>
<td>(4.25)</td>
<td>(3.13)</td>
<td>(3.41)</td>
</tr>
</tbody>
</table>

* Average Change Scores Overall **Standard deviations

frequency of sexual activity in the weeks following the intervention. Scores for all other participants suggest at least mild increases in frequency of post-MI sexual activity in the post-treatment phase. When combined, both patients' and partners' ratings showed a net improvement in the post-treatment phase.

Information regarding pre-MI history of sexual difficulties, changes in sexual activity post-MI, and physician's instructions regarding resumption of sexual activities was provided on the CFI. A summary of those data is presented in Table 5.
Three of the patients reportedly did not receive any instructions from their physicians regarding resumption of sexual activities. Of special note are the discrepancies between patient's and partners' reports with regards to physician instructions.

Table 6 displays the average number of points missed on the CRSAS for each patient and partner in baseline and post-treatment phases. The accuracy of responding for 7 participants decreased following the intervention. Overall, the patients' scores reflect an increase in accuracy of responses in the post-treatment

Table 4

Average Change in Frequency of Sexual Activity From Pre-MI Levels as Reported on the Comfort and Frequency Index

<table>
<thead>
<tr>
<th></th>
<th>Patient Baseline</th>
<th>Patient Post-Treatment</th>
<th>Partner Baseline</th>
<th>Partner Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-1.00</td>
<td>0.00</td>
<td>-0.67</td>
<td>-1.00</td>
</tr>
<tr>
<td>B</td>
<td>+1.00</td>
<td>0.00</td>
<td>-1.00</td>
<td>-0.75</td>
</tr>
<tr>
<td>C</td>
<td>+0.25</td>
<td>+0.50</td>
<td>+0.42</td>
<td>+1.00</td>
</tr>
<tr>
<td>D</td>
<td>-1.75</td>
<td>-0.75</td>
<td>-1.92</td>
<td>-1.75</td>
</tr>
<tr>
<td>E</td>
<td>-1.20</td>
<td>+1.00</td>
<td>-4.40</td>
<td>-2.00</td>
</tr>
<tr>
<td>F</td>
<td>-2.00</td>
<td>-1.75</td>
<td>-0.38</td>
<td>+.25</td>
</tr>
</tbody>
</table>

| Totals | -0.78*          | -0.17                  | -1.26            | -0.71                  |
|        | (1.07)**        | (0.89)                 | (1.41)           | (1.05)                 |

* Average Change Scores Overall **Standard deviations

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Table 5
Summary of Qualitative Data From Comfort and Frequency Index

<table>
<thead>
<tr>
<th>Patient</th>
<th>Pre-MI Sexual Problems</th>
<th>Current Sexual Concerns</th>
<th>Physician's Instructions Regarding Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No</td>
<td>None</td>
<td>&quot;Ok after few weeks&quot;</td>
</tr>
<tr>
<td>B</td>
<td>No</td>
<td>Less Frequent</td>
<td>&quot;Ok to have sex&quot;</td>
</tr>
<tr>
<td>C</td>
<td>No</td>
<td>Fatigued, Less frequent than pre-MI</td>
<td>&quot;No sex the 1st week. Ok thereafter.&quot;</td>
</tr>
<tr>
<td>D</td>
<td>No</td>
<td>No desire</td>
<td>&quot;None&quot;</td>
</tr>
<tr>
<td>E</td>
<td>No</td>
<td>Inability to become aroused, Fear sexual activities too strenuous</td>
<td>&quot;None&quot;</td>
</tr>
<tr>
<td>F</td>
<td>No</td>
<td>Partner not willing</td>
<td>&quot;None&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Partner</th>
<th>Pre-MI Sexual Problems</th>
<th>Current Sexual Concerns</th>
<th>Physician's Instructions Regarding Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No</td>
<td>Less interest</td>
<td>&quot;Intercourse within 1 or 2 wk., woman on top&quot;</td>
</tr>
<tr>
<td>B</td>
<td>No</td>
<td>Less frequent</td>
<td>&quot;Ok to have sex&quot;</td>
</tr>
<tr>
<td>C</td>
<td>No</td>
<td>Husband fatigued</td>
<td>&quot;To resume after 4 weeks&quot;</td>
</tr>
<tr>
<td>D</td>
<td>No</td>
<td>Inability to become aroused</td>
<td>&quot;None&quot;</td>
</tr>
<tr>
<td>E</td>
<td>No</td>
<td>Fear sexual activities too strenuous</td>
<td>&quot;None&quot;</td>
</tr>
<tr>
<td>F</td>
<td>Yes</td>
<td>No interest</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partner not willing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fear sexual activities too strenuous</td>
<td></td>
</tr>
</tbody>
</table>
Table 6
Average Points Missed on Cardiac Risks of Sexual Activity Scale

<table>
<thead>
<tr>
<th>Patient</th>
<th>Baseline</th>
<th>Post-Treatment</th>
<th>Partner</th>
<th>Baseline</th>
<th>Post-Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-23.66</td>
<td>-20.50</td>
<td>-18.67</td>
<td>-17.50</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-13.60</td>
<td>-13.75</td>
<td>-10.60</td>
<td>-12.50</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-16.67</td>
<td>-13.50</td>
<td>-19.08</td>
<td>-14.75</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>-18.00</td>
<td>-8.50</td>
<td>-16.20</td>
<td>-19.25</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>-15.67</td>
<td>-17.00</td>
<td>-12.13</td>
<td>-19.25</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>-17.57</td>
<td>-15.88</td>
<td>-15.42</td>
<td>-17.04</td>
<td></td>
</tr>
</tbody>
</table>

* Average Points Missed Overall ** Standard deviations

phase. Patient E, who was one month post-MI, showed the greatest improvement. The partners' scores, in general, reflect a decline in accuracy.

Physiological Measures

The results of treadmill testing are summarized in Table 7. Patient E had a negative ECG, that is, it did not contain any wave form abnormalities during rest or exercise. The ECGs for all other patients contained S-T segment changes consistent
with CHD and/or MI. Two of these patients exhibited these abnormalities at rest as-well-as during stress testing. Additionally, S-T segment changes consistent with CHD were present in the ECGs of three partners.

As seen in Table 7, all patients achieved work loads of at least 5 METs during treadmill testing. The maximum workload achieved was 14 METs. All partners achieved work loads of at least 7 METS, with the maximum being 13.4 METs.

Four of the six patients were taking beta blockers, and of those, 3 were treated with cardioselective beta blockers. Two patients were being treated with angiotensin-converting enzyme (ACE) inhibitors. Psychotropic medications for symptoms of depression and anxiety were taken by one patient and one partner.

Measures of Depression and Anxiety

Self-report measures on depression and anxiety also were completed weekly in baseline and post-treatment phases. The average scores on the SDS, BDI, and the STAI are presented in Table 8. On average, symptoms of depression as measured on both the SDS and BDI were within normal limits. An examination of individual participant's scores revealed elevations in scores to the mildly depressed range for both patient and partner of couple A and for patient C. These elevations were not simultaneously present on both the SDS and the BDI.

