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THE EFFICACY OF HYPOPRESSIVE GYMNASTICS IN THE PHYSIOTHERAPEUTIC TREATMENT OF STRESS URINARY INCONTINENCE ASSOCIATED WITH CYSTOCELE

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ABSTRACT

Introduction: Urinary incontinence is defined as a condition where there is the involuntary loss of urine, already cystocele is conceptualized as the fall of the bladder due to loss of support in the region where it is located. Among the types of urinary incontinence, "Effort" (SUI) is the most frequent, assessed by the International Continence Society (ICS) as involuntary loss of urine after physical exercise, cough or sneeze. **Objectives:** To verify the effectiveness of hypopressive gymnastics in the physiotherapeutic treatment of stress urinary incontinence associated with cystocele. **Material and Method:** This is field research, characterized as an experience report, in which there will be a female volunteer who presents (SUI) aged 45 to 65 years. The volunteer underwent a urogynecological physiotherapeutic evaluation and the collection of socio-demographic data. The muscle strength test and the functional visual assessment using the modified Oxford scale were used to prove the presence or absence of voluntary contraction of the pelvic floor muscles (MAP) after the verbal command of the evaluator. **Results:** During the application of the protocol, there was a general improvement in the quality of life of the volunteer in all domains, implying the limitations felt by the patient in her personal and social life, as well as in her emotional, in addition to improvement in the degree of cystocele, grade 3 pre-treatment and grade 2 post-treatment and muscle strength gain. **Conclusion:** It was concluded that there was a significant improvement in the scores of the impact of incontinence, the limitations of daily, physical and social activities, muscle strength and the amount of urine lost after performing the specific hypopressive gymnastics protocol.

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INTRODUCTION

Urinary incontinence is defined as a condition where there is an involuntary loss of urine. It affects about 10% to 57% of women aged between 20 and 89 years1,12. With prevalence in women with the shorter urethra, vaginal births, advanced age, obesity, decreased or lack of estrogen, conditions associated with increased intra-abdominal pressure that includes intense physical activity, smoking, neuropathies, and previous hysterectomy2. Among the types, stress urinary incontinence (SUI) is the most frequent. Conceptualized by the International Continence Society (ICS) as involuntary loss of urine after physical exercise, coughing or sneezing 3. Women who show SUI may have some degree of genital prolapse, related to the displacement of the pelvic organs 1,12. Cystocele is conceptualized as the fall of the bladder due to loss of support in the region where it is located. It can be of tension, where there is a stretching of the anterior vaginal wall and displacement cystocele when paravaginal irregularity occurs in which a separation of the pubocervical fascia from the pelvic wall is seen. In up to 80% of cystocele, it is observed if the vaginal wall defect, and if associated with the EUI this value rises to 95% 4. There are a large number of women with pelvic floor disorders and these disorders have a direct impact on the

quality of life, as they generate an uncomfortable situation, causing low self-esteem, depression, anguish and in general, psychological, social, physical and personal relationships and sexuality, and it is essential to work in a broad way to reduce or treat these disorders1,12. In the 1980s, French researchers created a technique to improve the tone of the perineal musculature, based on the active contraction of the abdominal musculature, causing the elevation of the pelvic organs towards the respiratory diaphragm and the respective contraction, supposedly reflecting the pelvic floor musculature (MAP)5. Hypopressive Gymnastics (GH) is a combination of a set of postures and diaphragmatic breathing exercises that reduces abdominal pressure by toning the muscles of the abdomen and pelvic floor. Associations of postures associated with respiratory movements cause a drop in intra-abdominal pressure, synergistic activation of pelvic floor muscles and abdominal muscles, especially the transversus abdominis, because from the postural point of view, the muscles worked in GH are antagonists of the diaphragm leading to these changes. Therefore, the activation of this muscle can coactivate the perineal musculature, and when it works in the long term, it leads to an increase in the tone of the pelvic floor and abdominal muscles, significantly decreasing the risk of urinary loss 6,13. The exercise consists of three phases: 1) slow and deep diaphragmatic inspiration, 2) complete exhalation, and 3) diaphragmatic aspiration, keeping apnea for about 10 to 20 seconds, as is most comfortable for the volunteer. Deep abdominal, intercostal muscles and elevation of diaphragmatic domes occur 7,14.

