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POST-PREGNANCY FUNCTIONAL ABILITY

By

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THESIS

Submitted to the Department of Physical Therapy
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1998

POST-PREGNANCY FUNCTIONAL ABILITY

ABSTRACT

The purpose of this study was to examine perceived changes in functional ability among three groups of women: women who have never been pregnant, women six to seven weeks postpartum, and women six to eight months postpartum. Secondary to the paucity of literature pertaining to physical therapy and pregnancy, the authors chose a qualitative design for this study. Thirteen Caucasian women participated in open-ended audiotaped interviews. Audiotapes were transcribed, then data was thoroughly analyzed. Responses were organized into categories and themes discovered between different categories were outlined. The major themes impacting functional ability were psychosocial and physical in nature. Although interesting themes emerged, only minimal declines in perceived functional ability were reported.

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PREFACE

Definition of Terms

Activities of daily living (ADL): 1. Classified as a part of physical function. 2. Day to day activities common to almost everyone (Scully and Barnes, 1989, p.629).

Extension moment: Product of force and displacement from any point to the action line of force directed anterior to the joint (LeVeau, 1992, p. 309).

Function: 1. Refers to the action of a body part .2. Refers to the ability to perform ADLs. 3. Refers to a person's performance in all aspects of life, which is subdivided into: physical, mental, emotional and social function (Scully and Barnes, 1989, p.629).

Functional ability: "Resumption of household, social and community, and occupational activities, and assumption of infant care responsibilities" (Tulman and Fawcett, 1988, p. 77) at a quality equal to or greater than that of a pre-pregnancy level.

Lumbar lordosis: The curve in the lumbar region of the vertebral column with an anterior convexity (Norkin & Levangie, 1992, p. 127).

Moderate aerobic activity: "Caution with high impact activity, such as running." Activity lasting approximately fifteen minutes and a recommended intensity of heart rate no greater than 140 beats per minute (American College of Obstetricians and Gynecologists, 1985).

Musculoskeletal: Pertaining to or comprising the skeleton and the muscles (Arey, Burrows, Greenhill, and Hewitt, 1957, p. 879).

Neuromuscular: Pertaining to nerves and muscles (Arey, Burrows, Greenhill, and Hewitt, 1957, p. 916).

Nulliparous: Having never given birth to a viable infant (Arey, Burrows, Greenhill, and Hewitt, 1957, p. 932).

Primiparous: Bearing or having born but one child (Arey, Burrows, Greenhill, and Hewitt, 1957, p.1105).

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CHAPTER 1: INTRODUCTION

Pregnancy is a condition that causes many changes in a woman's body and life. Hormonal changes, in conjunction with the growth and development of the fetus, cause a cascading effect of physical and psychosocial changes that impact women's functional ability in a variety of ways, both during and after childbirth. For the purposes of this study, physical changes will be limited to a discussion of postural adaptations and back pain. Psychosocial changes include fatigue, depression, heightened sensitivity to body image, and role identification. Together, these changes impact functional ability after childbirth.

Functional ability after childbirth is defined as "the resumption of household, social and community, and occupational activities and assumption of infant care responsibilities" (Tulman & Fawcett, 1988, pg. 77) at a quality equal to or greater than that of a pre-pregnancy level. Physical therapy intervention is an appropriate form of treatment for women who have difficulty returning to their prior level of functional ability secondary to the physical changes that occur throughout pregnancy. Physical therapy expertise encompasses many techniques for treatment and the knowledge for education regarding how to change and/or manage the musculoskeletal effects of pregnancy. The authors of this study, along with Tulman & Fawcett (1988),

acknowledge a paucity of literature which delves into the field of physical therapy intervention in relation to women's health, specifically, in education and intervention throughout pregnancy and the postpartum in order for a woman to resume her pre-pregnancy function.

Tulman and Fawcett have written several articles regarding postpartum functional status; however, their research is focused on the nursing care approach to function. In addition, their studies focus on current functional status, not the woman's perceived functional ability. Several studies exist that address factors impacting functional ability, such as low back pain and effects of exercise; (Uzendoski, 1990, Ostgaard, 1994, Ostgaard, 1991, Diakow, 1991) however, no literature has been found by the researchers concerning postpartum functional ability in the context of physical therapy intervention.

The purpose of this grounded theory study is to examine perceived changes in functional ability among three groups of women: 1) nulliparous women; 2) women six to eight weeks postpartum; and 3) women six to seven months postpartum. In doing so, the researchers hope to demonstrate a need for further studies regarding postpartum physical therapy intervention. Additionally, the researchers hope this study will provide further rationale for the existence of physical therapy in women's health practice.

CHAPTER 2: LITERATURE REVIEW

The physical changes for the purposes of this study are postural adaptations and back pain. These physical changes which a woman experiences as a result of pregnancy and childbirth are well-documented; however, "actual research studies have been limited to studies of transcutaneous electrical nerve stimulation (TENS) use in labor and delivery and other attempts to apply standard physical therapy modalities to the pregnant patient," (O'Connor and Gourley, 1990, p.306). A limited amount of research has been focused on the return of prior functional ability after pregnancy. Functional ability, as defined by Tulman and Fawcett (1988), is "the resumption of household, social and community, and occupational activities and assumption of infant care activities" (p.77). The literature review will discuss changes and complaints affecting functional ability of postpartum women; specifically the secondary effects of hormonal changes, and fetal growth and development. Physical fitness throughout pregnancy will also be addressed. In addition, the impact of physical therapy intervention on postpartum functional ability will be discussed throughout the review.

Many changes occur in the body during pregnancy. Hormonal changes plus fetal growth and development impact the functional ability of the mother during and after pregnancy. These changes cause secondary effects of pregnancy which include joint laxity, postural changes, muscle imbalances, low back pain, changes in functional ability,

and psychosocial changes (Ostgaard, HC Anderson, Schultz & Miller, 1993). Following will be a discussion of the secondary effects of hormonal changes, fetal growth and development, psychosocial changes, exercise, and the role of the physical therapist in treating the effects of pregnancy.

Secondary Effect of Hormonal Changes

A secondary effect of hormonal changes to the musculoskeletal system is increased joint laxity due to the effects of relaxin. Progesterone and relaxin soften and relax pelvic and sacroiliac ligaments in the final stage of pregnancy. This softening of supporting ligaments aids in increasing pelvic capacity for childbirth, but also causes the pelvis to become unstable and more prone to injury (Jacobsen, H. 1991; Vullo, 1996; Heckman, Sassard, 1994; DonTigny, 1985). "Hormonal influence on the ligaments is profound producing a systemic decrease in ligamentous tensile strength and an increase in mobility of structures supported by ligaments.....ligamentous laxity may lead to hypermobility in the joints resulting in joint injury especially in the weight bearing joints in the back, pelvis and lower extremities." (Kisner and Colby, 1990, p.553). Increased relaxin levels in the bloodstream have been correlated with pregnancy related pelvic pain (Vullo, 1996). Therefore, it is possible that ligamentous laxity may also lead to low back pain. In addition to inadvertently causing pain, joint laxity may also affect biomechanical efficiency, possibly resulting in altered functional levels (Norkin and Levangie, 1992).