Scores on the STAI also were within normal limits, and did not reflect clinical elevations of either State or Trait Anxiety. Baseline levels of State Anxiety were of particular interest; however, no significant elevations were evident in individual data.
Table 7
Results of Treadmill Testing

<table>
<thead>
<tr>
<th>Patient</th>
<th>Test Stage</th>
<th>Duration</th>
<th>MET</th>
<th>ECG Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>III</td>
<td>5' 40&quot;</td>
<td>9</td>
<td>Ventricular Bigeminy</td>
</tr>
<tr>
<td>B</td>
<td>IV</td>
<td>6' 30&quot;</td>
<td>10.1</td>
<td>2 mm upsloping S-T segment, at peak only</td>
</tr>
<tr>
<td>C</td>
<td>V</td>
<td>9' 20&quot;</td>
<td>14</td>
<td>1-2 mm S-T segment depression, resting &amp; exercise</td>
</tr>
<tr>
<td>D</td>
<td>II</td>
<td>3' 10&quot;</td>
<td>5</td>
<td>1 mm horizontal S-T changes exercise &amp; recovery</td>
</tr>
<tr>
<td>E</td>
<td>III</td>
<td>6' 00&quot;</td>
<td>10</td>
<td>no arrhythmia, no S-T changes</td>
</tr>
<tr>
<td>F</td>
<td>IV</td>
<td>8' 00&quot;</td>
<td>13</td>
<td>2 mm S-T changes at peak, through recovery</td>
</tr>
<tr>
<td>Partner</td>
<td>Test Stage</td>
<td>Duration</td>
<td>MET</td>
<td>ECG Changes</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>----------</td>
<td>-----</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>A</td>
<td>III</td>
<td>5' 00&quot;</td>
<td>7</td>
<td>1.5 - 2 mm downsloping S-T change at peak</td>
</tr>
<tr>
<td>B</td>
<td>IV</td>
<td>6' 30&quot;</td>
<td>10.1</td>
<td>no arrhythmia, no S-T changes</td>
</tr>
<tr>
<td>C</td>
<td>V</td>
<td>8' 30&quot;</td>
<td>13.4</td>
<td>no arrhythmia, no S-T changes</td>
</tr>
<tr>
<td>D</td>
<td>II</td>
<td>4' 00&quot;</td>
<td>7</td>
<td>no R wave, 6 mm Q wave on septal leads at rest</td>
</tr>
<tr>
<td>E</td>
<td>IV</td>
<td>6' 30&quot;</td>
<td>10.1</td>
<td>3 mm downsloping S-T segment changes exercise &amp; recovery</td>
</tr>
<tr>
<td>F</td>
<td>III</td>
<td>4' 30&quot;</td>
<td>7</td>
<td>no arrhythmia, no S-T changes</td>
</tr>
</tbody>
</table>
Table 8

Average Depression and Anxiety Scores

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th></th>
<th>Partners</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Post-Treatment</td>
<td>Baseline</td>
<td>Post-Treatment</td>
</tr>
<tr>
<td>SDS</td>
<td>38.40* (8.20)</td>
<td>35.75 (7.99)</td>
<td>35.13 (5.66)</td>
<td>34.04 (5.22)</td>
</tr>
<tr>
<td>BDI</td>
<td>4.28 (3.47)</td>
<td>3.71 (3.45)</td>
<td>3.51 (3.20)</td>
<td>3.50 (3.51)</td>
</tr>
<tr>
<td>SANX</td>
<td>47.22 (8.47)</td>
<td>42.67 (7.48)</td>
<td>45.23 (5.23)</td>
<td>42.79 (4.54)</td>
</tr>
<tr>
<td>TANX</td>
<td>45.47 (9.57)</td>
<td>42.67 (9.58)</td>
<td>43.61 (9.10)</td>
<td>41.67 (9.22)</td>
</tr>
</tbody>
</table>

* Average scores (Standard deviations)
SDS = Self-Rating Depression, BDI = Beck Depression Inventory, SANX = State Anxiety, TANX = Trait Anxiety
CHAPTER IV

DISCUSSION AND RECOMMENDATIONS

This research assessed the effects of partner participation in treadmill testing and an information/counseling session on sexual functioning in couples following MI. The prediction that sexual functioning would improve following the intervention was not supported. The hypothesis that level of pleasure derived from sexual activities would increase following the intervention also was not supported. Results are mixed with regards to the predictions that level of comfort with sexual activities and frequency of sexual activities would increase following the intervention, but in general, do not appear to support these predictions. There were no significant baseline elevations on measures of depression and anxiety so the effects of the intervention on these factors may not have been adequately tested.

The intervention was designed to reduce anxiety in the patient and/or partner and, more specifically, any anxiety regarding risk of reinfarction following a MI due to the belief that the energy requirements of sexual activity are likely to trigger another MI. While three participants identified this as a personal concern, this was not of sufficient intensity to be reflected in the STAI. More importantly, both the patient and partner of couple E reported this as a concern, but this was not reflected in their SII scores. There is the possibility that these verbal reports were influenced by the participants' knowledge of the purpose of this research. As with all verbal self-reports the implicit "demands" of the audience may influence the accuracy of the report (Michael, 1990; & Skinner, 1957). The third participant to identify this as a concern was the partner in couple F. The scores on the SII suggest some impairment in sexual
functioning, and an examination of the comfort change scores reflect decreasing comfort with sexual activities in the post-treatment phase of this project. The fact that sexual difficulties, as reported by the partner, existed in couple F prior to the MI suggests that the anxiety was not the major source of the difficulties reflected in the SII.

There is the possibility that when considered in the context of all other concerns of post-MI couples, the day-to-day concerns diminish the relative importance of any fears associated with sexual activity. The fact that this anxiety was not corroborated with information from other assessment tools employed does suggest the need to identify or develop assessment methods which are sufficiently sensitive to detect these concerns and any changes following an intervention.

In addition to the concerns regarding the measurement of sexual anxiety, there are concerns regarding the measurement of sexual functioning. While at least one member of each couple expressed concerns regarding the couple's sexual activities post-MI, these concerns do not appear to be captured by the SII. The SII was selected, in part, because it has been widely utilized with couples presenting with sexual dysfunction and is able to discriminate between functional and impaired couples (Talmadge & Talmadge, 1990). However, the practices and complaints for this sample may be quite different than those on whom this instrument was normed and of younger couples presenting at sex therapy clinics. Several of the participants of this project reported having difficulty with the way questions on the SII were phrased, and suggested that questions regarding specific sexual activities emphasized the wrong aspect of sexuality in older couples. Alternative methods of assessing sexual functioning may produce quite different results.

The results regarding the purported assessment of comfort of post-MI sexual
activities following the intervention are mixed and difficult to interpret. For example, the change in comfort scores for patient B and partner E suggest that there was considerable improvement in the level of comfort from baseline to post-treatment; however, the change for patient B is due to lower ratings of pre-MI levels of comfort following the intervention rather than to increased post-MI comfort ratings. The improvements for partner E, however, did result from increased post-MI comfort ratings. The absolute decrease in the patients' comfort scores in the post-treatment phase was quite small, as was the apparent improvement in partners' comfort but these may have clinical importance. The decreases in comfort following the intervention are difficult to interpret, but may have resulted from an increased willingness to report discomfort or distress after learning about "typical" responses to MI. One must also consider the possibility that ratings of increased comfort were influenced by the participants' knowledge of the purpose of the research. Because the psychometric properties of this instrument have not been established, accuracy of interpretation is of great concern and speculative in nature.

The results regarding frequency of sexual activity appear to support the hypothesis. Overall, both patients and partners reported increased frequency in post-MI activity during the post-treatment phase. However, the concerns regarding validity and reliability of this instrument require that these results be interpreted with caution.

Concerns regarding validity and reliability of the CRSAS also make discussion of these results quite speculative. Patients, on average, missed 1.5 points less (i.e. responding accuracy improved) after the intervention in which these items were addressed. The partners, however, missed, on average, 1.9 points more following the intervention. The information provided was believed to be relevant to
both patients and partners, but the possibility that the material was more personally relevant to the patients cannot be ruled out. Of particular interest, is the fact that patient E, who was only 1-month post-MI, showed the most improvement in scores after the intervention. However, the psychometric properties of this instrument must be established before any sound conclusions can be drawn.

Beyond the measurement issues, however, is the concern regarding sampling. While the SII results suggest that couples D and F were experiencing significantly impaired sexual functioning, the other couples were functioning within normal limits. If the majority of couples participating in this project were fairly well-adjusted at the outset one would not expect significant changes following an intervention of this type.

