The Effects of Exercise, Sleep, and Self-Directed Education in Individuals with Fibromyalgia

Bridgman MB, Gee T, Harrison A, and Wojtowicz G; University of Kentucky; Lexington, KY

ABSTRACT

Background and Purpose: To investigate the impact that sleep and exercise have on the level of experienced symptoms in individuals with fibromyalgia. A survey was utilized to compare the results of those who attended support group meetings to those who did not.

Subjects: The seventy-eight subjects had been diagnosed with fibromyalgia by a physician and were at least 18 years old.

Methods: A questionnaire pertaining to fibromyalgia was created with four distinct sections: general information, sleep information, exercise information, and information pertaining to previous physical therapy experience after being diagnosed with FMS. The questionnaires were distributed to personal contacts on an individual basis through mail or in person, to members of support groups, and to patients affiliated with physical therapy clinics or other health care facilities.

Results: Seventy-one subjects completed a survey for this study. Of the seventy-one, 28 attended support group meetings (39.4%), and 43 (60.6%) did not. Fisher's exact test was found to be statistically significant when analyzing the effects of education on the amount of pain after exercise ($p=0.0343$) and combined sleep quality & quantity ($p=0.454$) in FMS subjects. The effects of combined exercise on the amount of pain ($p=0.403$), tiredness ($p<.001$), and average pain & tiredness ($p<.001$) after exercise was also found to be statistically significant.

Discussion and Conclusions: Results suggest that FMS subjects who obtain self directed education through regular attendance in support group meetings, are more likely to experience decreased pain after exercise, and lower average VAS scores when examining sleep quantity and quality specifically. When examining the effects of exercise in FMS subjects, it was found that experiences of pain & tiredness following exercise were lower in those who achieved the highest total amounts of exercise. Thus, self-directed education, and exercise performance are significant interventions to employ in individuals with FMS in order to reduce pain and tiredness.

EVALUATING RATE OF CHANGE AND THE QUALITY OF WOMEN'S HEALTH INFORMATION ON THE INTERNET.

Dalal S, Pauls J, Texas Woman's University, Houston, Texas

PURPOSE: The purpose of this project was to evaluate the rate of change and quality women's health related internet sites using the Women's Health Web Site Evaluation tool developed at Texas Woman's University.

METHODS: Fifty-five web sites from 11 different women's health categories were assessed and then re-assessed after 17-22 months. In this way, we proposed to illustrate the relative quality of women's health related information on the Internet. The 55 sites were related to women's health and included heart disease, osteoporosis, incontinence, female athlete triad, gynecological cancer, arthritis, fibromyalgia, pregnancy, menopause, pelvic pain, and fall prevention. The Yahoo search engine was used to check the availability of these web sites. If the same web site from the previous study was available through this search, the researcher accessed it by clicking on the link. If the web site was unavailable through the Yahoo search engine, the researcher accessed it by typing the web address into the address bar. The researcher completed the evaluation form for each available web site.

ANALYSIS: The analysis included comparison of the number of web sites available and average total score per topic and per author's credentials, an item-by-item analysis of the evaluating tool, and a comparison of ease of use, content, structure, and appearance to author's credentials. These data were also compared to scores from the previous study at TWU conducted by Bennett, Gleeson, and Pauls. Descriptive analysis included any trends that were not accounted for in the evaluation form, and a listing of the web sites that no longer existed.

RESULTS: Thirty-one of the 55 web sites were available after 17-22 months (56.36%). Academic and medical organizations had the highest availability (75%) by category. Out of a possible to 36 points, the highest scoring web site scored 30 points and the lowest scored 16 points. Pharmaceutical and health services companies had the highest average total score (22.47 points).

CONCLUSION: Pharmaceutical and health services companies provided web sites with the greatest ease of use, content that is understandable by the average internet user, a structure that is easy to navigate through, and had an attractive and memorable appearance, but web sites by academic and medical organizations demonstrated a longer duration.

RELEVANCE: Due to the large amount of health related information on the Internet and the increasing numbers of people who use it to take charge of their own health, it has become increasingly important to ascertain the quality of the information available. The rate of change and the quality of the information available are two important considerations for the consumer of information about women's health.

The Relationship between Diastasis Recti, Low Back Pain and Abdominal Muscle Strength in Postpartum Women.