Secondary Effects of Fetal Growth and Development

Secondary effects of fetal growth and development are numerous. Included are postural changes, muscle weakness, gait deviations, low back pain, and respiratory changes. Multiple postural changes develop as a secondary effect of the hormonal changes that occur during pregnancy. One of these postural changes is shoulder malalignment. As breast size increases, compensatory reactions to the shoulder malalignment include increased cervical lordosis, hyperextension of the upper cervical column, flexion of the lower cervical column, and forward head posture. These biomechanical responses have the potential to impinge the brachial plexus and cause neurological problems, such as numbness and weakness in the upper extremities (Maldonado, 1995, p. 204).

At week fourteen of gestation, the mother's abdomen begins to protrude. From this point until delivery, the girth of her abdomen continues to expand. Between weeks fourteen and forty, the woman gains a minimum of fifteen to twenty-two pounds (Bobak, I.M., 1993). Abdominal distention and increased weight causes the center of gravity to shift forward and upward. This results in several compensatory mechanisms that work together to bring the center of gravity to a more posterior position. These mechanisms include: increased lumbar lordosis, knee hyperextension, and weight shift over the heels (Bobak, I.M., 1993; Otman, et. al., 1989; Heckman, 1994). The increase in lumbar lordosis counteracts the increased load anterior to the spine. Hyperextension of the knee results from both the

increased serum relaxin levels and from the line of gravity moving anterior to the knee joint creating an extension moment, or hyperextension (Vullo, 1996, p.64; Kisner and Colby, 1990). Weight shift over the heels is another compensatory mechanism that aids in bringing the line of gravity over the base of support, or the feet. "The gravid uterus and the compensatory lordosis it causes create a tremendous mechanical burden on the lower back" (Heckman, 1994, p. 1720). The resulting force placed on the woman's lower back from the abdominal distention is "equivalent to loads imposed on a non-pregnant woman who carried her trunk continuously flexed forward by 22.3 degrees" (Ostgaard, et. al., 1993, p.63). Thus, it should not be a surprise that many pregnant and postpartum women experience low back pain.

Low back pain (LBP) is a common complaint among pregnant and postpartum women. Research indicates forty-nine to fifty-eight percent of pregnant women report LBP during pregnancy (Orvieto, et al., 1994 p. 212). Ostgaard, et. al. (1991) found that forty-two percent of women with back pain during pregnancy report back pain persisting six months into the postpartum period and thirty-seven percent report back pain persisting eighteen months into the postpartum period. The primary risk factor in developing low back pain (LBP) during pregnancy is change in abdominal sagittal diameter. From the twelfth to thirty-sixth week of pregnancy, sagittal diameter increases fifty-five percent (Ostgaard, et. al., 1993). Four mechanisms have been proposed as contributory to the pathogenesis of LBP during pregnancy: (1) Pressure of the fetus on

lumbosacral nerve roots, (2) Strained spinal antigavity muscles secondary to inefficient functioning of anterior abdominal wall muscles, (3) increased lumbar lordosis secondary to increased size of the uterus and its contents in a relatively short time during pregnancy and (4) ligament laxity (Orvieto, et. al, 1994). Pressure of the fetus on lumbosacral nerve roots would cause referred pain to the low back, sacroiliac joint and lower extremities. In addition, the distention of the abdomen during pregnancy causes the continuity of the abdominal wall to be disrupted, resulting in a split of the rectus abdominis muscle vertically along the linea alba. This pathology, referred to as diastasis recti, is known to occur to varying degrees in 100 percent of pregnancies (Bursch, 1987). As a result, ability of the rectus abdominis to control the pelvis and lumbar spine may be inhibited, which in turn may give rise to low back pain (Kisner and Colby, 1990). According to Gilleard and Brown (1996), "Pelvic stabilization is compromised by the third trimester until at least eight weeks postbirth due to structural changes in abdominal muscles and decreased strength (p.750).

Lumbar lordosis increases due to the relatively rapid increase in size and weight of the uterus and its contents during pregnancy. As the abdomen protrudes forward, the lower spine is pulled forward. The woman then throws her shoulders back and holds her head forward to compensate for the changes in her center of gravity. These postural adjustments may cause backaches and tension headaches (Foundation for Chiropractic Education and Research, 1996).

Other factors may contribute to LBP, but research is inconclusive. For example, epidural anesthesia has been thought to cause LBP, but research does not implicate it as being a significant factor (MacArthur, et. al., 1995). Sufficient prospective evidence linking backache with a particular type of pain relief in labor has not been found (Russell, et. al., 1996). Controversy exists over factors such as height and obesity, occupations involving sit-to-stand or those involving moderately heavy work, and past use of oral contraceptives. Trends have been observed in these areas, but there is a lack of statistical evidence (Mantle, et. al., 1981; Ostgaard, Andersson, 1991). The effects of age in the development of LBP during pregnancy have been inconclusive, with some research claiming that an increase in age results in a higher incidence of LBP and others showing younger women having a higher incidence of LBP during pregnancy (Breen, et. al., 1994; Mantle, 1977; Heckman, Sassard, 1994). Nonetheless, multiparity, previous history of LBP, psychological and physiological work factors have been associated with increased incidence of postpartum low back pain (Ostgaard, Andersson, 1991; Ostgaard, Andersson, 1992; Mantle et. al., 1981).

Fatigue seems to be a major factor in the return of functional ability. Hanrahan and Deblois (1995) define fatigue as a “subjective feeling of tiredness varying in intensity, duration, and sensory and affective characteristics” (p. 55). They found approximately fifty percent of postpartum women experienced moderate to severe fatigue at six weeks after delivery. Tulman et al. (1990) found infant nocturnal sleep patterns,

increases in infant temperament, fussiness, and unpredictability to be related to maternal function at six months postpartum. Affonso and Mayberry (1990) found the most frequent stressors associated with fatigue in postpartum women to be sleep disturbances and physical recovery. Increased delay for physical recovery translated into altered or decreased functional ability. Tulman and Fawcett (1988) found only fifty-one percent of women had regained their usual level of activity by six weeks postpartum. "The women commented that although they had returned to work and resumed certain activities they did not feel as though they had regained normal levels of energy (p78)."

Tulman et al (1990) used a quantitative measure of functional ability to assess functional status in ninety-seven women. Their results indicated that by six months postpartum, twenty percent of women have not fully resumed the usual level of household activities. In social and community activities, thirty percent did not resume the usual level of activity. In self-care, twenty percent of the women did not resume the usual level of activity and in occupational activities sixty percent did not resume the usual level of activity. Interestingly, data results indicated significant functional ability increases in the above areas only during the period three to six weeks and six weeks to three months postpartum. No significant increase was found in the period of three to six months after delivery. Six weeks is considered normal physical healing time for reproductive organs (Bobak and Jensen 1993). The research, however, is consistent in

reporting that functional return can take up to six months to return to pre-pregnancy levels (Tulman and Fawcet, 1990, and 1988; and Tulman et al. 1990).