An additional concern is that the factors contributing to the impaired levels of sexual functioning in couples D and F may have pre-dated the MI. As previously noted, the partner in couple F indicated this was the case. The intervention was designed to address concerns arising as a result of a MI. If other factors were the primary source of dissatisfaction, this intervention was not likely to affect them. The addition of a global assessment of marital functioning may have helped to clarify other relationship issues contributing to the suggested levels of distress observed on the SII and to explain the absence of a treatment effect.

The intervention itself may account for the lack of change in the couples who were experiencing difficulties in sexual functioning. Compared to sex therapy and anxiety reduction procedures typically employed in outpatient settings, this intervention was quite brief and did not explicitly address each couple's specific concerns regarding sexual functioning or anxiety. There was discussion with each
partner during the patient's treadmill testing regarding any fears about the patient's
capacity to perform; however, no specific relaxation strategies were employed.

The absence of a treatment effect might also be due to the short follow-up
period. Given the relative infrequency of sexual activities as reported by these
couples, it is possible that the changes will not occur or be observed for 6-8 weeks
after the intervention.

While all patients were being treated with medications associated with sexual
dysfunction (i.e., beta blockers and ACE inhibitors), only patient D and patient E
reported this as a concern. If others were experiencing sexual dysfunction as a result
of their cardiac medications, this was not revealed.

In summary, the results suggest that involving partners in treadmill testing and
providing a joint information/counseling session does not affect sexual functioning in
post-MI couples. However, concerns regarding the assessment methods utilized must be
addressed in future projects. Utilization of measures of sexual functioning designed for
older couples and cardiac patients might yield more accurate information. Additionally,
a replication of this project with couples for whom anxiety regarding the patient's
physical capacity is a concern might yield different results. The majority of the couples
who participated in this project appeared to be functioning at a fairly good level at the
outset so there was little room for improvement. Therefore, additional research with
couples who are clearly experiencing sexual difficulties as a result of experiencing a MI is
recommended.
Appendix A

General Information Form
General Information Form

Participant number: _________________ Age: _______ Gender: ___Fe ___M

Relationship Status: ___Married ___Divorced ___Separated ___Cohabiting ___Dating

Length of Current Relationship: ________

Highest level of education completed: ___Some High School ___High School Graduate

___Some College ___B.A. ___Some Graduate School ___Master's Degree

___Doctorate ___Other

Employment Status: ___Retired ___On Medical Leave ___Full-time ___Part-time ___Unemployed ___Other

Annual Household Income: ______ less than $19,999 ___$20,000 - $34,999 ___$35,000 - $49,999 ___$50,000 - $62,999

___$63,000 - $74,999 ___more than $75,000

In what treatment(s) are you currently participating?

___ Cardiac Rehabilitation Program. (Please describe) __________________________

___ Diet (Please indicate type of diet) ___Low fat ___Low salt

___ Other Diet (Describe) ________________________________

___ Exercise If so, how often do you exercise? ___x's per week

At what intensity? ___< 60% of maximum heart rate ___60% - 70% of maximum h.r. ___70% - 80% of maximum h.r. ___Other (Please describe)

Do you exercise ___ alone or ___ with someone?

___ Stress Management (Please describe) ____________________________

___ Smoking Cessation (A program to help you stop smoking.)

___ Other activities or advice for helping you recover from your heart attack?

(Please describe) ____________________________________________
General Information Form (Partner form)

Participant number: _________________ Age: ______ Gender: ___Fe ___M

Relationship Status: _____Married _____Divorced _____Separated _____Cohabiting _____Dating

Length of Current Relationship: ______

Highest level of education completed: _____Some High School _____High School Graduate

_____Some College _____B.A. _____Some Graduate School _____Master's Degree

_____Doctorate _____Other

Employment Status: _____Retired _____On Medical Leave _____Full-time _____Part-time

_____Unemployed _____Other

Annual Household Income: _____less than $19,999 _____$20,000 - $34,999

_____$35,000 - $49,999 _____$50,000 - $62,999

_____$63,000 - $74,999 _____more than $75,000

In what treatment(s) is your partner currently participating?

_____Cardiac Rehabilitation Program. (Please describe) ________________________________

_____Diet (Please indicate type of diet) _____Low fat _____Low salt

_____Other Diet (Describe) ________________________________

_____Exercise If so, how often does s/he exercise? _____x's per week

At what intensity? _____< 60% of maximum heart rate _____60% - 70% of maximum h.r. _____70% - 80% of maximum h.r. _____Other (Please describe)

Does s/he exercise _____alone or _____with someone?

_____Stress Management (Please describe) ________________________________

_____Smoking Cessation (A program to help stop smoking.)

_____Other activities or advice for helping in recovery from the heart attack? (Please describe) ________________________________

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Appendix B

Cardiac Risks of Sexual Activity Scale
Cardiac Risks of Sexual Activity Scale

(Developed by Betty J. Fisher specifically for the dissertation project entitled: "The Effects of an Information/Counseling Session and Partner Participation in Treadmill Testing on Sexual Functioning Following Myocardial Infarction")

Directions: Please rate the accuracy of the following statements using the scale below.

<table>
<thead>
<tr>
<th>Completely False</th>
<th>Completely True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4  5</td>
<td></td>
</tr>
</tbody>
</table>

1. Hugging, kissing, and caressing are sexual activities which are safe immediately after a heart attack.
2. Sexual intercourse is dangerous following a heart attack.
3. Sudden death from heart attack often occurs during sexual intercourse.
4. Sexual activity often causes an irregular heart beat.
5. Chest pain during sexual intercourse is a signal of over-exertion and sex should be discontinued.
6. All sexual activity is associated with an increase in blood pressure.
7. Age affects sexual functioning after a heart attack.
8. Regular exercise will improve sexual functioning following a heart attack.
9. Sexual activity after eating a heavy meal or after drinking several alcoholic beverages may increase the risk of another heart attack.
10. Fears about resuming sexual activity are common for both cardiac patients and their partners.
11. Sexual intercourse should be resumed when the patient and partner are ready.
12. Engaging in sexual activities with a new partner may require more energy than sex with your usual partner.
13. When engaging in sexual intercourse you should not try new positions.
14. A decrease in sexual desire following a heart attack is unusual.
15. Shortness of breath during sexual intercourse is a sign of another heart attack.
16. The frequency and quality of sexual intercourse following a heart attack rarely return to previous levels.
17. Recovery from a heart attack may be enhanced by resuming satisfying sexual activities.
18. Feelings of sadness and loss of energy are not normal following a heart attack.
19. Fear of another heart attack is a common reason for avoiding sexual activity following heart attack.
Appendix C

Comfort and Frequency Scale
Patient Comfort and Frequency of Sexual Activity scale

(Developed by Betty J. Fisher specifically for use in the dissertation entitled "The Effects of an Information/Counseling Session and Partner Participation in Treadmill Testing on Sexual Functioning Following Myocardial Infarction")

Please answer the following questions as accurately as possible.

Prior to your heart attack did you ever experience sexual difficulties? ___yes ___no
If so, did you seek treatment for the problem? ___yes ___no
What were the results of treatment? ____________________________

Are you currently experiencing any sexual difficulties? ___yes ___no
If yes, what type of problem?
___Not interested/No desire for sex
___Inability to achieve an erection or Inability to become aroused
___Inability to maintain an erection
___Inability to achieve orgasm
___Partner not willing
___Fear sexual activities too strenuous
___Other (please describe) ____________________________

How many days of the month prior to your heart attack were you and your partner together in the same living quarters? _______

Approximately how many times in the month prior to your heart attack did you engage in sexual activities? ______

How many days of the past month did you and your partner share living quarters? ___

Have you engaged in sexual activities since your heart attack? ___yes ___no
If yes, how often? ____________

What instructions did your physician give you regarding sexual activities? ______

______________________________

Do you experience any cardiac symptoms, e.g., chest pains or shortness of breath, during routine daily activities? ___yes ___no
If so, what medications are you taking to control these symptoms? ______

______________________________

Additional comments: ____________________________________

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Patient Comfort and Frequency of Sexual Activity Index - Continued

Please read and answer each item carefully. Some items request information about events prior to your heart attack. Answer as accurately as possible. DO NOT COMPARE YOUR RESPONSES WITH YOUR PARTNER.
(In the following questions the word "comfortable" means that you believed there was no physical danger, e.g., causing a heart attack, associated with these activities.)