MATERIALS AND METHODS

Qualitative and quantitative field research was carried out to verify the effectiveness of hypopressive gymnastics in the physiotherapeutic treatment of stress urinary incontinence associated with cystocele. The study was conducted from August to October 2018 at the School of Physiotherapy Clinic of Gurupi university, after approval by the ethics and research committee of Gurupi university, according to CAAE: 58612016.9.0000.5518, and opinion no. 1,755,827, strictly obeying Resolution No. 466/2012 of the National Health Council and through the protocol formulated by researchers and physical evaluation. A female subject participated in the study, inserted in the waiting list for the treatment of the Women's Health sector of the School of Physiotherapy Clinic (CEF) of Gurupi university, with stress urinary incontinence (SUI) and cystocele, which signed the TCLE and committed to implementing home protocols. The inclusion criterion was a female subject who has SUI and cystocele, aged between 45 and 65 years old, who has not undergone surgery to treat Urinary Incontinence and cystocele or any pelvic surgery and who accepted to participate in the research and who committed to executing home protocols. Exclusion criteria were subjects that did not fit in any of the inclusion criteria and who had diabetes, hypertension, chronic obstructive pulmonary disease (COPD) and who performed other methods of physiotherapeutic treatment for the disorders that will be studied. In the initial evaluation through the anamnesis form, demographic socio-data were collected as containing name, date of birth, age, level of education, work activity, marital status. The 48-year-old volunteer, single, from the home, illiterate, with a history of two births, one vaginally, where she started with urinary losses and one due to cesarean section, reported being in the post-menopause period 5 years ago. In the evaluation, she presented urine loss during the day, triggered by effort, such as coughing, sneezing, bending over, lifting weight, etc., even wetting her underwear, the frequency this loss occurred during the day and night, in a drip. For the observation of routine, bladder habits and the characterization of urine loss, the volunteer filled out the voiding diary, is a tool that is among the best means of obtaining objective data on subjective symptoms and is widely used for the diagnosis and management of urinary incontinence for pre and post-intervention comparisons 8. During the clinical examination, the waltz maneuver and cough were performed to identify the loss of urine, which may exclude neurological disorders and assist in assessing the integrity of the pelvic floor, as well as ruling out other pelvic disorders. To assess the strength of the pelvic floor muscles (MAP), the muscle strength test or functional visual assessment using the modified Oxford scale, proving thepresence or absence of voluntary contraction of the MAP after the verbal command of the evaluator, that is, the analysis of the movement of the perineum, during the contraction of the MAP. The measurement of MAP contraction is quantified in the grading from 0 to 5, which determines the functional classification of MAP, according to the Modified Oxford scale. Supported by this procedure, the volunteer was evaluated as follows:

Grade 0	No visible perineal contraction, nor palpation (absence of contraction);
Grade 1	No visible perineal contraction, contraction confirmed only on palpation;
Grade 2	Weak perineal contraction, weak palpation contraction;
Grade 3	Perineal contraction present and resistance against palpation;
Grade 4	Perineal contraction present and resistance against palpation not maintained for more than five seconds;
Grade 5	Perineal contraction present and resistance against maintained for more than five seconds on palpation.

Fig. 1. Absence of contraction (Fabiana, 2018)

During the test the volunteer was positioned in the gynecological posture without clothing from the waist down, covered by a sheet, followed by the palpatory tactile perception, where the examiner introduced the index and middle fingers into the vagina. Thus, it was possible to ascertain muscle strength and classify the volunteer in the five categories, according to the Oxford scale. The evaluation of voluntary contraction is the principle for determining the treatment modality, on a scale of 0 to 5, showing the absence of normality of muscle strength. The measurement of the cystocele occurred visually being classified into degrees, being: first degree: Up to the upper part of the vagina; second degree: Even vaginal introitus; third-degree: in addition to vaginal introitus. For the detection and quantification of urine loss, the long-term PAD TEST (24 hours) was performed at the volunteer's home. She used protectors for 24 hours, exercising her routine activities, noting the volume of liquid ingested and urination, changing the protectors when necessary. The weights of the guards were weighed before and after that period and compared with the dry protector weight. The increase of 5.5 to 8 grams in 24 hours is considered normal9. To assess the impact of SUI on the volunteer's quality of life, the King's Health Questionnaire (KHQ) questionnaire was applied before starting treatment and after its completion. The KHQ was validated in 2005, consisting of 30 questions that are arranged in nine domains 10,15. The report, respectively: health perception, the impact of incontinence, limitations on tasks, physical limitations, social limitations, personal relationships, emotions, sleep/energy and severity measures (Table 1). All responses were assigned numerical values, added and evaluated by domains. Responses