Psychosocial Considerations

"Childbirth is a major psychosocial stress. The stress of adapting to the role of parent, adjusting to the disruption to the routine, and integrating the infant into the family must be dealt with by the postpartum mother" (Daw, 1988, p.208). The literature points to several psychosocial alterations that impact the self-perceived functional status of the mother. Two important areas of change are in body image and balancing new and old roles (i.e. mother, wife, professional) (Sethi, 1995; AWHONN brochure, 1996).

Concern with body image is first centered around physical healing from the birth process including episiotomy, discomfort during urination, hemorrhoids, etc. (AWHONN brochure, 1996, p. 2.12). As healing from the birth process resolves, the woman's needs center around regaining pre-pregnancy appearance. As the mother reconciles with changes that have occurred in her body, she forms a new body image. This process may be difficult if her expectations are unrealistic. Function may be impaired when the mother goes through a grieving process over the loss of her earlier appearance (AWHONN brochure, 1996, p. 2.12). This impaired function may be psychological as well as physical.

Interaction with friends and family, especially the baby's father, is necessary to facilitate "maternal adjustment" to the new role of motherhood. According to Bobak and Jensen (1993), this adjustment occurs in three distinct phases: the dependent phase, the dependent-independent phase, and the interdependent phase. In the dependent phase the mother has the tendency to respond to her own needs through the involvement of family and/or friends. She needs to be nurtured and cared for to be able to fill her role as a mother in the first one to two days after the baby is born (Bobak and Jensen, 1993, p.680). Her new role of mother may make her feel anxious and preoccupy her mind. The dependent-independent phase begins on day three of postpartum. In this phase, if the mother feels she has been well-cared for during the first phase, she will openly accept her role as a new mother. If she is not adequately nurtured in the first stage of adjustment, she may feel resentment or be completely overwhelmed by the extent of the responsibilities required of motherhood. When a mother is not able to get through those feelings of being overwhelmed and is unable to handle the responsibilities that accompany parenthood, she may need additional support from a professional (Bobak and Jensen, 1993, p. 681). During this second phase it is not uncommon for women to be depressed, especially if fatigue was present throughout the last month of pregnancy. This depression is referred to as "postpartum blues". It affects approximately seventy-five to eighty percent of women who have given birth, usually subsiding by fourteen days postpartum (Bobak and Jensen, 1993, p. 681). The last phase of adjustment, the

interdependent phase, can be a source of stress for the new parents. It is a time for spouses to make room in their lives for the new family member, while also meeting their needs as a couple through regular participation in adult activities. This will be a challenging time for the couple, yet is imperative for maintaining a happy, healthy relationship, ultimately having a positive impact on functional ability (Bobak and Jensen, 1993).

Exercise

Physical activity has been shown to improve both mood and performance of activities of daily living, while diminishing depression and anxiety. However, according to the Surgeon General's 1996 report, "more than sixty percent of adults do not achieve recommended amount of physical activity," (p. 20). As people age, activity level declines, especially among women (Center for Disease Control and Prevention Division of Nutrition and Physical Action, 1996). A woman's attention to physical fitness becomes a low priority when tending to the additional needs of a child.

The physiological adaptations made by the body during exercise have been well documented. Many of these adaptations hold true for pregnant women. It has been found, however, that vigorous exercise has been correlated with reduced birthweight, shortened gestation and decreased gestational weight during pregnancy. Higher levels of activity have been found to increase maternal and fetal body temperature and to decrease uterine

blood flow. Women are encouraged to avoid high impact exercise such as running and standing for long periods as these are two factors that have been associated with premature delivery and central nervous system abnormalities in the infant (Rice, et. al., 1991). The consensus in the literature suggests that moderate aerobic exercise may be done without detrimental effects to the developing fetus (Uzendoski, 1990; Sternfeld, 1997; Heckman, 1994; Rice, 1991).

As mentioned earlier, the benefits of exercise remain throughout pregnancy. Weekly physical exercise before pregnancy has been shown to decrease the risk of developing back pain during pregnancy and subsequent pregnancies (Ostgaard, et. al., 1994, p. 894). Most literature suggests mild to moderate exercise among mothers who had been active prior to pregnancy is well tolerated and possibly promotes positive results in the mother and/or fetus (Rice and Fort, 1991, p.96; Vullo, 1996;). Vullo (1996) states that non-weightbearing exercises are noted to decrease the risk of injury and are recommended with fewer restrictions than weightbearing activities. One study found that the perceived exertion for active women during labor was less than that of sedentary women, even though a slight increase in time of stage two labor was noted (Rice, 1991).

Role of Physical Therapy

Due to the lack of research documenting the effectiveness of physical therapy in women's health, physical therapists cannot offer sound documented rationale for why they should be included in the health care team for women's health. In spite of this, physical therapists are specifically trained to treat the various neuromuscular and musculoskeletal dysfunctions commonly experienced as a result of pregnancy. The low back pain commonly seen in pregnancy is often believed to be self-limiting and many physicians see low back pain as a part of "normal" pregnancy (Orvieto, et al., 1994 p.210). Because of this belief, physicians may be reluctant to refer their patients to physical therapists for management of physical changes secondary to pregnancy. The breadth of physical therapy expertise includes postural and physical assessment, strengthening, and patient education regarding physical fitness, body mechanics, and prevention. Because of physical therapists' knowledge base, logic dictates that the physical therapist would be an integral part of the women's health care team during pregnancy and postpartum in addition to other healthcare needs specific to women.

"Pregnant women and postpartum women present a unique opportunity for the physical therapist. The role of the physical therapist is to evaluate and monitor changes in the women's body with focus on maintaining wellness rather than correcting illness or deformity" (Kisner and Colby, 1990, p. 547). Postpartum exercise has been advocated by physical therapists for several decades. Harvey, in 1949, recommended postpartum

exercises which emphasized strengthening of back and abdominal muscles, posture training and breathing exercises. Postpartum exercise has been recommended as soon as 24 hours after an uncomplicated delivery (AWHONN brochure, 1996). Kegel exercises are recommended to increase muscle tone in the pelvic floor musculature. These exercises are used to decrease the incidence of urinary incontinence and to facilitate resumption of satisfactory sexual functioning. Strengthening of abdominal muscles during pregnancy is advocated to improve muscle performance during labor, to correct poor posture and to prevent rectus abdominis separation. Abdominal exercise is encouraged postbirth to address the effects of pregnancy on the maternal trunk. However, structural changes in the trunk may alter the ability to correctly perform such strengthening programs (Gilleard, 1996, pg. 750-762). By days one to three, the mother should have begun a regimen of light exercise, should be trained in how to do Kegel exercises, and should understand the need for abdominal muscle toning (AWHONN brochure, 1996, p. 4.10)). The physical therapist is uniquely qualified to give instruction on Kegel exercises as well as postural training, safe abdominal strengthening, and proper body mechanics. Having a physical therapist in an obstetrical-gynecological clinic would be a benefit to both the health care practitioners and the clients. The physical therapist would be available for immediate consultation, thus avoiding the inconvenience of scheduling an additional appointment and prolonging treatment.