1. Prior to your heart attack, how comfortable were you with hugging and holding?

   Extremely
   Comfortable
   Uncomfortable
   5 4 3 2 1

2. At that time, you engaged in hugging or holding approximately

   More than once a day More than once a week Rarely or never
   4 3 2 1 0

3. Prior to your heart attack, how comfortable were you with caressing and other non-genital stimulation?

   Extremely
   Uncomfortable
   Comfortable
   5 4 3 2 1

4. At that time you engaged in caressing or other non-genital stimulation almost

   Rarely or never More than once a week More than once a day
   0 1 2 3 4

5. Prior to your heart attack, how comfortable were you with manual stimulation of your genitals?

   Extremely
   Uncomfortable
   Comfortable
   1 2 3 4 5

6. At that time, you received manual stimulation of your genitals approximately

   More than once a day More than once a week Rarely or never
   4 3 2 1 0

7. Prior to your heart attack, how comfortable were you with slow, gentle intercourse?

   Extremely
   Uncomfortable
   Comfortable
   1 2 3 4 5
8. At that time, you engaged in slow, gentle intercourse approximately
   More than once a day More than once a week Rarely or never
   4   3   2   1   0

9. Prior to your heart attack, how comfortable were you with vigorous or passionate intercourse?
   Extremely Uncomfortable Extremely Comfortable
   1   2   3   4   5

10. At that time you engaged in vigorous or passionate intercourse approximately
    Rarely or never More than once a week More than once a day
    0   1   2   3   4

11. Since your heart attack, how comfortable are you with hugging and holding?
    Extremely Comfortable Extremely Uncomfortable
    5   4   3   2   1

12. Presently, you are hugging and holding each other approximately
    Rarely or never More than once a week More than once a day
    0   1   2   3   4

13. Since your heart attack, how comfortable are you with caressing and other non-genital stimulation?
    Extremely Comfortable Extremely Uncomfortable
    5   4   3   2   1

14. Presently, you are being caressed and receiving other non-genital stimulation approximately
    Rarely or never More than once a week More than once a day
    0   1   2   3   4

15. Since your heart attack, how comfortable are you with manual stimulation of your genitals?
    Extremely Comfortable Extremely Uncomfortable
    5   4   3   2   1

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Patient Comfort and Frequency of Sexual Activity Index - Continued

16. You are currently receiving manual stimulation of your genitals about
More than once a day More than once a week Rarely or never
4 3 2 1 0

17. Since your heart attack, how comfortable are you with slow, gentle intercourse?
Extremely Uncomfortable Extremely Comfortable
1 2 3 4 5

18. Currently, you and your partner engage in slow, gentle intercourse about
More than once a day More than once a week Rarely or never
4 3 2 1 0

19. Since your heart attack, how comfortable are you with vigorous or passionate intercourse?
Extremely Comfortable Extremely Uncomfortable
5 4 3 2 1

20. Currently, you and your partner engage in vigorous or passionate intercourse approximately
Rarely or never More than once a week More than once a day
0 1 2 3 4
Partner's Comfort and Frequency of Sexual Activity Index

(Developed by Betty J. Fisher specifically for use in the dissertation entitled "The Effects of an Information/Counseling Session and Partner Participation in Treadmill Testing on Sexual Functioning Following Myocardial Infarction")

Please answer the following questions as accurately as possible.

Prior to your partner's heart attack did you ever experience sexual difficulties?
   ___yes ___no  If so, did you seek treatment for the problem? ___yes ___no
   What were the results of treatment? ________________________________

Are you currently experiencing any sexual difficulties? ___yes ___no
   If yes, what type of problem?
      ____Not interested/No desire for sex
      ____Inability to achieve an erection or Inability to become aroused
      ____Inability to maintain an erection
      ____Inability to achieve orgasm
      ____Partner not willing
      ____Fear sexual activity too strenuous
      ____Other (please describe) ____________________________

How many days of the month prior to your partner's heart attack were you and your partner together in the same living quarters?_____

How many times in the month prior to your partner's heart attack did you engage in sexual activities?_____

How many days of the past month did you and your partner share living quarters?_____

Have you engaged in sexual activities since your partner's heart attack?
   ___yes ___no  If yes, approximately how often?_____

What instructions did your partner's physician give regarding sexual activities?
   ________________________________

Does your partner experience any cardiac symptoms, e.g., chest pains or shortness of breath, during routine daily activities?___yes ___no  If so, what medications is s/he taking to control these symptoms?______________________________

Additional comments:______________________________

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Partner's Comfort and Frequency of Sexual Activity Index - Continued

Please read and answer each item carefully. Some items request information about events prior to your partner's heart attack. Answer as accurately as possible. DO NOT COMPARE YOUR RESPONSES WITH YOUR PARTNER. (In the following questions the word "comfortable" means that you believed there was no physical danger, e.g., causing a heart attack, associated with these activities.)

1. Prior to your partner's heart attack, how comfortable were you with hugging and holding?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>3</td>
<td>4</td>
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<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

2. At that time, you engaged in hugging or holding

- More than once a day: 4
- More than once a week: 3
- Rarely or never: 2
- 1
- 0

3. Prior to your partner's heart attack, how comfortable were you with caressing and other non-genital stimulation?

<table>
<thead>
<tr>
<th>Extremely Comfortable</th>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

4. At that time you engaged in caressing or other non-genital stimulation

- Rarely or never: 0
- More than once a week: 1
- More than once a day: 2
- 3
- 4

5. Prior to your partner's heart attack, how comfortable were you manually stimulating your partner's genitals?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
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<td>3</td>
<td>4</td>
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</tbody>
</table>

6. At that time, you manually stimulated your partner's genitals

- More than once a day: 4
- More than once a week: 3
- Rarely or never: 2
- 1
- 0
7. Prior to your partner's heart attack, how comfortable were you with slow, gentle intercourse?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
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<tr>
<td>4</td>
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<tr>
<td>5</td>
</tr>
</tbody>
</table>

8. At that time, you engaged in slow, gentle intercourse

<table>
<thead>
<tr>
<th>More than once a day</th>
<th>More than once a week</th>
<th>Rarely or never</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

9. Prior to your partner's heart attack, how comfortable were you with vigorous or passionate intercourse?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
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<tr>
<td>4</td>
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<td>5</td>
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</tbody>
</table>

10. At that time you engaged in vigorous or passionate intercourse

<table>
<thead>
<tr>
<th>Rarely or never</th>
<th>More than once a week</th>
<th>More than once a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

11. Since your partner's heart attack, how comfortable are you with hugging and holding?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
</tr>
<tr>
<td>4</td>
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<td>3</td>
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<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

12. Presently, you are hugging and holding each other approximately

<table>
<thead>
<tr>
<th>Rarely or never</th>
<th>More than once a week</th>
<th>More than once a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>3</td>
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<td>4</td>
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</table>

13. Since your partner's heart attack, how comfortable are you caressing and providing other non-genital stimulation?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
</tr>
<tr>
<td>4</td>
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<td>3</td>
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<tr>
<td>2</td>
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<td>1</td>
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</tbody>
</table>

14. Presently, you are caressing and providing other non-genital stimulation

<table>
<thead>
<tr>
<th>Rarely or never</th>
<th>More than once a week</th>
<th>More than once a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
15. Since your partner's heart attack, how comfortable are you providing manual stimulation of his/her genitals?