Farouh, AM, Giuletti, SM, Municref, VE, Chiarello, CM. Columbia University Program in Physical Therapy, New York

Diastasis recti (DR), a separation of the rectus abdominus muscle at the linea alba, affects up to 70% of pregnant and postpartum women. Left untreated the separation can impair the normal function of the abdominal muscles. Altered biomechanics of the abdominal muscles, which are maintained in an elongated position in DR, leads to weakness and postural changes precipitating Low Back Pain (LBP). LBP affects 48-90% of women during pregnancy and 44% of women postpartum. The purpose of this study was to examine the relationship between diastasis recti, abdominal muscle strength, and low back pain.

Subject and Methods Subjects were 13 postpartum women who had participated in a prenatal exercise program. A digital caliper was used to measure resting and active DR at 4.5 cm above the umbilicus, at the umbilicus, and 4.5 cm below the umbilicus. Abdominal muscle strength was measured using the Kendall method of double leg lowering. LBP was examined using LBP questionnaire. All DR measurements were taken by one investigator with a high intra-rater reliability (ICC 3,1 = .77-.98) for the six measurements were also taken by one separate investigator with a high intra-rater reliability (ICC 3,1 = .98).

Results: DR was found in 69% of the women at the umbilicus. Fifty-four percent of women during pregnancy and 61% of the women after pregnancy reported low back pain. Abdominal muscle strength was Fair minus in 61% of the women and Good in 38% of the participants. The relationship between DR resting measurements at 4.5 cm below the umbilicus and abdominal muscle strength approached significance (r=.75, p=.08). No statistically significant relationship was found between abdominal muscle strength and DR between DR and LBP. These results may be influenced by the small sample size and warrant further investigation.

Clinical Relevance: It is important to investigate the inter-relationship between these musculoskeletal disorders as pregnant and postpartum women frequently exhibit DR, LBP, and weak abdominals potential compromising function. Understanding these relationships will facilitate the implementation of effective preventative and rehabilitative programs for peripartum women.

The relationship between Diastasis Recti, Abdominal Muscle Strength, and Low Back in Postpartum Women.

Occupational Activity During Pregnancy: A Study of Practicing Physical Therapists

Authors: Kathie Lampe, Teresa Negen, Danielle Pietrucci, Becky Barclift, Cindy Van Damme

Abstract

Background and Purpose. Physical therapists routinely engage in occupational activities that have been identified as having the potential to increase the risk of an adverse pregnancy outcome. These activities include: standing, stair climbing, walking and commuting to work. The purpose of this study was to determine if a physical therapist's occupational characteristics increase the risk of an adverse pregnancy outcome. Adverse pregnancy outcomes examined were pre-term delivery (PTD), low birth weight (LBW), and miscarriage.

Subjects and Methods. The authors developed a 27-item questionnaire that was mailed in a regional survey of female Iowa Physical Therapy Association (IPTA) members. It consisted of two sections: Section I included current demographic information about the sample; Section II, pertained to an individual pregnancy and examined occupational setting and activities, along with pregnancy outcome.

Results. Some occupational activities were found to increase the risk of an adverse pregnancy outcome. Of the 327 pregnancies, 60 pregnancies (18.3%) resulted in an adverse pregnancy outcome with 28 miscarriages ($X = 10.5$ weeks $\pm$ 5.7), 29 PTD (X=35.4 weeks), and 9 LBW infants (X=2250.6 grams). Standing greater than 4 hours per day increased the risk for low birth weight (RR=1.8). The number of hours worked per day and week had significant relationships with miscarriage ($p \leq .01$).

Discussion and Conclusion. The significant results of this study showed that the occupational activities routinely engaged in by physical therapists may increase the likelihood of an adverse pregnancy outcome. The development of physician-implemented guidelines to modify the work environment in some settings for female physical therapists and other health professionals may be warranted.

THE ASSOCIATION BETWEEN FEMALE ADOLESCENT WEIGHT STATUS AND MOTHER'S EDUCATIONAL BACKGROUND.

Mitchell, K., Texas Woman's University, Houston, Texas.

PURPOSE: To determine whether female adolescent weight status was associated with mother's educational background.

SUBJECTS: High school students that voluntarily completed confidential in-home questionnaires were randomly selected for this study. The study utilized data from 543 16-year-old female adolescents of different races and ethnicities.

METHOD: The data was collected as part of the National Longitudinal Study of Adolescent Health.

ANALYSIS: A chi-square (test for independence) and four subsequent group partitions were used to analyze the data. Alpha levels of 0.05 were used to test for significance.