In 1995, in Kent county, MI, 11,367 pregnancies in women ages fifteen to forty-four were recorded. A telephone survey of local hospitals and health maintenance organizations revealed that several exercise classes for pregnant women were currently being offered, yet no postpartum exercise classes were found to be available. Findings indicate that numerous women do not receive any formal intervention for the physical changes and the resultant decline in functional ability associated with pregnancy. The authors believe that, with proper physical therapy intervention before, during, and after pregnancy, subjective complaints of long term physical side effects associated with pregnancy can be diminished.

Summary

Post-pregnancy functional ability is affected by physical and psychosocial changes of pregnancy. It is not known to what degree or how long childbirth affects functional ability of the postpartum woman. Few studies pertaining to physical therapy intervention, including pre-pregnancy, pre-natal and postpartum periods were found. The expertise of physical therapists regarding muscle and biomechanics of the human musculoskeletal system makes them uniquely qualified to intervene in women's health during the aforementioned periods. More research is required in this field in order to determine the extent and effectiveness in return of function when utilizing a physical therapy intervention.

CHAPTER 3: METHODOLOGY

Assumptions and Rationale for a Qualitative Design

Merriam (1988) mentions several assumptions of qualitative design that hold true for this study. Qualitative researchers are interested in how individuals react to experiences in their lives and make them meaningful. The qualitative researcher is the primary instrument for data collection and analysis. The concept of the researcher as a data collection tool applies to this study in which the researchers will both conduct the interviews and analyze the collected data. Another element in qualitative research involves physically going to the subjects and working with them in a natural setting. Merriam (1988) also states that qualitative research is inductive, meaning theories are developed from details collected from the study. It is these assumptions that serve as the framework for this qualitative study.

The characteristics of qualitative design are well suited to this study. The concept of perceived functional ability in postpartum women is not well developed due to a lack of theory and previous research (Morse, 1991, p.120). Morse (1991) also states that in qualitative research the need exists to explore and describe the phenomena and to develop theory. The topic of this preliminary study is appropriate for a qualitative research design

because there is a dearth of research supporting the effectiveness of physical therapy intervention in women's health clinics.

Type of Design Used

The type of qualitative design utilized in this study is grounded theory. Grounded theory is a common method found in human and social qualitative research (Creswell, 1994, p. 11). This type of study seeks to derive a theory by using multiple stages of data collection and the refinement and interrelationship of categories of information (Strauss & Corbin, 1990). This research effort will attempt to develop a theory that will support the usefulness of physical therapy in a women's health clinic through analysis of data collected from interviewing nulliparous and postpartum women.

Role of Researchers

Because the researchers act as the instrument for data collection, the values and judgments of the researchers cannot be segregated from the data analysis. Factors such as cultural influences affect both the participants responses and the investigators interpretation. The information gathered is subjective in nature, and due to the qualitative nature of this study, the information is subjectively analyzed. The researchers have a deep interest in contributing to the body of knowledge of women's health and this interest is the motivation behind the research.

The subjects were found by word of mouth and were asked if they were interested in participating in the study. Those willing to participate made an appointment to be interviewed in their home.

This study was submitted to the Human Subjects Review Board (HSRB) on June 20, 1997 and was approved on July 22, 1997. Please see appendix D for HSRB approval. The purpose of the review is to protect the rights of the participants. The participants were informed about the nature of the study, made aware of the confidentiality of the information they provide, and informed how the data will be used. The subjects indicated their willingness to participate in the study by signing an informed consent document. Please see appendix A for consent form.

Data Collection Procedures

The data collected was in the form of open-ended interviews with a sample of thirteen Caucasian women between the ages of twenty and forty who have employee/spousal healthcare coverage. They were within 50 pounds of the normal weight for their age and height. Women with other health issues such as disease and drug abuse were excluded from this study. Five of these women were not pregnant at the time of the interview. The remaining women delivered viable offspring vaginally with no medical complications during the pregnancy or delivery. They gave birth only once and it was their first full term pregnancy. Three primiparous women were interviewed at six

to eight weeks postpartum and five at six to seven months postpartum. The six to eight week postpartum time period was chosen because the woman makes her first postpartum visit to her healthcare practitioner at six weeks and is generally considered to be physiologically healed at that time. The six to seven month time period was chosen based on the findings of Tulman et al. (1990), who stated that some women had not returned to normal activities at six months postpartum.

As mentioned previously, the subjects participated in an open-ended interview about their assessment of their functional ability both before and after childbirth. Two researchers attended the interview. One researcher conducted the actual interview and the other made subjective observations on the body language of the participant. The nulliparous women were only interviewed about their current level of function and activity level. The definition of functional ability was provided as it appears in the study in order to minimize investigator and participant bias and/or interpretation. Definitions of any other words were provided upon request. The interview questions were developed from the major themes found in the literature that impact functional ability: level of exercise both before and after delivery, secondary effects of pregnancy, stage of psychosocial adjustment and fatigue level.

The setting for the interviews was the subjects' homes. The interviews were audiotaped and transcribed. Interview questions are found in appendix B. Copies of the results of the study were made available upon request to participants.

Data Analysis Procedures

Data was analyzed after the interviews were transcribed. The responses gathered were sorted into categories. These categories then served as the basis of developing themes of functional ability at different points in the postpartum recovery of the subjects. The information gathered was presented in tables and a diagram which outlined the results of functional ability checklist, and the themes and categories developed, including any relationships discovered between categories.

Methods for Verification

Validity was assessed by conducting pilot interviews; one performed by each of the three researchers. Participants in the pilot study were excluded from interpretation of the results. Credibility was addressed using several methods. The gathered information was triangulated using sources such as the literature, transcription of interviews, document reviews, and incorporation of observational journals. Two researchers were present at each interview, as described earlier, and discussed their observations after each interview to further enhance credibility. Documents reviewed included pamphlets given to expectant mothers by their healthcare practitioner, support groups, exercise classes and hospitals.

CHAPTER 4: RESULTS

Research was initiated by performing three pilot interviews, one interview in each of the three groups studied; nulliparous women (Nulliparous group), women who were six to eight weeks postpartum (Weeks group), and women who were six to seven months postpartum (Months group). Results of the pilot study suggested the need for addition of a question pertaining to each participant's education level. Consistency among researchers was attained through post interview discussion of subjective observations and participant responses.

A total of thirteen women participated in the study; five in the Nulliparous group, three in the Weeks group, and five in the Months group. All of the participants in each group completed a functional ability checklist (see appendix C for results). The demographics are summarized in table 1.