<table>
<thead>
<tr>
<th>Extremely Comfortable</th>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
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</table>

16. You are currently providing manual stimulation of your partner's genitals

<table>
<thead>
<tr>
<th>More than once a day</th>
<th>More than once a week</th>
<th>Rarely or never</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

17. Since your partner's heart attack, how comfortable are you with slow, gentle intercourse?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
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</table>

18. Currently, you and your partner engage in slow, gentle intercourse

<table>
<thead>
<tr>
<th>More than once a day</th>
<th>More than once a week</th>
<th>Rarely or never</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
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</tbody>
</table>

19. Since your partner's heart attack, how comfortable are you with vigorous or passionate intercourse?

<table>
<thead>
<tr>
<th>Extremely Comfortable</th>
<th>Extremely Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
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</table>

20. Currently, you and your partner engage in vigorous or passionate intercourse

<table>
<thead>
<tr>
<th>Rarely or never</th>
<th>More than once a week</th>
<th>More than once a day</th>
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Appendix D

Consumer Satisfaction Form
Consumer Satisfaction Form

Please help us evaluate the usefulness of our treatment package by answering the following questions. We need your honest opinions whether they are positive or negative. Please respond to all items.

1. How would you rate the quality of the educational services you received?
   
   | Poor | 1 |
   | 2   |   |
   | 3   |   |
   | 4   |   |
   | Excellent | 5 |

2. Did the services you received help you and your partner cope with problems due to post-myocardial infarction changes?
   
   | Yes, a great deal | 5 |
   | 4   |   |
   | 3   |   |
   | 2   |   |
   | No, Not at all | 1 |

3. Do you think this educational package should be presented to all heart attack patients?
   
   | Definitely not | 1 |
   | 2   |   |
   | 3   |   |
   | 4   |   |
   | Yes, definitely | 5 |

4. Did the information you gained improve your sexual activities?
   
   | Yes, very much | 5 |
   | 4   |   |
   | 3   |   |
   | 2   |   |
   | No, things got worse | 1 |

5. Attending the educational session with only my partner present was a good way to get information on sexual activities.
   
   | Strongly disagree | 1 |
   | 2   |   |
   | 3   |   |
   | 4   |   |
   | Strongly Agree | 5 |

6. I would have been more comfortable getting this information with other couples present.
   
   | Strongly agree | 5 |
   | 4   |   |
   | 3   |   |
   | 2   |   |
   | Strongly Disagree | 1 |

7. The thing I disliked most about this research was ______________________

8. The thing I liked most about participating was ______________________
Appendix E

Recruitment Flyer
Heart Attack Patients Wanted

If you have been treated for symptoms of a heart attack within the last 3-9 months, you are invited to participate in a research project comparing the effects of different treatments on emotional responses and sexual activity in the weeks and months after a heart attack. You will be asked to fill out a several forms over a 3 month period and to attend an information session with your partner. Both you and your partner will also be asked to participate in treadmill exercise testing.

Your participation in this study will give you the opportunity to ask questions or discuss your concerns at length and may help other heart attack patients. Issues and concerns you wish to talk about will be treated confidentially.

If you are married or in a relationship which began prior to your heart attack and you and your partner are interested in knowing more about this study, call Betty Fisher at 667-6697 or 433-1283 after 5:00. If I am unavailable to take your call, please leave your first name and phone number and I will return your call to schedule a time to meet to go over the details of the study.
Appendix F

Letters of Information
University of Western Ontario

Letter of Information for Patient Participation in project entitled
"The Effects of an Information/Counseling Session and Partner Participation in Stress Testing on Sexual Functioning Following Myocardial Infarction"
Principal Investigator: Tony Iezzi, Ph.D., Clinical Psychologist
Student Investigator: Betty J. Fisher, M.A.

You are being invited to participate in a research project which is being conducted as part of the requirements for a Ph.D. or doctoral degree in Clinical Psychology. This study is examining sexual functioning following myocardial infarction (MI) or heart attack and the effects that different activities may have on sexual activity.

In order to participate you must 1) be in a heterosexual relationship which began prior to your heart attack, 2) not have angina nor Congestive Heart Failure 3) be between 12 and 36 weeks post-MI, 4) have a partner who wants to participate, 5) have your cardiologist or primary care physician provide a written release which will allow you to participate, and 6) be able to read English at a sixth-grade level.

Your involvement in this research will include completing several written forms every week for at least 3 weeks before receiving the information and undergoing treadmill testing and for 4 weeks after receiving that intervention (information session and treadmill testing). The forms will be filled out again at 8 weeks and 12 weeks after receiving the intervention. Several of these forms contain questions about specific sexual activities. Completing these forms will require about forty-five (45) minutes each time. You and your partner will be asked to attend one (1) ninety (90) minute information session and to undergo treadmill testing. The Treadmill exercise testing will be conducted at Victoria Hospital (London, Ontario). A qualified physician will be present during treadmill testing. The associated risks are those that apply to exercise testing in general. These risks may include muscle soreness, muscular straining, sprains, chest pain, nausea, dizziness, abnormal heart rhythms, heart attack or sudden death. The risk of having a heart attack or dying during treadmill testing is approximately 1 in 10,000. As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to you except as otherwise stated in this Letter of Information. You and your partner may be excluded from this study if any serious cardiac abnormalities are detected while undergoing stress testing.

By signing the consent form you give the researcher and her associates permission to use information about your heart attack from your medical records.
All information obtained during the course of this study will be confidential. Knowledge of your participation in this study will be limited to the student investigator and her assistants, your physician, and your partner. A code number will be assigned to you and used to identify all information used for analysis in this research. The master list which contains the codings will be destroyed after the data have been analyzed.

From your participation you can expect to gain a better understanding of how a myocardial infarction may influence sexual functioning. Your participation in this research is completely voluntary and free of charge. You may refuse to participate or withdraw from this study at any time with no effect on your future care.

If you have any questions or concerns at any time they may be directed to Betty Fisher, M.A. or Tony Iezzi, Ph.D. at (519) 667-6697 (Psychology Department at Victoria Hospital).
University of Western Ontario
Letter of Information for Partner Participation in project entitled
"The Effects of an Information/Counseling Session and Partner Participation in Stress Testing on Sexual Functioning Following Myocardial Infarction"
Principal Investigator: Tony Iezzi, Ph.D., Clinical Psychologist
Student Investigator: Betty J. Fisher, M.A.

You are being invited to participate in a research project which is being conducted as part of the requirements for a Ph.D. or doctoral degree in Clinical Psychology. This study is examining sexual functioning following myocardial infarction (MI) or heart attack and the effects that different activities may have on sexual activity.

In order to participate you must be in a heterosexual relationship which began prior to your partner's heart attack and must be able to read English at a sixth-grade level.

Your involvement in this research will include completing several written forms every week for at least 3 weeks before receiving the information and undergoing treadmill testing and for 4 weeks after receiving that intervention (information session and treadmill testing). The forms will be filled out again at 8 weeks and 12 weeks after receiving the intervention. Several of these forms contain questions about specific sexual activities. Completing these forms will require about forty-five (45) minutes each time. You and your partner will be asked to attend one (1) ninety (90) minute information session and to undergo treadmill testing. The Treadmill exercise testing will be conducted at Victoria Hospital (London, Ontario). A qualified physician will be present during treadmill testing. The associated risks are those that apply to exercise testing in general. These risks may include muscle soreness, muscular straining, sprains, chest pain, nausea, dizziness, abnormal heart rhythms, heart attack or sudden death. The risk of having a heart attack or dying during treadmill testing is approximately 1 in 10,000. As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to you except as otherwise stated in this Letter of Information. You and your partner may be excluded from this study if any serious cardiac abnormalities are detected while undergoing stress testing.

