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### **Impact of Cantienica® Method to Improve Urinary Incontinence and Quality of Life**

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#### **Abstract**

**Background:** The aim of this study was to determine the impact of symptoms of urinary incontinence by individuals, with the help of pelvic floor muscle's activation using Cantienica® and the subsequent effect on the quality of women's life.

**Patients and methods:** The selected sample consists of two groups - experimental and control. The experimental group consisted of 31 female patients with incontinence, who completed therapeutic exercises using features of Cantienica® method. Control group consisted of 31 female patients with incontinence, which had taken a different way of conservative therapy.

**Results:** The research has found that in the group of female patients who completed the therapeutic exercise by Benita Cantieni method, came in both phases to significantly greater change in the quality of life and greater alleviation of incontinence among the women who completed the other conservative treatments of incontinence.

**Conclusion:** It can be alleged by the observed results, that the evaluated method has an effect on improving the quality of life and alleviating the symptoms of urinary incontinence in women.

**Keywords:** Urinary incontinence. Pelvic floor. Body posture correction. Cantienica®. Quality of life.

## Introduction

Urinary incontinence, despite the relatively frequently occurrence is still taboo. The negative impact of this problem is not only in health levels, but especially in the psycho-social and hygiene. Although there is no problem associated with high morbidity and mortality, it has a major impact on the quality of life of affected patients. It is not a disease in the true sense, but it is a symptom of the most different pathologies. Feedbacks from therapy, used treatments and their effectiveness are various. Only 35% of respondents expressed satisfaction with the quality of treatment (Švihra, 2009). Even in the assessment from some doctors we discovered the opinion that surgical treatment is far more successful than conservative treatment (Kawaciuk, 2009). Interdisciplinary approach also appears in other literary sources. Urinary incontinence is assessed as a serious economic, social and medical problem. So the diagnosis is necessary to distinguish the stress, urgent, mixed, or other types of incontinence. It helps anamnesis with using ICIQ-SF questionnaire, physical examination, including the tests for incontinence, residual urine measurement and laboratory testing of urine and blood. Examination by a specialist, Urologist, Urogynecologist, Neurologist is indicated, if there are presented complicating factors, when the basic examination does not help to determine the level and type of incontinence or in case of unsuccess of primary treatment of incontinence. In moderate stress incontinence is usually recommended regime measures and training of the pelvic floor, in urgent incontinence mostly antimuscarinic drugs and in other types the solution of the causes of incontinence (Lachváč, 2010). From the perspective of "popularity" of individual therapeutic action in patients dominates the collection devices. 93% of respondents have said that they use absorption facilities (Švihra, 2009). The results of therapy influences are also the way of access to the patient. It considers that the treatment of stress incontinence should always be strictly individual. The female patients have individual mobility problem, which cannot be generalized just because the consequence is the same and it is urinary incontinence. At the same time it is problematic individual control of the accuracy of activation of the pelvic floor muscles. There is missing Elementary control of correct implementation of exercises and the patient's motivation by a physical therapist. And exactly in this it sees the cause of laic opinion, but also the public expert, that physiotherapy incontinence does not bring the success. At the same time it expresses a negative approach to fairly widespread recommendation, that the "exercise" of the pelvic floor is being implemented by the system of interrupting the flow of urine during urination. After some time, it may in fact lead to damaging of proper voiding stereotype and then to the inability to completely empty your bladder (Krhut, 2005). Krhut (2005) assesses the physiotherapy as a full-featured therapeutic method in the treatment of incontinence. It has its indications and contraindications as such, especially cognitive limits. It can not be agreed with the opinion, that we indicate to the physiotherapy of those patients, who are unsuited for any other therapy. On the contrary, we consider physiotherapy in most cases as first-line therapy. The basic priority of physiotherapy in fact lies in the complete absence of side effects and in the case of therapeutic failure it does not exclude the use of any other method of treatment. Cantienica® method (Cantienica or method of Benita Cantieni) is anatomically correct, logical and complex. It provides guidance for the identification within the own body, it is an instruction for strengthening the muscles and for creating of significant basis not only for the successful treatment of incontinence, but also for its prevention (Cantieniová, 2007). Doctors, physiotherapists, midwives work abroad with this method. This method is suitable for all women and men of all ages category, non-sports people, and athletes. It consists of over 100 exercises, from simple to challenging. The individual exercises can be modified and adapted to the needs and physical condition of the patient. The therapeutic effect is usually seen after the first workout. The program of exercise is various and thereby is entertaining. Exercise is very pleasant for the body and gives it energy. The method is characterized by erect posture, the ideal position of the pelvis, ribcage, spine, leg bones, ensures optimal functioning of joints. The method is harmonious, develops a feeling for your own body, its holding and movement within everyday life, supplies a sense of lightness, harmonious movements, youthful radiation and forms the figure. The method is very practical, exercises can be used in everyday life (Cantienica, 2012). The object of research was urinary incontinence, women's quality of life with stress urinary incontinence, the symptoms of urinary incontinence and accurately aimed exercises, which has used of the elements of Benita Cantieni method.