Table 1: Demographics

| | Nulliparous group | Weeks group | Months group |
|---|--|--|--|
| Age (years) | 23 to 28 | 25 to 36 | 22 to 29 |
| Marital status | 3 single 2 married | 3 married | 2 single 3 married |
| Occupation | 3 nurses 1 social worker 1 rehab counselor | 1 child care worker 1 occupational therapist 1 teacher | 2 nurses 2 unit secretaries 1 physical therapist assistant |
| Education level (highest degree earned) | 1 associates 2 bachelors 2 masters | 1 associates 2 masters | 2 associates 3 bachelors |
| Currently working outside of home | all | 2 of 3 | all |

Nulliparous Group Results

The responses of the Nulliparous group interviews were intended to serve as a baseline measurement of functional ability (See appendix B for the nulliparous interview questions). When asked about their level/frequency of exercise, two respondents indicated they did not exercise regularly and three indicated they exercised on a regular basis, three to four times per week. A Likert scale was used for rating current energy level, with one being the lowest energy level and five being the highest. When participants were asked to rate their current energy level, one reported an energy level of five out of five, three reported a level of 4 out of five, and one reported a level of three out of five. The person who indicated a level of three stated "I don't know that it affects my daily life. If I want to do something, then I will do it. If I don't want to do it, then I

won't. I don't feel that I have a problem with energy, though." When asked to respond to the question about low back pain, one respondent indicated no history of back pain, four respondents indicated varying degrees of back pain including "little", "strained at work", "some, but doesn't affect my life", and "back pain since high school... due to heavy lifting". When asked about their duties to themselves, all respondents indicated personal needs, including diet, exercise, spiritual, and mental components. Examples of responses include "maintaining a healthy life", "to support myself", "taking care of myself, both physically and mentally", and "praying to God, getting enough sleep, and loving myself". Two also included social needs, such as "Do what I want to do and be around my friends and enjoy life more", and "make sure I go out and spend time with my friends".

Six to Eight Weeks Postpartum Group Results

The responses of the participants in the Weeks group to the question regarding exercise before pregnancy varied. Although all participants stated they exercised, the frequency and duration ranged from once a week for twenty to forty minutes to five times per week for twenty minutes. When asked about their exercise habits during pregnancy, the participants indicated they either stayed at the same level, or exercised less. The respondents who exercised before pregnancy continued after delivery, and the respondent who did not exercise on a regular basis before pregnancy, stated she currently does not exercise. When asked about any instruction received regarding exercise during

pregnancy, the responses were similar in that they were all informed they could continue exercising at their current level.

When asked about their energy level, the respondents indicated they had slightly less than full energy. Two respondents indicated their energy level was a four out of five, saying that “I didn’t want to leave the house because I didn’t have the energy to do the car seat and all that. Even doing grocery shopping seemed like such a huge undertaking.”. The third respondent indicated a three out of five energy level, saying “I have a lot of energy once I get to work and then I put 100% into my job and once I get home I’m pooped.” Two respondents said their baby wakes once during the night, and the third said the baby is sleeping through the night. None of the women interviewed had any complaints of back pain that hindered their daily activities.

When asked if they now feel they are able to function at their pre-pregnancy level, two respondents indicated they felt they were able to function at their pre-pregnancy level, and one said she was not. Interestingly, the two women who felt they were able to fully function at their pre-pregnancy level indicated activities that made returning to full function difficult. These were the women who rated their energy level as four out of five. Among the complaints were lightheadedness after standing up quickly, swelling in the extremities, and carpal tunnel syndrome symptoms. When the respondents were asked how the time since delivery compared with their expectations of resuming activities in and out of the home, two indicated they are doing better than they thought. Responses

included “I’m getting a lot of sleep and that helps”, and “I’m feeling better actually a lot faster than I expected to”. One respondent thought she would have more time, but stated “Physically, I feel that I can do what I could before I was pregnant”.

When asked about education on physical activity during pregnancy, two women said they felt they received sufficient education, but they had to actively seek it out. One woman said she expected more education. When asked about education on physical activity after pregnancy, two women indicated they agreed that they received sufficient information. One woman said “Agree. On a scale of one to five, I would say a three. I was told not to do abdominal exercises”.

When asked to respond to the statement “my body is much different now than before my pregnancy” , all women felt their bodies were different saying “everything fits differently”, “Physical appearances are definitely different”, and “you just feel much different”. When asked to respond to the statement “my duties to myself include...”, all women gave answers of a self-care nature, saying “making sure I eat”, “just doing things to make sure that I feel better”, and “taking care of my health, making sure I have balance in my life”. One woman went on to include “becoming a good parent and learning to be a good wife”.

Six to Seven Months Postpartum Group Results

Responses were variable for questions regarding regular exercise before, during, and after pregnancy, and for exercise instruction provided. Four out of five of the women exercised on a regular basis before becoming pregnant. Three out of five exercised during and throughout their pregnancies. However, only one of five continued her exercise program after her child was born. All five of the women in this group reported receiving instruction about exercising during and after pregnancy. Some of the responses are as follows: "My OB told me not to run. I could walk and do light exercises.", "I was told to walk.", "Not written, but my OB told me to exercise.", and "I took a prenatal class and we were instructed in an exercise portion of the class."

When asked about their current energy level, all women reported levels between four and five out of five, and all five of these women had returned to full-time work. Two women reported energy level of five out of five, with one of them stating, "Most of the time at about five. The baby takes a lot of my energy away. So, I don't really get a lot done." One reported an energy level between four and five and gave the following response, "I am able to do all the housework and take care of the baby." The other two women stated their energy was at four out of five, with one of the responses being, "...typically I'm around four. Depending on how long my work day was.....I work different hours. So, longer work days I get home and have to rush around." When asked if there baby was sleeping through the night, only one participant said "yes", and is the

only woman in the Nulliparous group who reported having an energy level of five out of five.

A question was asked regarding their ability to function at pre-pregnancy level. Four of the five women replied "yes" and one replied "for the most part". When asked if they had any physical complaints making return to work difficult, only one of five said "yes"; however, either due to transcription or audiotape error, no explanation of her difficulties in returning to work is available.

Responses to the rating of the statement "Women get sufficient direction concerning physical activities during their pregnancies" were highly variable. One disagreed, one strongly agreed, and three agreed. Some of the responses are as follows: "For the most part I agree" and "Disagree. I didn't get any from my OB." When asked to respond to the question regarding direction after pregnancy, the distribution of the answers was the same, and the comments were similar.