were based on an increasing numerical scale and proportional to the intensity complaint (0 = not / not applicable; 1 = a little / sometimes; 2 = more or less / several times; 3 = a lot / always), except for the general health understanding domain, which has five response options: very good, good, regular, bad, very bad. The KHQ was scored for each of its domains. The result of the domain values vary from zero to 100, and the higher the score obtained, the worse the related quality of life to that domain11. The exercise protocol was performed in ten sessions so that there was a pre-evaluation meeting and another post-evaluation meeting. It was two weekly meetings lasting 30 to 40 minutes each session. The evolution of the session time was increased as the evolution of this volunteer. The sessions took place at CEF, in the neurology room, an environment with ample space, refrigerated, with tatami support and mirror for better execution of the exercises. In the first 5 sessions, exercises were used with less difficulty for the volunteer. The exercise consisted of phases: 1) slow and deep diaphragmatic inspiration, 2) complete exhalation, and 3) diaphragmatic aspiration, keeping in apnea for around 10 to 20 seconds and a rest time of 1: 2. The postures maintained in each exercise evolved with the gradual gain of perception and awareness of the postures, according to the present order, the volunteer remained in an orthostatic position, internal rotation of shoulders, hands up and knees semi flexed; semi trunk flexion, internal rotation of shoulders, with hands resting on the knees; with your hands and buttocks leaning against the wall, performing a trunk and knees flexion; four supports; in a sitting position with legs intertwined, shoulders in internal rotation; position on four supports; supine position, knees flexed, internal rotation of shoulders, arms flexed and hands up. A descriptive statistical analysis of the collected data was performed with the present tests and applied protocol.

RESULTS AND DISCUSSION

A volunteer, aged 48 years, with a 27-year SUI complaint time, was evaluated, reporting “discomfort as a meatball in the vagina” (SCI) and loss of urine. Regarding obstetric history, the volunteer is multigravid, with the mode of delivery, a cesarean section and a vaginal one. In addition, the volunteer started treatment with the proposed protocol with grade III cystocele, in which the protrusion exceeds partially the vaginal introitus. The voiding diary was applied only in the evaluation, as the participant was unable to understand and fill it out correctly, therefore it is not possible to make a comparison before and after the intervention, justifying this difficulty due to the low school index and difficulty in understanding the event that is being described. During the evaluation of the pelvic musculature, it was noticed the difficulty and little perception of the volunteer in relation to the muscular contraction, simultaneously contracting the muscles of the abdomen, adductors, glutes and anal sphincter. Thus, in the first session, a work of awareness and muscle proprioception was carried out to be able to carry out the correct application of the protocol both in the proposed postures and in the respiratory part, where there was apnea of just 5 seconds in the first session, reaching 40 seconds on the last day of care. During the treatment, there was difficulty in positioning the volunteer in the supine position, as she had vertigo. Regarding the scale of urinary symptoms of KHQ, before and after treatment, it was investigated how much some symptoms that affected the volunteer, such as health perception, impact on incontinence, limitations in daily tasks, physical and social limitations, personal relationship, emotions, quality of sleep and changes in the frequency of urine leakage. It can be observed that, before the treatment, the symptoms that most bothered the volunteer and, later, showed improvement were the limitations in daily tasks such as cleaning, washing, cooking, scoring 0 points in the final KHQ evaluation, showed improvement in relation to physical limitations and social, zeroing two of the four items in that domain. In the domain of personal relationships, containing 13 items, the volunteer improved by 5 and kept the rest according to the initial assessment. The symptoms that showed improvement were related to family, nocturia and nocturnal enuresis, bladder pain and SUI while coughing, sneezing or running. In the domain of emotions, all items showed an improvement, leading to a score of 3, refers to a problem that affected "a lot" / "always" to 2, refers to a problem that affects "more or less", being one indicative of improvement of the volunteer. The score The patient’s overall score at the initial assessment was 61 points and in the end, it was 45 points, as shown in Table 1 and Graph 1. According to the Oxford Scale, it was possible to ascertain the muscular strength and classify the volunteer according to the muscular contraction of the MAP, which presented perineal contraction and resistance against palpation, initially classified as grade 3. Right after the end of the application of the protocol, there was a new evaluation, where the volunteer presented present perineal contraction and resistance against palpation not maintained for more than five seconds, being classified as grade 4 (Graph 2). Before treatment, cystocele was measured and classified as grade 3, going beyond the vaginal introitus, after the application of the protocol, there was a new measurement classifying it as grade 2, limited to the vaginal introitus.