### Patients and methods

The selected sample consists of female patients with incontinence the first and the second level, randomly divided into two groups - experimental and control. The experimental group consisted of 31 female patients with incontinence who completed therapeutic exercises using features of Cantienica® method. Control group consisted of 31 female patients with incontinence, which have taken a different way of conservative therapy. The only intentionally criterion for the selection of respondents was woman with urinary incontinence the first or the second level according to classification of Ingelmann - Sundberg. The age of female patients was ranged from 37 to 69 years. The research was conducted from January 2014 to October 2014. The first phase of the research was accomplished for ten therapeutic units, where the duration of one therapeutic unit was of 60 minutes, periodically once a week. In the second phase of research the female patients adhered to complete program at domestic environment, where they had to repeat the exercise regularly several times a day for a further ten weeks. Throughout the research were conducted three surveys, input, controlling after 10 weeks and output after the next ten weeks, in all a total of 20 weeks. From the method of research we used two questionnaires - Incontinence Quality of Life Questionnaire I - QOL, International Consultation on Incontinence Questionnaire ICIQ - UI Short Form (Bushnell, 2005). After the completion of quantitative data's collection, the results of this research were statistically analysed using descriptive statistics and the tools of comparative analysis where we used non-parametric test types such as Mann-Whitney's test that is used to compare the median values of two independent samples. Its output is among other characteristics called p-value of the test. This p-value is compared with a level of significance  $\alpha$ , which we have determined the most commonly used value of 0.05. And non-parametric sign test, which evaluates the number of changes that have occurred in the file and on the basis of it the p-value is calculated. Statistical calculations and their graphical representation were realized in the statistical program of Statistica 12.

### Results

I-QOL – Incontinence Quality of Life questionnaire related to urinary incontinence and the problems associated with it. The questionnaire was completed by female patients three times in certain time intervals, followed by the total percentage evaluation the quality of life. Total score equals the sum of all items. The score is then transformed to a scale of 0 to 100% (Table 1).

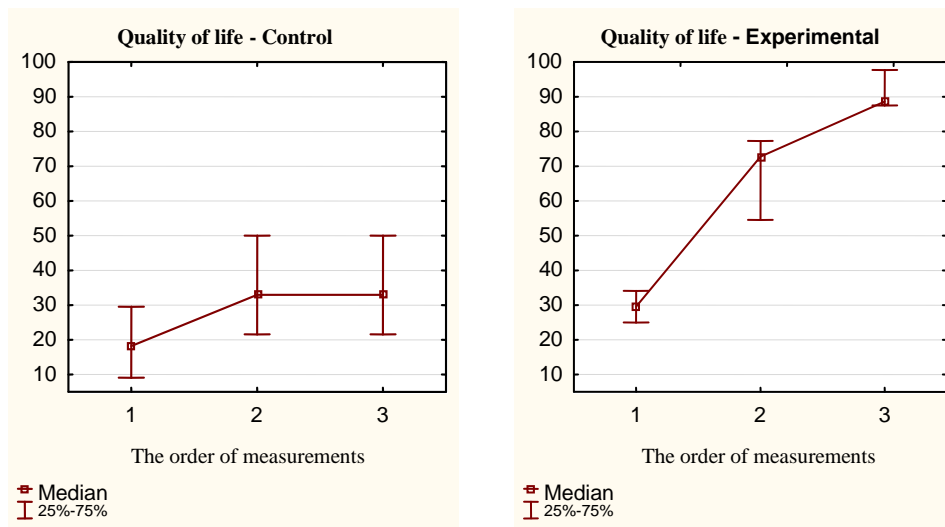
Table 1: Incontinence Quality of Life questionnaire – 3 measurements

<i>Quality of Life I-QOL</i>	<i>Control group</i>			<i>Experimental group</i>		
	1. measurement	2. measurement	3. measurement	1. measurement	2. measurement	3. measurement
Mean	<b>19,46</b>	<b>34,71</b>	<b>34,71</b>	<b>30,79</b>	<b>68,11</b>	<b>89,00</b>
Standard deviation	12,94	16,78	16,78	6,56	15,20	12,44
Coefficient of variation	66%	48%	48%	21%	22%	14%
Count	31	31	31	31	31	31
Minimum	0,0	9,1	9,1	20,5	25,0	50,0
Maximum	45,5	75,0	75,0	50,0	88,6	100,0
Variation margin	45,5	65,9	65,9	29,5	63,6	50,0