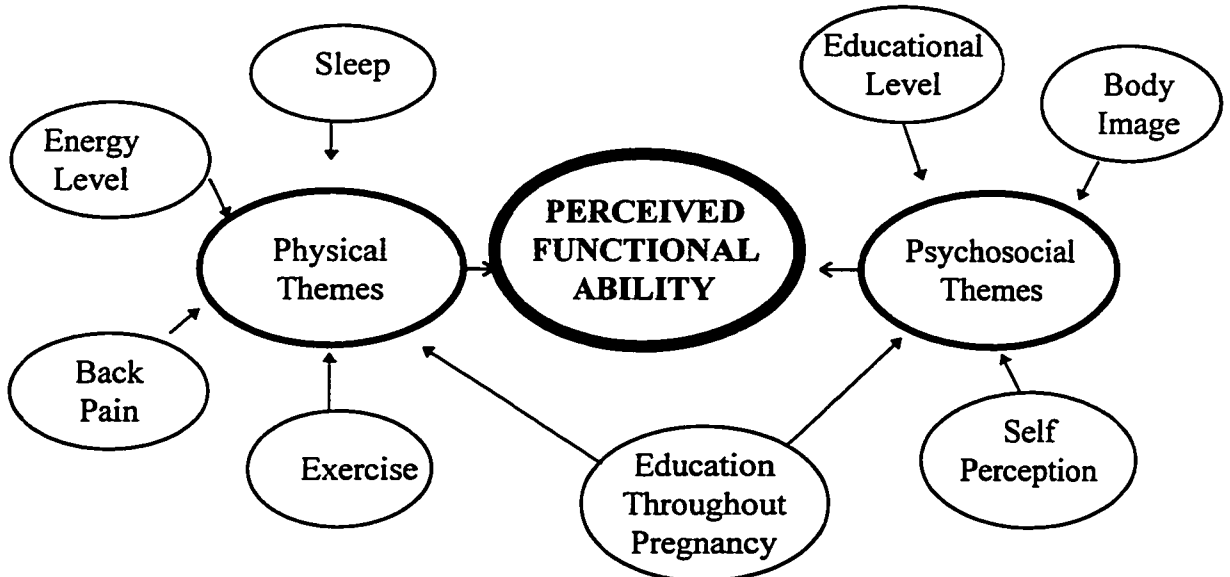
When asked to respond to the statement "My body is much different now than before my pregnancy", four out of five agreed while only one disagreed, saying "It's pretty much the same." Responses of those that agreed are as follows: "I guess a little bit. I have some stretch marks now", "I strongly agree", and "My hips are definitely wider." When asked to complete the statement "My duties to myself include...", all of the responses pertained to self-care and/or infant care. Their responses included: "Taking care of my son", "Try to eat right. I don't spend much time by myself, it's mostly with

her", "Taking care of my child and taking care of my health", and "I think you need a little time to yourself. I should keep exercising and try to stay in shape."

CHAPTER 5: INTERPRETATION

From the interviews conducted, two major themes emerged: physical and psychosocial. Using the words of Erlandson (1993, p.112), “the themes that emerged, although not conclusive, provided a plausible framework for future research” on postpartum functional ability. The researchers found the two main themes that impacted perceptions of postpartum functional ability to be physical changes and psychosocial changes. See Figure 1.

Figure 1. Framework for Data Analysis.



Psychosocial Changes

The theme of psychosocial changes impacting functional ability was categorized into education level of participants, perception of body image, and self perception, i.e. what they perceived their duties to themselves to be. Although the psychosocial theme was not originally a focus of this study, the researchers found it to be an important factor impacting the women's perceptions of functional ability. When looking at the educational level of the participants, the six to eight weeks postpartum group generally had attained higher educational degrees than the six to seven months postpartum group, and the responses given by the Weeks group when asked about their duties to themselves centered around self care. The Months group gave responses that centered around assuring the welfare of their child, with only two of the five women mentioning self-care as a part of their self duties. Although this trend was noted, it cannot be assumed that educational level dictates how the women feel about their self duties. It is possible that education may play a role in a woman's perception of her self-duties, but as the woman begins to incorporate the role of motherhood into her self concept, the duties to herself may shift towards child well being. This may be supported by responses of the nulliparous women, who generally responded to the question of self duties by stating social activities and self-care were important in their lives. The educational level of the Nulliparous group was the most diverse, ranging from associates to masters degrees, implying that educational level did not dictate their perception of self duties. The fact

that they included social activities as important to the self may be due to the fact that they were not responsible for the care of a child, thus suggesting they had more time and energy to be social.

Another category in the psychosocial theme is body image. Both the Weeks and Months groups did not express any negative attitudes towards the changes in their bodies. They did say things had changed, but acknowledged these changes as a part of pregnancy, realizing that exercise and proper diet would restore much of their original figure. Educational level did not appear to play a significant role in the participants body image, as the responses were similar across all educational levels. Body image was not noted to have any impact on perceived functional ability.

Physical Changes

The theme of physical changes impacting functional ability was broken down into the following categories: presence of back pain, energy level, amount of uninterrupted sleep, and amount of exercise before, during and after pregnancy. The process of pregnancy and the postpartum period was not reported to have caused any significant back pain in the participants of this study. In the Nulliparous group, the complaints of back pain were attributed to lifting heavy loads. One woman in the six to eight weeks group described a short duration of back pain that she attributed to receiving epidural anesthesia. Another woman, in the six to seven months group, reported back pain only

when carrying her six month old child. Any other occurrence of back pain reported by the participants did not impact their perceived ability to function.

When examining energy level in the postpartum period, the findings of this study suggest that amount of uninterrupted sleep may in part affect reported energy level. The energy level of the Nulliparous group varied greatly, and no trends were noted; therefore, the Nulliparous group could not serve as a baseline for comparison with the two postpartum groups. In the Weeks group, all women reported decreased energy levels, with their baby usually waking at least once during the night. The Months group showed similar results of decreased energy level. This suggests that with broken sleep, energy level tends to decline. Other factors that may have had an impact on energy level as indicated in this study may be marital status (single versus married), and whether the woman is currently working outside the home. The lowest energy levels reported in the postpartum groups were in those participants who were single and/or had returned to work. Although perceptions of functional ability were generally reported to be normal, or “fully able”, one woman in each postpartum group reported being only “partly able” to meet deadlines and/or run errands. Both of these women had returned to work and reported a decrease in energy level.

For exercise in the W and Months groups, there was inconsistency in the regularity of exercise reported before, during and after pregnancy; therefore, no trends appeared to emerge from the category of exercise. Regarding instruction received for

exercise during and after pregnancy, all participants in the Months group received instruction, the majority of which were pleased with the instruction they received. The Weeks group showed variability in the satisfaction of exercise instruction, with one woman being unsatisfied with the amount of education she received. One possible explanation for the differences in satisfaction between the groups is that the Weeks group, having a higher education level, may have been better informed and more critical consumers of their health care, and as a result may have had higher expectations of their healthcare provider. For example, the Weeks group felt that the education was available, but the individual has to actively seek it out. When looking at how exercise level affected the perception of functional ability, the researchers found no trends due to the high variability in the responses within and between the groups regarding exercise throughout pregnancy. The Nulliparous group also showed high variability in exercise activity and functional ability, and again could not serve as a baseline for comparison.

