

Effectiveness of Horseback Riding in the Management of Pelvic Floor Dysfunctions

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Background: Pelvic floor dysfunctions (PFD) significantly affect the quality of life for these women and often result in the need for complex surgery. Horseback riding can strengthen the pelvic floor (PF), reduce risks of PFD.

Objective: To study the effectiveness of horseback riding with pelvic floor exercise in treatment and future prevention of the Pelvic floor dysfunctions.

Materials and Methods: This was an experimental study of one group pretest posttest design. 12 women were recruited using convenience sampling technique. Therapy on horseback was performed with one session (30 minutes) a week for 12 weeks. The proposed activities during the sessions consist on basics of horsemanship (controlling the horse, mounting and dismounting the horse, and care of the horse) and perineal (Kegels) exercises. All the participants underwent a gynecologic physiotherapy assessment consisting of Vaginal palpation (Modified Oxford Score) and Perineometry before and after the intervention.

Results: The post-intervention Oxford scores and Perineometry measures (resting tone, voluntary contraction and rest tone difference) were significantly higher ($p < 0.05$) compared to baseline.

Conclusion: The therapeutic horseback riding combined with perineal exercises led by trained professionals seems to be effective in the treatment and prevention of pelvic floor dysfunctions.

Keywords: Horseback riding, Women, Prevention, Pelvic floor dysfunctions



INTRODUCTION

For some women, changes that occur as a result of vaginal delivery during the reproductive years can lead to increased problems later in their life. These problems are referred as pelvic floor dysfunction (PFD). These disorders significantly affect the quality of life for these women and often result in the need for complex surgery, that unfortunately have re-operation rates that reach 30%¹. The PFD includes a wide range of changes, both anatomical and functional. The most frequent is the urinary incontinence (UI), genital prolapse (GP), fecal incontinence (FI)² and sexual dysfunctions (SD)³. The UI, according to the Standardization Committee of the International Society of Continence⁴ is defined as any involuntary loss of urine. Stress urinary incontinence (SUI) is the most common cause of urinary incontinence among women, defining themselves as the involuntary loss of urine from effort or exercise, coughing or sneeze^{5,6}. This symptom of SUI can cause great discomfort, shame and loss of confidence, causing the isolation of social life and affect the physical and mental integrity^{7,8}. The UI affects between 17% and 45% of the adult women⁹ and is estimated to 0.4 for 17% of the adult women that are in the ambulatory the reason is fecal incontinence. The prevalence increased with the age¹⁰. Similarly, the prolapse is a common condition accounting for about 20% of the surgeries in developed countries¹¹.

According to the World Health Organization (WHO), the Sexual Health is the integration of somatic, intellectual and social aspects of sexual being in ways that are positively enriching and that enhance personality, communication and love. This presents decisive importance in the right to information and pleasure¹². The SD is the category most frequently found in sexual disorders. Approximately 25-63% of women suffer some kind of sexual problem¹³. These problems are also common distressing and have significant cost implications for the health systems¹⁴. Therefore, there is a clear need for prevention strategies for pelvic floor dysfunction or at least reducing their impact. There are evidences that horseback riding can strengthen the pelvic floor (PF), reduce risks of

sexual dysfunction and urinary incontinence¹⁵. The horse's movement facilitates the movement of the pelvis. This may be the result of pelvic similarity found between the horse and humans¹⁶. Therapeutic Riding has also been shown to strengthen muscles, improve coordination, reduce spasticity and improve or maintain range of motion, improved posture position, trunk control, mobility of the pelvis, manual control, flexibility, force and mental lucidity¹⁷. The riding exercises and the tasks about the care of horses, contributes to the general welfare of the individual¹⁸.

The basis for the rehabilitation of the perineum is the reeducation of the body as a unit that is advocated by the TR and also gives combined with strengthening the pelvic muscles, which is based on the precept that repeated voluntary movements provide increased muscle strength. Thus, the perineal exercises are beneficial and lead to strengthening and supporting elements to improve urethral resistance¹⁹. The rhythmic movements of the horse are precise and three-dimensional and are what makes it a kinesiotherapeutic instrument when walking dislocated to the front, to behind, to the sides, up and down, being compared with the action of the human pelvis when walking²⁰.