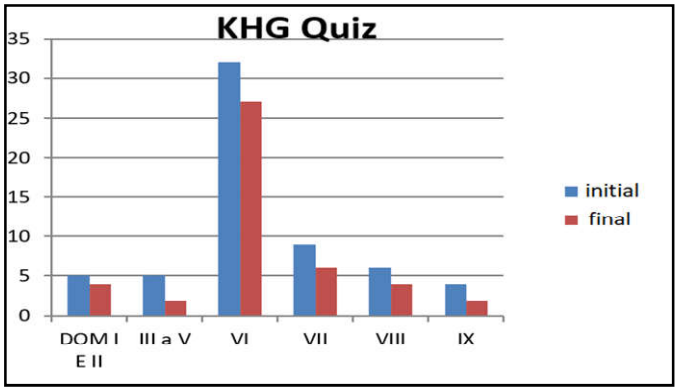

Fig. 2. KHG questionnaire divided by domains

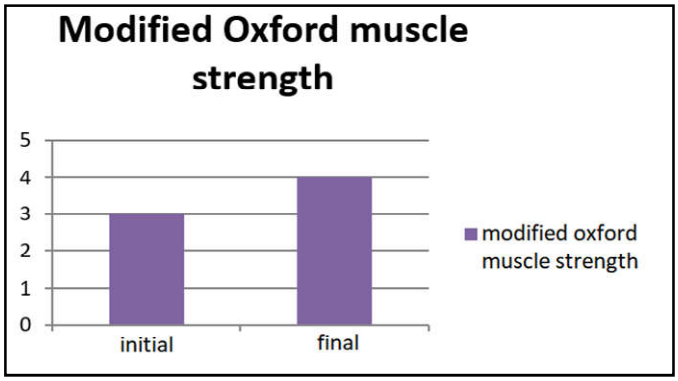

Fig. 3. Initial and final muscle strength

The long-term PAD TEST (24 hours), performed at the volunteer’s home, showed a significant improvement, initially weighing 10.4 grams and then 7.39 grams (Graph 3), with a

drop in the amount of urine lost, entering within the loss considered normal that is between 5.5 to 8 grams in 24 hours 9.

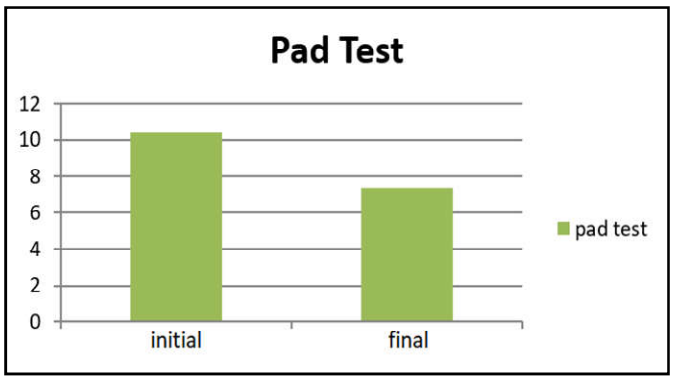

Fig. 4. Long-term Pad Test

Another data observed during the application of the protocol was the decrease in the Hip Waist Ratio (WHR) (Graph 4), initially presenting an abdominal circumference of 84 centimeters and 88 centimeters of the waist, subsequently presented 81 and 85 centimeters respectively.