All information obtained during the course of this study will be confidential. Knowledge of your participation in this study will be limited to the student investigator and her assistants, your physician, and your partner. A code number will be assigned to you and used to identify all information used for analysis in this research. The master list which contains the codings will be destroyed after the data have been analyzed.
From your participation you can expect to gain a better understanding of how a myocardial infarction may influence sexual functioning. Your participation in this research is completely voluntary and free of charge. You may refuse to participate or withdraw from this study at any time with no effect on your partner's future care.

If you have any questions or concerns at any time they may be directed to Betty Fisher, M.A. or Tony Iezzi, Ph.D. at (519) 667-6697 (Psychology Department at Victoria Hospital).
Appendix G

Informed Consents
Patient Consent Form

for

"The Effects of an Information/Counseling Session and Partner Participation in Stress Testing on Sexual Functioning Following Myocardial Infarction"

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions regarding this study have been answered to my satisfaction.

Participant signature _________________________ Date ______________

Witness signature _________________________ Date ______________
Partner Consent Form
for
"The Effects of an Information/Counseling Session and Partner Participation in Stress Testing on Sexual Functioning Following Myocardial Infarction"

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions regarding this study have been answered to my satisfaction.

Participant signature _________________________ Date ________________

Witness signature _________________________ Date ________________
Appendix H

Human Subjects Institutional Review Board Approval Forms
Date: July 14, 1994
To: Fisher, Betty J.
From: Richard Wright, Interim Chair
Re: Old HSIRB Project Number 94-09-18 (92-12-26)
New HSIRB Project Number 95-07-04

This letter will serve as confirmation that an extension to your research project entitled "The effects of an information/counseling session and partner participation in stress testing on sexual functioning following myocardial infarction" has been granted by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now continue to implement the research as described in the original application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the continued pursuit of your research goals.

Approval Termination: July 14, 1996

cc: Spates, PSY
REVIEW BOARD FOR HEALTH SCIENCES RESEARCH INVOLVING HUMAN SUBJECTS

1994-95 CERTIFICATION OF APPROVAL OF HUMAN RESEARCH

ALL HEALTH SCIENCES RESEARCH INVOLVING HUMAN SUBJECTS AT THE UNIVERSITY OF WESTERN ONTARIO IS CARRIED OUT IN COMPLIANCE WITH THE MEDICAL RESEARCH COUNCIL OF CANADA "GUIDELINES ON RESEARCH INVOLVING HUMAN SUBJECT".

1994-95 REVIEW BOARD MEMBERSHIP

1) Dr. B. Borwein, Assistant Dean - Research - Medicine (Chairman) (Anatomy/Ophthalmology)
2) Ms. S. Hoddinott, Assistant Director of Research Services (Epidemiology)
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14) Dr. S. Hill, Faculty of Kinesiology Representative (Kinesiology)
15) Dr. C.G. Ellis, Research Institutes Representative (Medical Biophysics)
16) Mrs. R. Yohnicki, Administrative Officer

Alternates are appointed for each member.

THE REVIEW BOARD HAS EXAMINED THE RESEARCH PROJECT ENTITLED:
"The effects of an information/counseling session and partner participation in stress testing on sexual functioning following myocardial infarction."

REVIEW NO.: 4823

AS SUBMITTED BY: Dr. T. Iezzi (B.J. Fisher), Psychology, Victoria Hospital

AND CONSIDERS IT TO BE ACCEPTABLE ON ETHICAL GROUNDS FOR RESEARCH INVOLVING HUMAN SUBJECTS UNDER CONDITIONS OF THE UNIVERSITY'S POLICY ON RESEARCH INVOLVING HUMAN SUBJECTS.

APPROVAL DATE: 26 June 1995

AGENCY: C.C. Hospital Administration

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PROJECT TITLE: The effects of an information/counselling session and partner participation in stress testing on sexual functioning following myocardial infarction.

PRINCIPAL INVESTIGATOR: Dr. Tony Iezzi/Betty Fisher

DATE OF REVIEW BY CRIC: September 13, 1995

HEALTH REVIEW BOARD NO. 4823

Please be advised that the above project was reviewed by the Clinical Research Impact Committee and the project:

- Was approved

- Needs further clarification (see following comments - page 2)

PLEASE INFORM THE APPROPRIATE NURSING UNITS, LABORATORIES ETC. BEFORE STARTING THIS PROTOCOL. THE RESEARCH OFFICE NUMBER MUST BE USED WHEN COMMUNICATING WITH THESE AREAS

Dr. Joseph J. Gilbert
Chairman
Clinical Research Impact Committee

All future correspondence concerning this study should include the Research Office Review Number and should be directed to: Jan Challis, Research Office, Room C210, Nurses Residence, South Street Campus
Appendix I

Physician's Release Form for Participation in Research
University of Western Ontario  
(Protocol #4823)  
Victoria Hospital Clinical Research Impact Committee  
(#R-95-035)

Physician's Release Form for Patient Participation in project entitled
"The Effects of an Information/Counseling Session and Partner Participation in Stress Testing on Sexual Functioning Following Myocardial Infarction"

Principal Investigator: Tony Iezzi, Ph.D., Clinical Psychologist  
Student Investigator: Betty J. Fisher, M.A.

I have examined my patient ________________________________ and 
found no conditions which would prevent him/her from engaging in sexual activities (including intercourse) or participating in the treadmill stress testing conducted by a qualified physician at Victoria Hospital as a component of the dissertation research conducted by Betty Fisher, M.A. Permission is hereby granted for my patient to participate in this research.

Signed ________________________________, M.D.

Date ________________________________
Appendix J

Instructions for Preparing for Stress Testing
PATIENT INSTRUCTIONS FOR EXERCISE TESTING

NAME: _____________________________________________________________________

DATE of TEST: ______________________________ TIME: ________________________

LOCATION of APPOINTMENT: CARDIAC FITNESS INSTITUTE (see map on back)

If for business or personal reasons, you have to change your appointment, please try to give us AT LEAST 2 DAYS NOTICE. We can be reached at (519) 685-6372.

Please bring your Ontario Health Card and Victoria Hospital Card with you.

1. DIET
   Please do not eat a meal within two hours of the scheduled test time.

2. SMOKING and STIMULANTS
   Coffee, tea, nicotine and alcohol should not be taken within two hours of the test. If necessary non-caffeinated beverages are okay.

3. PRELIMINARY REST
   Do not exercise on the day of your test, either prior to or afterwards. If you are already in the program, this test will count as your exercise segment for that day.

4. DON'T RUSH THE CLOCK
   Avoid unusual stresses (either physical or psychological) prior to arriving for the test. Allow adequate time to meet your test appointment time.

5. MEDICATION
   If you are on any medication, please TAKE IT AS USUAL unless otherwise informed by the physician or staff here at the institute. Also bring a list of your medications with you so that we may keep your files up to date.

6. CLOTHING
   Footwear appropriate for walking or running is essential. Slippers or sandals are not permitted. Men should wear gym shorts, track pants or loose-fitting light trousers. Women should wear shorts, track pants or loose-fitting slacks. No one-piece undergarments may be worn during the test.

7. TEST DURATION
   The actual amount of time on the treadmill or bicycle will likely only be a matter of minutes. Please allow time for changing (if required), weighing and measuring, equipment adjustments, ECG preparation, history taking, as well as discussion with the Doctor. Allow a total time of approximately 45 minutes.

8. COMMENTS
   The above protocol is designed to ensure your well-being during the test and to standardize the test results. The test will evaluate your response to exercise. There is no reason to be anxious about it.
PATIENT INSTRUCTIONS FOR EXERCISE TESTING

NAME ___________________________ DATE OF TEST ___________________________ TIME OF APPOINTMENT ___________________________

LOCATION OF APPOINTMENT: CARDIAC FITNESS INSTITUTE (See map on back.)

If for business or personal reasons, you have to change your appointment, please try to give us AT LEAST 2 DAYS NOTICE. We can be reached at Victoria Hospital, (519) 685-8372.

Please bring your Ontario Health card and Victoria Hospital card.