Conclusion

At the outset of this study, the researchers expected to see declines in women's functional ability after pregnancy thus suggesting a need for therapeutic intervention. Despite some decreases in energy level, the effects of pregnancy and childbirth did not seem to have an impact on the participants' perceptions of their functional ability. The researchers still believe that physical therapy has a purposeful role in prenatal and

postpartum healthcare, although we were unable to clearly demonstrate it with this study. This study posed questions to guide future research. Several functional ability deficiencies seen in this study could be improved through physical therapy treatment and patient education. Included in these areas are body mechanics training for new mothers on how to lift and carry their children without injuring their backs, developing specific and individualized exercise programs to mitigate physical changes and increase energy level, and education regarding energy conservation.

Limitations

Limitations were examined according to three different categories: demographics of the study, methodology, and various uncontrollable factors.

The demographics of the study that are limitations are the sample size, high education level of the participants, and the exclusion criteria used for this study. The sample size was a mere thirteen women, all of whom had some form of college degree, ranging from Associate to Master level. In addition, our exclusion criteria of participants being in good health, Caucasian, and having health insurance, greatly impacted the results of the study. Had we not placed such strict requirements on our sample, we may have found more significant trends to emerge from the interviews. Requiring the subjects to have health insurance theoretically allowed the researchers to have better control of the data, having fewer variables to consider. It appears that this part of our exclusion criteria

impacted the study by providing us with more highly educated participants than we might have had otherwise. The results of this study may best be applied to this specific group of women

Areas within the methodology of this study that served as limitations are the cross-sectional framework and the researchers' interviewing techniques. A longitudinal study of the same group of women may have provided more relevant information on how a woman's perceptions of functional ability change throughout pregnancy and the postpartum period, rather than comparing different women's perceptions at different points in time in the postpartum. One possible area of bias is gender and cultural expectations of motherhood. Another limitation in the methodology is the researchers' interviewing technique. As all three researchers were inexperienced in performing qualitative research, skills were lacking that would have been useful in gathering more relevant data from the interviewees. The researchers need to develop additional skills to encourage discussion and/or explanation of responses without leading the participants and thereby biasing the results.

The final area of limitations to be discussed includes factors beyond our control at this time, such as prior research performed on this topic and the quality of the transcriptionist's work. The individual who prepared the transcripts was inexperienced at transcribing audiotaped interviews. Some taped interviews were difficult to hear and therefore the responses may have been altered or abbreviated.

As stated in the introduction of this study, very little research has been performed on physical therapy and pregnancy and/or the postpartum period. One of the reasons the researchers chose this topic was to build upon the existing literature and hopefully lead future researchers to perform more in-depth studies in this area, thus validating the need and usefulness of physical therapy for problems that can arise from the physical changes brought about by pregnancy.

Suggestions for Further Study

This study revealed several areas for future research. The same study could be conducted on different populations, such as women who have undergone a cesarean section, women who do not have health insurance, or women in a low income bracket. The subject of exercise and pregnancy could be studied in more detail by looking at the effect of regular exercise on perceived energy level. One area not addressed in this study was postural changes that occur as a result of pregnancy. A detailed physical assessment could be performed to determine how postural changes affect ability to function at a pre-pregnancy level. An additional area of study would be the effects of an abdominal strengthening program before pregnancy and in the postpartum period and the effects on posture and back pain. Pelvic floor muscle strength could also be studied comparing women who have and did not have an episiotomy. This grounded theory study helped to identify a conceptual framework which can be further developed as a base for future

studies. The researchers hope the results of this study highlight the need for future research into the effectiveness of physical therapy intervention throughout pregnancy and the postpartum period.

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APPENDIX A - Participant Consent Form

Subject # _____

Participant Consent Form

I understand this is a study of postpartum functional ability among women between 20 and 40. The knowledge gained is expected to help justify the need for physical therapy in prenatal and postnatal care.

I also understand:

1. Participation in this study will involve participating in a 45 minute interview on current physical ability.
2. I have been selected for participation because I am a female between the ages of 20 and 40 years and am either planning on becoming pregnant, six weeks postpartum or three months postpartum.
3. It is anticipated this study will not lead to any physical or emotional risk to myself.
4. The information I provide will be kept strictly confidential and the data will be coded so identification of individual participants will not be possible.
5. The investigators, Kari Dulaney, Dawn Hallwood, and Kristen Keeter have my permission to ask me questions regarding my health history.
The results of the study will be available to me upon request.

I acknowledge:

“ I have been given an opportunity to ask questions regarding this research study, and these questions have been answered to my satisfaction.”

“I have been given the phone numbers of Kari Dulaney, Dawn Hallwood, Kristen Keeter, Susan Allaben and Paul Huizenga in case I have any questions regarding the study.”

“ In giving my consent, I understand my participation in this study is voluntary, and I may withdraw at any time by notifying Kari Dulaney, Dawn Hallwood, or Kristen Keeter.”

“ I hereby authorize the investigators to release the information obtained in this study to scientific literature. I understand I will not be identified by name”

“I acknowledge I have read and understand the above information, and I agree to participate in this study.”

| | |
|-----------------------|------------|
| Participant Name | Researcher |
| Participant Signature | Date |

Researcher: Kari Dulaney (616) 459-9586

Researcher: Dawn Hallwood (616) 975-3878

Researcher: Kristen Keeter (616) 241-4063

GVSU Committee Chairperson: Susan Allaben (616) 895-2677

Human Subjects Review Committee: Paul Huizenga (616) 895-2472

APPENDIX B - Interview Questions

NULLIPAROUS INTERVIEW QUESTIONS

Age _____

Subject # _____

Marital Status: Single Married Divorced Widowed

Occupation _____

Currently working yes no

| | I can perform this activity : | | | | |
|----------------------------------|-------------------------------|-----------|----------------|----------------|--------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | |
| Change laundry (washer to dryer) | | | | | |
| Vacuum | | | | | |
| Get in & out of bed | | | | | |
| Get up from sitting | | | | | |
| Stand for more than 5 minutes | | | | | |
| Pick up a baby | | | | | |
| Reach overhead | | | | | |
| Drive a car | | | | | |
| Meeting deadlines | | | | | |
| Running errands | | | | | |

NULLIPAROUS INTERVIEW QUESTIONS

1. Do you exercise regularly? If so, how often & how long each week?
2. Rate your current energy level on a scale from 1 to 5 with 1 being the lowest energy level and 5 being the highest energy level and discuss the effects it has on your daily activities.
3. Have you had any previous history of low back pain?
4. Complete this sentence: My duties to myself include...