Based on the operation of the pelvis and the influence of TR riding on the same combined with specific exercises for the pelvic floor this study was aimed to assess the effectiveness of horseback riding with the exercise protocol, compiled by the authors of this article, on the PF. This research also aimed to study the possibility of future prevention and treatment of the PFD

MATERIALS AND METHODS

This was an experimental study of one group pretest post test design. 12 women were recruited using convenience sampling technique. Exclusion criteria were UI or other Abdominal disorders such as pelvic prolapse or any physical change that does not allow the patient to ride. By agreeing to participate in the study, all the participants signed a Consent form.

By agreeing to participate in the study they signed a consent form. All the participants underwent a Gynecologic physiotherapy assessment consisting of Vaginal palpation and Perineometry before and after interventions.

Vaginal Palpation

The Vaginal palpation of the pelvic musculature was performed by a Physiotherapist with training and experience in Modified Oxford scale²¹. The patient lied supine with Knees bent, the evaluator used the 2 fingers for Vaginal palpation. The Patients performed maximal and sustained contraction of pelvic muscles maintaining normal breathing. 3 tests were performed and the median score was tabulated.

Perineometry

The perineometry was performed through the display of the pressure signal of the pelvic muscles through a vaginal probe. This probe was connected to a pressure sensor (MYOMED134). The probe was inserted into the vagina with the central portion located approximately 3.5 cm from the introitus²². Patients remained in the same position of palpation and were oriented in the same way. Maneuvers were performed up to five maximum vaginal contractions with a rest between them. The Perineometer measurements were taken during the rest (Resting Tone) and during the 5 Voluntary Contractions. The mean of the measurements were considered for analysis.

Intervention

Therapy on horseback was performed with one session (30 minutes) a week for 12 weeks. The proposed activities during the sessions consist on basics of horsemanship (controlling the horse, mounting and dismounting the horse, and care of the horse) and perineal (Kegels) exercises.

Statistical analysis

The statistics have been analyzed by the software: SAS v9.2, SAS institute Inc., Cary, NC, USA. Descriptive statistics was produced for Age, Pregnancy, Abortion and Sexual activity. Paired t tests were performed to compare differences between Post and preintervention Oxford and Perineometry scores. 5% level of probability was used to indicate statistical significance.

RESULTS

Table 1 shows the descriptive statistics of the 12 subjects participated in this study. The average age of the subjects was 24.7 years. Majority of the subjects (83.3%) were sexually

Table 1 Descriptive statistics of Age, Pregnancy, Abortion and Sexual activity			
Characteristics		Mean	S.D
Age (Years)		24.7	3.5
		Frequency	Percentage
Pregnancy	Yes	2	16.7
	No	10	83.3
Abortion	Yes	2	16.7
	No	10	83.3
Sexually active	Yes	10	83.3
	No	2	16.7

active and was not pregnant. 16.7% of the subjects had history of pregnancy and abortion. The data regarding comparison of pre-intervention and post-intervention scores are presented in **Table 2**. The mean Oxford score for the subjects at the baseline (Pre-intervention) was 2.74. The mean Perineometry measures of resting tone, voluntary contraction and rest tone difference at the baseline were 32.84, 63.54 and 30.7 cm³H₂O respectively. The mean post-intervention Oxford score for the subjects was 4.04. The mean post-intervention Perineometry measures of resting tone, voluntary contraction and rest tone difference were 47, 98.17 and 51.17 cm³H₂O respectively. The post-intervention Oxford scores and Perineometry measures (resting tone, voluntary contraction and rest tone difference) were significantly higher (p < 0.05) compared to baseline.