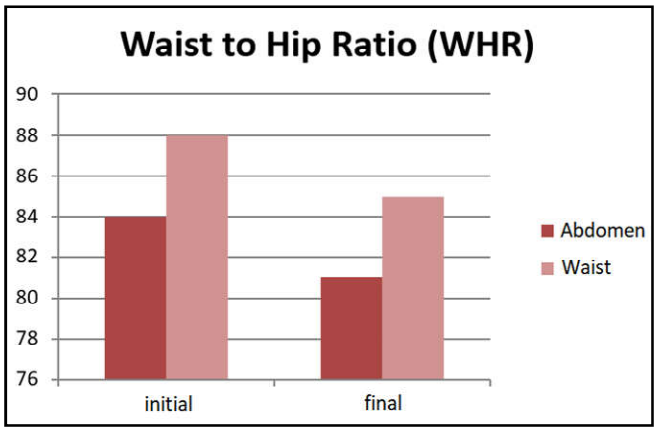

Fig. 5. Waist-Hip Relationship (WHR)

Although SUI does not directly put people's lives at risk, it is a condition that can have several medical, social, economic and emotional implications, adversely affecting the quality of life. The treatment had a direct impact on different aspects of QOL, such as the symptoms of the urinary tract perceived by the volunteer, showing minimal side effects in its application.

Table 1. KHG Questionnaire, PAD TEST, Waist-Hip Relationship RCQ, modified Oxford, Cystocele Grade

		Initial Evaluation	Final Evaluation
KHG Quiz		**61**	**45**
Domain I and II		5	4
Domain III to V		5	2
Domain VI		32	27
Domain VII		9	6
Domain VIII		6	4
Domain IX		4	2
PAD TEST**			
Used absorbent		10,4g	7,39g
Waist-to-hip ratio RCQ **			
Abdomen		84	81
Waist		88	85
Modified Oxford muscle strength **		3	4
Cystocele degree **		3	2

* Refers to the questionnaire score.
** Reference data analyzed.

According to the results, it can be inferred that the proposed protocol with hypopressive gymnastics had its effectiveness proven by the improvement in the scores of all tests applied, as well as in the KHQ questionnaire.

During the application of the KHQ questionnaire, there was a general improvement in the quality of life of the volunteer in all domains, implying the limitations felt by the patient in her personal and social life, as well as in her emotional life.

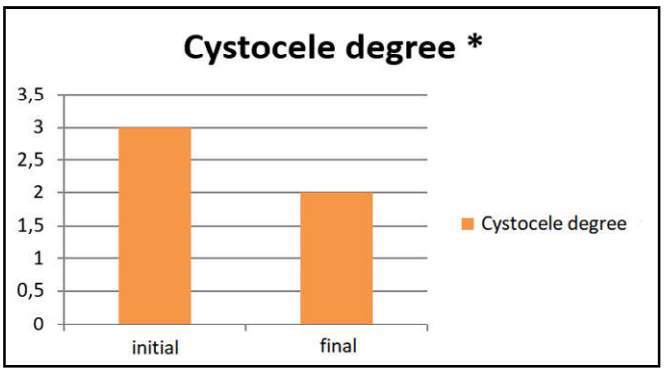

Fig. 6. Degree of Cystocele

The results also point out that there was an improvement in the degree of cystocele, with grade 3 pre-treatment and grade 2 post-treatment, in addition to a significant improvement in the pelvic floor muscles, which acquired muscle strength, initially showing perineal contraction and resistance against palpation, classified as grade 3 and after treatment, the volunteer presented perineal contraction present and resistance against palpation not maintained for more than five seconds, classified as grade 4.

Conclusion

It is concluded that there was a significant improvement in the scores of the impact of incontinence, the limitations of daily, physical and social activities, muscle strength and the amount of urine lost after performing the specific hypopressive gymnastics protocol. Therefore, hypopressive gymnastics can be an effective self-care strategy because it is characterized as a non-invasive, resolution and low-cost method that improves the quality of life of those who are under stress urinary incontinence.

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