WEEKS GROUP INTERVIEW QUESTIONS

Age _____

Subject # _____

Marital Status: Single Married Divorced Widowed

Occupation _____

Currently working yes no

Time since childbirth (in weeks) _____

| | I have resumed this activity : | | | | |
|----------------------------------|--------------------------------|-----------|----------------|----------------|--------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | |
| Change laundry (washer to dryer) | | | | | |
| Vacuum | | | | | |
| Get in & out of bed | | | | | |
| Get up from sitting | | | | | |
| Stand for more than 5 minutes | | | | | |
| Pick up baby | | | | | |
| Reach overhead | | | | | |
| Drive a car | | | | | |
| Meeting deadlines | | | | | |
| Running errands | | | | | |

WEEKS GROUP INTERVIEW QUESTIONS

1. Do you exercise regularly? If so, how often & how long each week?
2. Have you received any instruction regarding exercise during pregnancy? If so, please describe what kind of instruction you received.
3. Did you exercise regularly *before* your pregnancy? If so, how often & how long each week?
4. Did you exercise regularly *during* your pregnancy? If so, how often & how long each week?
5. Rate your current energy level on a scale from 1 to 5 with 1 being the lowest energy level and 5 being the highest energy level and discuss the effects it has on your daily activities.
6. Is your baby sleeping through the night? If not, how many times a night does the baby wake you?
7. Have you experienced any back pain that you attribute to your pregnancy? If so, how would you rate your pain on a scale from 1 to 5 with 1 being minimal pain and 5 being unbearable pain.
8. Have you had any previous history of low back pain?
9. Do you now feel you will be able to function at your pre-pregnancy level?
10. Have you had any physical complaints that have made return to previous level of functional ability difficult?
11. How do the 6 to 8 weeks since your delivery compare with your expectations of resuming your usual activities in the home? Outside the home?
12. Tell me how you rate this statement: "Women get sufficient direction concerning physical activity *during* their pregnancy". Do you strongly disagree, disagree, agree, or strongly agree?
13. Tell me how you rate this statement: "Women get sufficient direction concerning physical activity *after* their pregnancy". Do you strongly disagree, disagree, agree, or strongly agree?
14. Respond to this statement: My body is much different now than before my pregnancy.
15. Complete this sentence: My duties to myself include...

MONTHS GROUP INTERVIEW QUESTIONS

Age _____

Subject # _____

Marital Status: Single Married Divorced Widowed

Occupation: _____

Currently working yes no

Time since childbirth (in weeks) _____

| | I have resumed this activity : | | | | |
|-------------------------------------|--------------------------------|-----------|-------------------|----------------|-----------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | |
| Change laundry (washer to dryer) | | | | | |
| Vacuum | | | | | |
| Get in & out of bed | | | | | |
| Get up from sitting | | | | | |
| Stand for more than 5 minutes | | | | | |
| Pick up baby | | | | | |
| Reach overhead | | | | | |
| Drive a car | | | | | |
| Meeting deadlines | | | | | |
| Running errands | | | | | |

MONTHS GROUP INTERVIEW QUESTIONS

1. Do you exercise regularly? If so, how often & how long each week?
2. Have you received any instruction regarding exercise during pregnancy? If so, please describe what kind of instruction you received.
3. Did you exercise regularly before your pregnancy? If so, how often & how long each week?
4. Did you exercise regularly during your pregnancy? If so, how often & how long each week?
5. Rate your current energy level on a scale from 1 to 5 with 1 being the lowest energy level and 5 being the highest energy level and discuss the effects it has on your daily activities.
6. Is your baby sleeping through the night? If not, how many times a night does the baby wake you?
7. Have you experienced any back pain that you attribute to your pregnancy? If so, how would you rate your pain on a scale from 1 to 5 with 1 being minimal pain and 5 being unbearable pain.
8. Have you had any previous history of low back pain?
9. Do you now feel you will be able to function at your pre-pregnancy level?
10. Have you had any physical complaints that have made return to previous level of functional ability difficult?
11. How do the 6 to 7 months since your delivery compare with your expectations of resuming your usual activities in the home? Outside the home?
12. Tell me how you rate this statement: "Women get sufficient direction concerning physical activity *during* their pregnancy". Do you strongly disagree, disagree, agree, or strongly agree?
13. Tell me how you rate this statement: "Women get sufficient direction concerning physical activity *after* their pregnancy". Do you strongly disagree, disagree, agree, or strongly agree?
14. Respond to this statement: My body is much different now than before my pregnancy.
15. Complete this sentence: My duties to myself include...

APPENDIX C - Results of Functional Ability Checklist

Nulliparous Functional Ability Checklist:

| | I can perform this activity : | | | | |
|----------------------------------|-------------------------------|-----------|----------------|----------------|--------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | 5/5 |
| Change laundry (washer to dryer) | | | | | 5/5 |
| Vacuum | | | | | 5/5 |
| Get in & out of bed | | | | | 5/5 |
| Get up from sitting | | | | | 5/5 |
| Stand for more than 5 minutes | | | | | 5/5 |
| Pick up a baby | | | | | 5/5 |
| Reach overhead | | | | | 5/5 |
| Drive a car | | | | | 5/5 |
| Meeting deadlines | | | | 1/5 | 4/5 |
| Running errands | | | | | 5/5 |

Weeks Group Functional Ability Checklist:

| | I have resumed this activity : | | | | |
|----------------------------------|--------------------------------|-----------|----------------|----------------|--------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | 3/3 |
| Change laundry (washer to dryer) | | | | | 3/3 |
| Vacuum | | | | | 3/3 |
| Get in & out of bed | | | | | 3/3 |
| Get up from sitting | | | | | 3/3 |
| Stand for more than 5 minutes | | | | | 3/3 |
| Pick up a baby | | | | | 3/3 |
| Reach overhead | | | | | 3/3 |
| Drive a car | | | | | 3/3 |
| Meeting deadlines | | | | | 3/3 |
| Running errands | | | | 1/3 | 2/3 |

Months Group Functional Ability Checklist:

| | I have resumed this activity : | | | | |
|-------------------------------------|--------------------------------|-----------|----------------|----------------|--------------------|
| | N/A | unable to | barely able to | partly able to | completely able to |
| Climb stairs | | | | | 5/5 |
| Change laundry (washer to dryer) | | | | | 5/5 |
| Vacuum | | | | | 5/5 |
| Get in & out of bed | | | | | 5/5 |
| Get up from sitting | | | | | 5/5 |
| Stand for more than 5 minutes | | | | | 5/5 |
| Pick up a baby | | | | | 5/5 |
| Reach overhead | | | | | 5/5 |
| Drive a car | | | | | 5/5 |
| Meeting deadlines | | | | 1/5 | 4/5 |
| Running errands | | | | 1/5 | 4/5 |

APPENDIX D - Human Subject Review Board Approval



1 CAMPUS DRIVE • ALLENDALE MICHIGAN 49401-9403 • 616/895-6611

July 22, 1997

Kristen Keeter
328 Henry Hall
Physical Therapy

Dear Kristen:

The Human Research Review Committee of Grand Valley State University is charged to examine proposals with respect to protection of human subjects. The Committee has considered your proposal, "*Post-Pregnancy Functional Ability*", and is satisfied that you have complied with the intent of the regulations published in the Federal Register 46 (16): 8386-8392, January 26, 1981.

Sincerely,

A solid black rectangular box redacting the signature of Paul Huizenga.

Paul Huizenga, Chair
Human Research Review Committee