RESULTS: The initial chi-square analysis revealed a significant association between mother's educational level and daughter's classification of weight status ($p<.05$). Two of the four follow-up comparisons revealed significant associations ($p<.05$). When mothers with a college degree or higher were compared to mothers with only some college education there was a significant association with teen weight status. When mothers with any type of post high school education were compared to mothers with a high school diploma or GED there was a significant association with teen weight status. In each of these two comparisons, mothers in the higher educational categories had proportionally fewer teens in the overweight/obese categories.

CONCLUSIONS: There is an association between female adolescent weight status and mother's educational background.

RELEVANCE: This study found that the association between a child's weight status and parental education exists beyond childhood years into adolescence. National studies reveal a significant increase in the prevalence of overweight and obese teens during the past decade. Furthermore, obesity during adolescence is a strong predictor of obesity lasting into adulthood, which is linked to additional health concerns. Through education, physical therapists can promote adolescent female health by targeting both the mother and the teen in ways to combat obesity.

LIFE EXPERIENCE OF WOMEN WITH IDIOPATHIC SCOLIOSIS: ADOLESCENCE TO ADULTHOOD.

Morrin TA, Korf JL, Mostrom E; Central Michigan University, Mount Pleasant, Michigan.

PURPOSE: The adolescent years are marked by rapid development and emergence of one's identity. Many factors and psychosocial issues may affect the development of the individual in adolescence and early adulthood: physical function, appearance, personality, peer relations, health issues, and evolving sexuality. These factors are even more critical and magnified in the development of individuals with health and physical abnormalities, such as idiopathic scoliosis. Even so, there is a paucity of qualitative research that has investigated the experience of individuals with scoliosis and the effect of this physical impairment on their lives in adolescence and their transitions to early and middle adulthood. The purpose of this study was to explore the life experience of individuals diagnosed with adolescent idiopathic scoliosis from the time of adolescence and into adulthood.

SUBJECTS: The subject population was comprised of a volunteer, purposive sample of 10 subjects that met the following inclusion criteria: being female, at least 25 years of age, having a diagnosis of idiopathic adolescent scoliosis, and having had a scoliotic curve of 20^{o} or greater between the ages of 9 and 18. Participants were recruited from scoliosis and spine clinics in Michigan, as well as through support agencies in Ohio.

METHODS AND MATERIALS: Two questionnaires provided demographic and health history information on the participants. Semistructured open-ended interviews were conducted with all subjects to obtain participants' perceptions on their life and health care experiences after diagnosis with scoliosis during adolescence and into adulthood. Interviews were audiotaped and transcribed.

ANALYSES: Transcripts were analyzed using a qualitative, inductive approach and a constant-comparative method to identify key patterns and themes in the data.

RESULTS: The participants described the impact scoliosis had on many dimensions of their lives: (1) altered self-perception as an adolescent and as an adult, (2) social isolation and embarrassment, (3) decreased or impaired physical activity, (4) altered course of pregnancy, (5) an altered parent-child relationship, and (6) ultimately an overall general acceptance of the disease presently. Additional recurring themes were: (1) unfavorable effects from treatment methods, (2) unanimous positive perception of surgical results, and (3) an overall positive experience with health care professionals.

CONCLUSIONS: Findings provide a deeper and more "patient-centered" understanding of the myriad of experiences and issues that women with adolescent idiopathic scoliosis encounter from adolescence into adulthood. The words and perceptions of participants can assist health professionals, including physical therapists, who work with patients with scoliosis to use a holistic approach in order to recognize and address more than just the physical problems associated with idiopathic scoliosis.

USE OF A BIOMECHANICAL-BASED CLASSIFICATION AND TREATMENT SYSTEM TO DIFFERENTIATE CHRONIC LOW BACK PAIN (LBP) FROM PELVIC PAIN.

Packard KA, Kleiman SA. Spine & Sport Biomechanical Rehabilitation Center, Grand Rapids, MI

PURPOSE: This case study presents the evaluation and treatment of a patient using an innovative biomechanical-based classification and treatment-based system, Biomechanical Correction Technique (BCT). BCT has evolved over 12 years from a clinical need for more guidelines to direct treatment.