1. DIET
   Please DO NOT eat a meal within two hours of the scheduled test time.

2. SMOKING AND STIMULANTS
   Coffee, tea, nicotine, and alcohol should not be taken within two hours of the test. If necessary, “bland” drinks are okay.

3. PRELIMINARY REST
   Do not exercise on the day of your test, either prior to or afterwards. If you are already in the program, the test will count as your exercise segment for that day.

4. DON’T RUSH THE CLOCK
   Avoid unusual stresses (either physical or mental) prior to arriving for the test. Allow adequate time to meet your test appointment time.

5. MEDICATION
   If you are on any medication, please CHECK WITH YOUR PHYSICIAN CONCERNING WHICH MEDICATIONS TO STOP PRIOR TO THE TEST. Also bring a list of your medications with you so that we may complete our file.

6. CLOTHING
   Footwear appropriate for walking or running is essential. Slippers are not permitted.
   Men should wear gym shorts, bermuda shorts or a pair of loose-fitting light trousers.
   Women should have shorts, or loose-fitting slacks. No one-piece undergarments may be worn during the test.

7. TEST DURATION
   The actual amount of time on the bicycle or treadmill will likely be only a matter of minutes. Please allow time for changing (if required), a 12-lead ECG preparation, adjustment of equipment, weighing and measuring. Allow a total time of approximately 45 to 60 minutes.

8. COMMENTS
   The above protocol is designed to ensure your well-being during the test and to standardize the test results.
   The test will evaluate your response to exercise. There is no reason to be anxious about it.

A service, teaching and research hospital affiliated with The University of Western Ontario.
Appendix K

Life After a Heart Attack: Information for the Post-MI Couple
LIFE AFTER A HEART ATTACK: INFORMATION
FOR THE POST-MI COUPLE

Counseling session conducted by Betty Fisher, Ph.D. Candidate, Clinical Psychology
Victoria Hospital, London, Ontario
1995/96
I. Introduction and Outline of session

1. What was experience like?
   a. When, where, how bad, hospitalization?
   b. After discharge from hospital?
   c. Previous experience with heart attack/serious medical conditions?

2. Typical emotional/psychological responses to MI (Patient & Spouse)

3. Research-effects of partner support and relationship on recovery

4. How much work does sexual activity require?

5. General safety of sexual intercourse following MI.

6. When and how can most people resume sexual intercourse following heart attack? (Dos and Don'ts for safe and healthy sex following an MI.)

7. Apparent benefits of exercise

8. Concluding remarks

II. Information regarding the emotional and psychological impact of a MI

A. Typical Emotional Responses to suffering a MI

   1. Anxiety and Fear—a heart attack is a very serious event which causes one to face his/her own mortality and lack of control. This is a healthy response to a life-threatening event. Mild levels of anxiety may prompt an individual to take actions to improve health behaviors as a means of feeling control over his/her life. When fear prevents the resumption of previously normal activities or prohibits efforts to regain health, it is a problem. Fear does tend to decrease over time. If fears persist, counseling may help you to face fears (cope with them).

   2. Depression—again, initially an emotionally healthy response to a serious event. Patients may need to mourn or grieve over the loss of part of themselves, i.e., heart tissue, or a view of themselves, e.g., healthy, or loss of sense of control. Patients
may feel "damaged" or of decreased value. If depression continues do not hesitate to seek counseling. Depression is expressed in a variety of ways. Sometimes a family member may notice the person is not eating or sleeping normally. Other times the person may feel sad and/or cry. All of the following can be signs that a person is depressed.

a. Irritability—even slight annoyances or things that, in the past, would not have affected the person may now lead to angry outbursts.

b. Sadness - tearfulness or does not laugh or smile

c. Lack of interest in previous leisure activities

d. Fatigue or generally not feeling like completing any tasks.

4. Frustration—the combined effect of emotional turmoil following a MI and changes to your lifestyle may lead to frustration. Dramatic or large changes are never easy and when these changes are unexpectedly forced on someone the change can be even more difficult. The first few weeks following a MI are generally the worst since this is when physical activities are limited and your body is recovering.

5. Denial of the seriousness of this event—occasionally an individual will attempt an immediate return to pre-MI activities and seem overly cheerful given s/he has experienced a life-threatening event.

B. Typical emotional responses of cardiac patient's partner

1. Guilt—it is not unusual for partners to feel they may have played some role in causing the MI or that they have in some way failed to do enough following the patient's discharge.

2. Hostility—Again, it is not unusual for partners to experience feelings of anger toward the patient. As irrational as this may seem, the patient's MI has forced a dramatic change on the partner's life also. The partner may have to assume duties that
s/he has never had to carry out before. Unexpected dramatic changes may lead to unexpected emotional responses which are not easily explained. Accepting these responses, mending the hurt they cause, and moving on are necessary for a healthy relationship.

3. Fear and Anxiety—These are healthy emotional responses to an event which threatened the life of a loved one. In addition to the threat of loss this poses, it may also force the partner to face his/her own mortality—something which causes some degree of fear in most people. The partner may, like the patient, fear that life will not return to "normal" or that placing demands on the patient may lead to another MI or death.

4. Depression—The partner may feel a loss in that the MI patient is changed, the relationship may change or terminate as a result of the MI. The partner may also experience loss in that the patient may not be able to provide the emotional support, the financial support, or may not be able to engage in activities they once enjoyed as a couple (at least in the first few weeks).

5. Frustration—As with the patient, the partner has been plunged into emotional turmoil and adjusting to new roles and responsibilities added to old ones may cause much strain.

C. Impact of Marital relationship on recovery.

1. Detrimental impact—the following are linked to increased relationship tensions and have been shown to be related to poorer recovery.

   a. Failure to communicate fears and feelings prevents partner from providing support.
b. Strains caused by role changes—partners who are overprotective foster dependency in the patient and may increase the patient's loss of self-worth. Many people find it difficult to be dependent on someone else.

c. Difficulties caused by disagreement over physician's instructions or lack of understanding of heart disease.

d. Emotional responses of both partners produce increased tension and anxiety. Approximately 75% of couple have marital conflict in 1st 3 months following MI. Increased anxiety in the partner have been linked to increased fears in the patient. Which makes it important that both partners express their feelings and acknowledge what the other is experiencing.

2. Positive impact of good relationship—the following relationship qualities have been linked to fewer psychological problems (which generally leads to better or quicker recovery).

   a. Higher levels of marital satisfaction associated with lower levels of anxiety.

   b. Perception that spouse providing emotional support linked to less depression and good recovery.

   c. Spousal comfort with sexual activity related to better recovery, i.e., fewer rehospitalizations for cardiac symptoms, return to work sooner, fewer E.R. visits for cardiac symptoms.

III. Information specific to sexual activity post-MI

   A. Common beliefs regarding sexual intercourse following MI

      1. Sex will never be the same as it was

      2. Sex is dangerous (because it is too strenuous).

         a. Sex will cause angina (chest pain).
b. Sex causes irregular heart beat.

c. Sex will cause another heart attack.

d. Sex will cause sudden death.

B. Estimated energy requirements of sexual intercourse

1. Approximately 4.7 METs at orgasm and, on average, 3.4 METs during foreplay and resolution phases. Has been stated to be "equivalent to climbing 2 flights of stairs or walking briskly..."

*Average maximum heart rate was 117 bpm with heart rate returning to normal within one minute following orgasm.

2. The "2-flights of stairs" estimate of work required has been clarified. Two fights is twenty steps-10 steps, a landing, and 10 more steps, between two floors. The pace at which this must be completed is 2 steps per second.

3. Other activities which require 6-7 METs. If activities of this level can be performed, then should have little difficulty with sexual intercourse. 1) Double master step-test, 2) level 2 of Bruce Treadmill test, 3) 600-750 kpn on cycle ergometer, 4) walking 3 mph on 10% grade, 5) walking 4-5 mph on level, 6) cross country hiking, 7) square dancing, 8) cross-country skiing 4 mph on level, or 9) carrying 50-60 lbs. while walking 3 mph.

