ISSN: 2574-1241
DOI: 10.26717/BJSTR.2018.10.001970
Marc Pierre Bonis. Biomed J Sci & Tech Res

BIOMEDICAL Journal of Scientific & Technical Research

Research Article Open Access

Assessment and Alleviation of Lumbopelvic Pain and Pelvic Floor Dysfunction

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Received: October 20, 2018; **Published:** October 29, 2018

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Abstract

Because of the time- and labor-intensive nature of the proposed study, a 5-week pilot test consisting of 10 subjects was implemented to determine if protocol modifications were necessary and if the full 60-subject study was warranted.

Abbreviations: LBP: Low Back Pain; PFD: Pelvic Floor Disorders; PFM: Pelvic Floor Muscles; IRB: Institutional Review Board

Introduction

Low back pain (LBP) is a condition of localized pain to the lumbar spine whose etiology is commonly unknown [1]. Pelvic floor disorders (PFD) occur when the muscles that comprise the pelvic floor fail to properly contract. This can cause urinary incontinence, pelvic organ prolapse, fecal incontinence, or other sensory and emptying abnormalities of the lower urinary and GI tracts [2]. Current evidence shows that individuals with low back pain have a significant decrease in pelvic floor function compared to individuals without LBP [3]. Over 25% of all women and more than a third over the age of 65 experience PFD. Even though it is a physiological problem, the psychosocial impact of PFD can be much more detrimental to the patient's quality of life. Over the next 30 years chronic health problems associated with PFD are projected to increase by 50% due to the increasing numbers of women reaching age 65 [4]. PFD does not typically have one specific cause. Pregnancy/childbirth, age, hormonal changes, obesity, lower UTI, and pelvic surgery are major risk factors. Additionally, anatomical, physiological, genetic, reproductive and lifestyle components are probably PFD developmental influences [1,4].

The pelvic floor forms the inferior border of the abdomino-pelvic cavity [4].

It supports the abdomino-pelvic organs. The pelvic floor muscles (PFM) function as a unit instead of individually contracting. They play an important role in maintaining and increasing intra-abdominal pressure during functional tasks such as lifting, sneezing, coughing, and laughing to prevent urinary and fecal incontinence [3,5]. Men can also have disorders of the pelvic floor, however due the anatomy of the male pelvis, it is less common [6]. Current evidence supports exercise protocol with the common goal of regaining neuromuscular control of the pelvic floor and deep abdominal muscles in a functional matter [7]. There is also strong evidence for PFM training as conservative treatment for stress urinary incontinence [5,8]. Treatment should also include education on healthy lifestyle habits to promote optimal functioning of the lumbopelvic stability system. Examples of these habits include good posture, maintenance of a healthy body weight, proper diet, routine exercise, and refraining from smoking [6]. This purpose of this study was to evaluate whether the implementation of lifestyle modifications as well as a specialized exercise program would improve the symptoms of pelvic floor dysfunction and mild pelvic organ prolapse in women. These symptoms include low back pain, hip pain, pelvic pressure, pelvic pain with intimacy and/or the use of tampons, bladder and/or bowel leakage with laughing, coughing, sneezing, jumping, bladder and/or bowel urgency and frequency. The research addressed whether the interventions proposed lead to improvements in pain levels and quality of life. The study evaluated the severity of the participants' symptoms pre and post intervention (Table 1).

Table 1: Subjects' Physical Characteristics.

n	Gender	Age (mean + s.d.)	Height (mean + s.d.)	Weight (mean + s.d.)
9	Female	44.1 yrs + 8.4	1.64 M + .03	78.7 Kg + 10.9

Design

Initially, a five-week pilot study that included 10 female subjects aged 44.1 + 8.4 years (mean + s.d.) was implemented to determine if a study of 60 female participants aged 35-65 years

old was warranted and if protocol modifications were necessary. The project was approved by the Institutional Review Board (IRB) from the University of New Orleans. The pilot test sample was a convenience sample. The subjects were selected because they exhibited symptoms of pelvic floor dysfunction as defined by the following 3 assessment questionnaires, as follows:

a) Pelvic Floor Distress Inventory Questionnaire – Short Form 30 (PFDI-SF20)

b) (assesses if the participant has certain bowel, bladder, or pelvic symptoms and how much they bother the participant.) [9]

i. Exclusion from study if answer 'yes' on question 3, 4, 6, or 14 (indicating symptoms are too advanced for safe participation)

ii. Exclusion from study if total score is greater than 200, out of possible score range of 0-300 (indicating symptoms are too advanced for safe participation)

c) Oswestry Low Back Pain Disability Questionnaire

d) (measures how participants' back or leg pain is affecting their ability to manage in everyday life.)[10]

i. Exclusion from study if total score is equal to or greater than 41%, indicating 'severe disability' to 'crippled'

e) Pelvic Floor Impact Questionnaire - short form 7 (PFIQ-7)

f) (measures how much bladder, bowel, or vaginal symptoms affect the participant's activities, relationships, and feelings.) [9]

g) Exclusion from study if 'quite a bit' is answered in all 3 columns for questions 1 or 2 (indicating symptoms are too advanced for safe participation.

Subjects were excluded from the study if they are assessed to have greater than a 3 finger-width diastasis recti abdominal separation as measured by one of the co-investigators. The subjects were recruited from the greater New Orleans metropolitan area using informational fliers, Facebook video ads, email messages and community postings of the same flier. All subjects signed a letter of informed consent stating that the study was voluntary and confidential and that all results would be kept in a locked environment. Participation was voluntary and low-risk. Exclusion criteria ensured that those with advanced symptoms were referred for medical consultation. All participants had ample opportunity for questions to be answered as needed by the co-investigator clinicians during the live sessions. The subjects were not remunerated.

During the course of the 5-week pilot study one of the participants was dropped from the study due to protocol non-compliance, so only 9 subjects completed the pilot study. The pilot study design included pre- and post- research-validated quality of life assessments [11], In Body 570 body composition measurements [12], pelvic alignment assessments [13], diastasis recti assessments, and manual external pelvic floor muscle activation assessments [14]. Participants were instructed in specific lifestyle modifications and were taught an exercise program over the course of seven live group sessions, 45 minutes each, to be led by one or both of the co-investigator clinicians. Participants were also instructed to perform a home exercise program at least 5 days per week and complete compliance forms to be turned in at each live group session. The two research clinicians were a licensed physical therapist and a clinical exercise physiologist.

Analysis

IBM SPSS Version 24 statistical programming was utilized and non-parametric, Wilcoxon "related-items" analyses were employed. A 0.05 level of significance was used.

Results

A comparison of the subjects' results of the pre- and post- values from the 5-week pilot test indicated significant improvements of lower back pain (Oswestry, $z(9) = -2.556$, $p < .05$), significant improvements of the quality of life (subjective emotional gauge, PFDI -20, $z(9) = -2.666$, $p < .05$), and significant improvements of bladder symptoms (PFIQ – 7, $z(9) = -2.536$, $p < .05$).

Discussion

Although the sample of the pilot test was not large enough to eliminate statistical bias, the results warranted a continuation of the study. The full study of 60 female volunteers proceeded as planned with no modifications to the proposed study's protocol. Researchers are currently recruiting volunteers for the full study.

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