CASE DESCRIPTION: This 46 year old female had an 8 year history of low back and pelvic pain post vaginal delivery. She was evaluated and/or treated in multiple facilities in four cities. Evaluators included gynecologists, orthopedists, neurologist, anesthesiologist, physiatrist, pain psychologist, physical therapists, chiropractors, and a massage therapist. Tests included CT scan, MRI, pelvic x-ray, pelvic ultrasound, multiple blood tests, bone scan, bladder reflex tests, and EMG. Diagnoses included LBP, osteitis pubis, Regional Chronic Pain Syndrome, leg length discrepancy, and lipomas. Most prescribed medications failed to provide relief or she was unable to tolerate side effects. Drug-induced menopause and narcotic patches were advised but declined by patient. Patient participated in a comprehensive pain management program with minimal benefit. Proposed surgery included plate fixation, wedge resection and fusion of pubis joint. On examination, patient complained of dull aching to sharp pain in low back with episodic spasms, burning across buttocks and thighs, stabbing pain in lower abdomen, and audible popping in pubis with movement. Symptoms increased with walking, fast movement, prolonged standing, stair climbing and menses. Symptoms decreased with lying, position change and Paxil. Pain rating was 5-8/10 on Visual Analog Scale (VAS). Roland Morris Disability Questionnaire (RMDQ) was 10/24 points. Observation revealed asymmetry in standing posture and gait. Manual Muscle Testing (MMT) of hamstrings was 4-/5. Clinical observations were correlated with palpation findings of sacrococcygeal, sacroiliac, lumbosacral and lumbar ipsilateral rotation. According to BCT, these findings classified patient as an extension mechanism of resultant forces.

INTERVENTION: BCT Flexion Correction exercises for pelvis and spine series were given to address extension pattern. BCT incorporates manual therapy principles into active positional exercises. Patient was treated 2 times per week for 4 weeks. Patient received BCT stabilization exercises for recurrent joint dysfunctions as identified on daily BCT check log. Patient was encouraged to return to Activities of Daily Living (ADLs) without positional restrictions using BCT Check Tests as a guide to activity tolerance. The only remaining symptom was diffuse soreness across sacrum and pubis that she rated 0-2/10 on VAS. RMDQ listed 2/24 points. MMT of hamstrings was 5/5.

DISCUSSION: This patient had sought extensive treatment without success reinforcing the need for a clinically useful classification and treatment based system for non-specific low back/pelvic pain. BCT check tests and logs helped therapist and patient correlate a pattern of symptoms with a given region. Due to chronicity of symptoms, outcomes suggest that identification of dysfunctional movement patterns led patient to improved function and pain reduction. BCT classification and treatment system warrants further study for validity and reproducibility of results.

AEROBIC EXERCISE DURING AND AFTER ADJUVANT TREATMENT IN WOMEN WITH BREAST CANCER: A SYNTHESIS OF THE LITERATURE.

Flaig E, Lynn H, Maple A, Rieman J, Simpson K, Domholdt E. University of Indianapolis, Indianapolis, IN.

Purpose: The purpose of this paper is to synthesize the literature examining the use of aerobic exercise to improve physical function, body composition, fatigue, biopsychosocial well-being, and quality of life in women during or after adjuvant treatment for breast cancer.

Subjects: Articles reporting on research involving women with breast cancer who received adjuvant treatment and who participated in aerobic exercise were reviewed. Studies relating to exercise and the risk for breast cancer; those addressing specific post-surgical complications such as lymphedema; and those using non-aerobic upper extremity exercises, weight training, or stretching exercises were excluded.

Methods: We searched the Medline and CINAHL databases for terms relating to each of the five dependent variables (physical function, body composition, fatigue, biopsychosocial well-being, and quality of life). We limited the search to articles published between 1990 and the present. After finding relevant articles by this method, we combed the reference lists of those articles to find additional relevant articles published no earlier than 1989.

Data Analysis: Each relevant article was reviewed to determine its design, results, and limitations.

Summary Data: Five articles reporting on physical function, 5 on body composition, 6 on fatigue, 5 on biopsychosocial issues, and 3 on quality of life were reviewed.

Results: Overall, the evidence supported the use of aerobic exercise to counter the negative effects of adjuvant treatment for breast cancer. The findings show some form of aerobic exercise to be beneficial in increasing physical endurance and aerobic capacity; decreasing weight gain, increasing lean body weight, and decreasing percent body fat; reducing fatigue; decreasing depression and anxiety and increasing self-esteem; and improving the quality of life of women during adjuvant treatment for breast cancer.

Conclusion: A moderate amount of literature was found that supported the use of aerobic exercise to reduce the negative effects of adjuvant treatment for breast cancer.

Relevance: Physical therapists should consider aerobic exercise when prescribing exercise for women undergoing adjuvant treatment for breast cancer.