4. Peak coital heart rate averaged 127 bpm prior to training and decreased to 120 bpm (average) following 16 weeks of cycle ergometer training.

5. Other study: mean peak coital heart rate of 107.8. Some individuals develop irregular heart beat or other cardiac abnormalities more frequently during sexual activity. Some sexual practices, e.g., anal intercourse, may increase the probability of developing an irregular heart beat during sex.

B. General Safety of Sexual Activities Following MI
1. Study from Japan showing that of 5,559 only 34 occurred during sexual activity and 30 of these individuals were engaged in sex with someone other than their spouse, in unfamiliar surroundings, with a partner an average of 18 years younger than the deceased, and the deceased had high blood alcohol levels.

Other activities carry much greater risk than sexual activity.

2. 1 in 10,000 deaths during treadmill exercise testing.

3. Others- 30% of coronary occlusions occurred at rest, 23% during sleep, and 8.7% during moderate physical activity including sexual intercourse. Only 2% of coronary occlusions are associated with unusual exertion. Only 2% of one's daily activity is strenuous and 33-50% of day requires mild to moderate energy. The probability of incurring a MI during sex is quite low.

C. When and how to resume sexual activities or The Dos and Don'ts of safe healthy sex following MI

1. When is it okay to have sex? The following information is provided only as a guideline. You should always discuss this with your physician.
   a. A survey of 21 cardiac rehab experts in 1991 suggested 3 weeks post-MI is generally safe to resume intercourse with spouse; 6 weeks for sex with new partner.
   b. Others suggest 4 weeks - by the 4th week of cardiac rehab most pts. are climbing 2 flights of stairs without difficulty or are, in other words, physically capable of performing sexual intercourse.
   c. There are many non-coital sexual activities which are safe and encouraged shortly after MI. Hugging, kissing, non-genital massage, and cuddling are activities which are frequently overlooked safe "sexual" activities which can bring comfort, pleasure, and may speed recovery.
d. If either you or your partner has reservations, do not pressure the unwilling partner, rather discuss the fears or issues which are causing the hesitation. Sex with an anxious, fearful, or unwilling partner may produce long-lasting difficulties. It is not unusual for MI patients and their partners to lack interest in sex for a period of time following this life-threatening event. It is a low priority for many couples at that time.

2. Recommendations for safe healthy sexual activities post-MI

a. Begin with general demonstrations of affection: hugging, kissing, cuddling, and non-genital massage.

b. "Retrace" dating steps: become re-acquainted with your partner's body slowly and gradually before "going all the way", i.e., engaging in intercourse. Plan to spend approximately 30 min. 3x's/week providing and receiving massage and touching to become re-acquainted with the pleasures associated with these activities.

c. Gradually increase the level of arousal reached during periods of sexual activity. Masturbation may be a good way to resume orgasmic activities if you are comfortable with this activity. Masturbation produces less increase in heart rate than sex with a partner. Mutual masturbation may be an acceptable alternative for those uncomfortable with solitary activity.

d. When you are ready to resume intercourse (determined by physician's assessment of your physical recovery, your emotional readiness, and your partner's emotional readiness) take the following precautions:

**Be well rested prior to sexual activity and allow plenty of time for activity.

**Avoid sex for approximately 3 hours following a heavy meal or alcohol consumption. Digesting food requires a good blood supply to the stomach.
and will increase demands on the heart if other activities requiring blood in other parts of the body are attempted before the meal is digested. Alcohol is a central nervous system depressant and may adversely affect performance. Additionally, alcohol causes blood vessels to dilate and the heart rate to increase.

**Resume activities in familiar surroundings.**

**Make sure room temperature is comfortable—too hot or too cold will place additional strain on cardiovascular system.**

**Do have sex with your spouse or a familiar partner.** Sex with a new or unfamiliar partner may produce larger increases in heart rate than sex with your usual or familiar partner. One report of a patient having sex with mistress produced a heart rate increase from 96 - 150 bpm. Later, sex with wife produced h.r. increase from 72 - 92 bpm.

**Do engage in foreplay—give your heart a chance to warm up.**

**Using familiar positions (which don't require acrobatics!) are generally less stressful than trying new positions and there is no evidence to support claims of smaller increases in heart rate and systolic blood pressure with various position. If, however, you find your old positions require too much work try positions which are less demanding for the patient, e.g., side-by-side.**

**Discuss sexual problems with your partner.** Is s/he comfortable engaging in sexual intercourse? Are you comfortable? What changes are needed to make each of you comfortable?

e. **If you have sexual problems discuss them with your physician.** If his/her assistance does not resolve the problem seek specialists in the area of sexual functioning.
3. Cardiac symptoms during sexual activity

a. If you develop angina (chest pain) during intercourse—tell your partner and stop. Take nitroglycerin or other meds as your physician has instructed—discuss with your physician, you may be instructed to take medication prior to subsequent sexual activity.

b. Other symptoms which persist longer than 5 min. call physician. If symptoms subside, resume if you wish. However, if symptoms reappear, stop and do not resume sexual activity for rest of day and discuss these symptoms with your physician.

c. An increase in breathing rate normally occurs as arousal increases—do not be alarmed by quickening of breath.

d. An increased heart rate is also associated with arousal and no cause for alarm. If, however, your heart rate does not return to a much slower rate within 5-10 min. following orgasm you should inform your physician.

e. Feeling your heart beat as a throbbing in head or chest is not unusual during sex but you may be more sensitive to it since your MI.

f. Do not be alarmed if symptoms appear after orgasm (during resolution phase) but if they last longer than 5-10 minutes you should notify your physician.

4. Is there a relationship between exercise and sexual ability?

a. Some evidence that improved cardiovascular fitness leads to decreased maximum heart rate

b. Some report no significant change in frequency or quality of sex after exercise program but one study found 67% of those who reported cardiac
symptoms prior to exercise program reported fewer or no symptoms following exercise program and absence or reduced intensity of symptoms may improve comfort.

c. Sexual functioning does not appear related to severity of heart attack or work capacity, i.e., fitness level, but regular exercise does appear to improve psychological functioning which is, in turn, related to improved sexual functioning. In general, it appears that a more efficient heart is less likely to be symptomatic and those who exercise may experience psychological benefits which affect many areas of functioning.

IV. Conclusions—Several studies showed that many "cardiac couples" resume sexual activity without any difficulty. A few couples have reported an improvement in their sex lives. A number of studies also found that the majority of couples experience some degree of anxiety about resuming sexual activities—this is not unusual nor cause for concern unless it creates friction in the relationship.

A. Is sexual intercourse safe for you?

B. Is it okay not to want sex?

C. Discussion of concerns is important
   
   1. Talk to your partner
   
   2. Talk to other cardiac couples
   
   3. Talk to your physician
   
   4. Seek assistance from other professionals, if necessary
Bibliography
Additional Information for Cardiac Couples

Heartmates: A survival Guide For the Cardiac Spouse  Rhoda Levin, M.S.W.
(1989)  Pocket Books: Toronto

Additional materials available from: Heartmates
P.O. Box 16202
Minneapolis, Minnesota  55416

The Cooper Clinic Cardiac Rehabilitation Program  Neil F. Gordon, M.D. and Larry

There's Life After a Heart Attack  Jim Castelli  (1992) Prima Publishing, P.O.
Box 1260CASP, Rocklin, California  95677

Dr. Dean Ornish's Program For Reversing Heart Disease  Dean Ornish, M.D.

For Better or Worse: A Couple's Guide to Dealing With Chronic Illness  Beverly
Kievman with Susie Blackmun  (1989) Beaverbooks, Ltd., 195 Allstate
Parkway, Valleywood Business Park, Markham, Ontario L3R 4T8
BIBLIOGRAPHY