DISCUSSION

The anatomical structure of the women PF should prevent the UI and GP, during increased abdominal pressure or movements associated with activities of daily living. This should also allow elimination through urination and defecation. But the difference between a man, a woman has to allow the delivery¹. Studies show that continent women have better muscle function than incontinent women²³ and indicate that healthy pelvic muscles can take optimal anatomical position inside the pelvis where it is able to operate automatically²⁴. However, 49% of women can't contract the perineum in a way that increases urethral closure pressure²⁵ and with the progression of the age of 15 to 80 years the loss is 2% per year of the total number of muscle fibers. This causes a loss of

Table 2 Comparison between Pre-intervention and Post-intervention scores

Parameters	Pre-intervention		Post-intervention		p value #
	Mean	S.D	Mean	S.D	
<i>Oxford score</i>	2.74	0.84	4.04	2	< 0.001*
<i>Perineometry(cm³H₂O)</i>					
Resting tone	32.84	9.18	47	7.07	0.001*
Voluntary contraction	63.54	22.94	98.17	14.94	< 0.001*
Rest tone difference †	30.7	21.29	51.17	20.09	0.001*

†- Initial Vs final contraction, #- Paired t test, *- Significant p < 0.05

urethral closure pressure and probably leading to the SUI¹.

Hence the importance of prevention strategies for maintaining an optimal pelvic floor muscles and perineal learning and consciousness is enormous. Self-knowledge reduces the body's predisposition to injury and prevents the increased intra-abdominal pressure in the pelvic floor muscles. This and the domain structures of the body provide the proper use of the PF in the day life activity, that means, the automatic functional use of muscles, which is what keeps it healthy²⁶.

This makes health professionals seeking new techniques for prevention and intervention. This study demonstrated the effectiveness of a new technique that incorporates specific perineal exercises with therapeutic riding. We believe that the facilitation of movement of the pelvis that provides the horse²⁷ may enhance further treatment that may have greater adherence to be held outdoors in contact with the nature²⁸.

The protocol in this study used self-body awareness techniques and we believe that the greatest promoter of perception of the perineum was the women's contact with the horse without a saddle, added to the stimulus given by the horse facilitate pelvic mobility and increase the therapeutic results²⁹. Among the parameters measured displayed consistency between the scaling of the perineometry with the modified Oxford (contraction). The specific PF exercises have been used as treatment and prevention from 1920³⁰. Voluntary contraction of PF causes a constant pressure and elevation of the muscles resulting in urethral closure, stabilization and resistance against pressure increases³¹.

Another important finding in this study is the statistically significant increase (p < 0.001) of resting tone. The focus of the training of PF is build strength, endurance, speed and coordination in various situations. An effective training program of pelvic floor shown to increase contractile force and increases the resting tone of the pelvic muscles, providing better support of pelvic organs putting them to a upper position³². Besides constantly maintained tone relieves tension in the pelvic fascia³³.

The theoretical rationale for the intensive strength training (exercises) of the pelvic floor is that muscle strength training can build a structure for the pelvic support on raising the lift plate for a permanent position higher in the pelvis by a hypertrophied reinforce and rigid of the muscles and connective tissue. This would facilitate a more effective lighting power unit automatically (neural adaptation) preventing decrease in abdominal pressure increases³⁴.

We believe, therefore, it is a complete technique that treats women in a global manner. By riding women improve posture¹⁷ and sensory motor experience³⁵ that leads to self-knowledge of their bodies. In addition to the perineal exercises, that fact of learning your own body avoids the decline of the urethra, bladder neck and uses more and more effectively motor neurons³⁶.

Therapeutic Riding with specific exercises is effective to strengthen the pelvic floor muscles. The authors believe that besides the physical benefits, the technique brings psychological and social benefits for women and possible increased adherence to treatment.

CONCLUSION

The therapeutic horseback riding combined with perineal exercises led by trained professionals seems to be effective in the treatment and prevention of pelvic floor dysfunctions. We suggest further studies on the subject for further understanding of its mechanisms of operation with control groups for believing that the facilitating of the pelvic mobility in the horse the perineal exercises are maximized.

CONFLICTS OF INTEREST

None declared

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