Lower quartile	9	22	22	25	55	88
Median	18	33	33	30	73	91
Upper quartile	30	50	50	34	77	100

During five months there was improvement in the quality of life in both control groups. In control group was the quality of life of  $19.46 \pm 12.94$  at the beginning. The improvement was noted already at the second measurement, probably due to conservative treatment. Quality of life was at the second measuring  $34.71 \pm 16.78$  points. Average of the group increased by more than 15 points. During the following 10 weeks the quality of life in this group remained unchanged. Even by the third measuring all female respondents evaluated it in average of  $34.71 \pm 16.78$  points. It was found, that in the control group there was a slight improvement in the quality of life during the first phase. In the experimental group was greater significantly improvement of the quality. Already the steepness of the graph suggests at the same scale as a first graph, that the improvement is much higher in women who have completed special exercises (Graph 1).

The quality of life in this group was higher at the beginning then in the first group as it is shown above. At the beginning of the research the average was  $30.79 \pm 6.56$ . After the completing a series of exercises, which lasted for 10 weeks, the middle value of the quality improved by more than 28 points. In the second measurement there was an average of  $68.11 \pm 15.2$ . Gratifying is, that the improvement came also after the next phase, when the female patients had to take the exercise only at home. After another 10 weeks we have found by repeating request the quality of life in average  $89 \pm 12.44$ . This value is already very close to the maximum of 100 points and the improvement was in the second phase in the average of about 20 points.



Graph 1: Quality of Life – comparison of groups

It was assumed, that the experimental group of female patients will be achieving on average the higher output score than the control group. For verifying the obtained data was used the non-parametric Mann-Whitney test. For the comparing of two independent groups, it is the most frequently used of the parametric two-sample Student's t-test. However, the files do not fulfill the assumption of the test, therefore it was used as the non-parametric alternative. Table 2, 3 shows the basic characteristics of the calculated data and the characteristics of the test itself in the first and second phase of research.

Table 2: Changing the Quality of Life - 1st phase

<b>Changing the Quality of Life - 1st phase Questionnaire I-QOL</b>	<b>Control group</b>	<b>Experimental group</b>
Mean	15,25	37,32
Median	9,09	40,91
Mean rank	20,94	42,06
test statistic	Z = -4,606	
p-value	4,1E-06; ( 0,000 )	

The output of the Mann-Whitney test is the average order of the values from the both compared files. The average order of data in the control group is significantly lower (20,94) than in the experimental group (40,91). The characteristics of the test: the testing statistic  $Z = -4.0606$ , and especially the calculated p-value  $-4,1-06$ , i.e. 0,000, testify for the significance of difference between the compared groups. P-value is smaller than usual level of significance of 0.05.

Table 3: Changing the Quality of Life - 2st phase

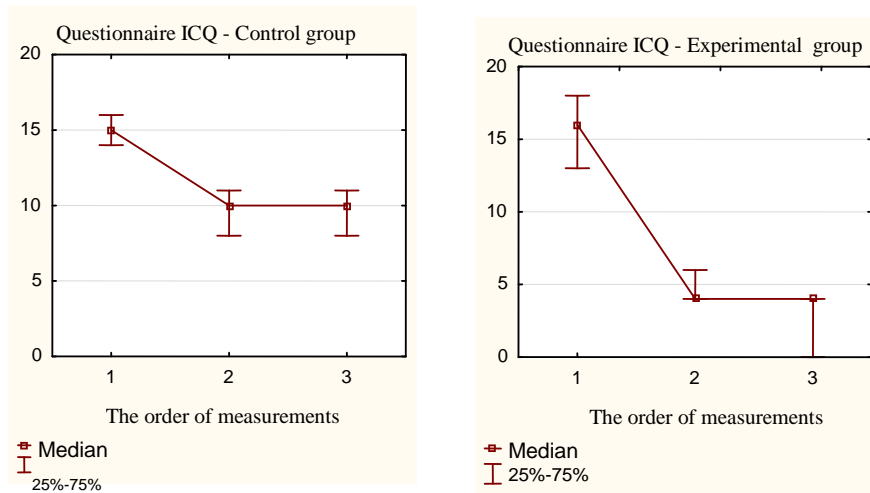
<b>Changing the Quality of Life - 2st phase Questionnaire I-QOL</b>	<b>Contr ol group</b>	<b>Experimental group</b>
Mean	0,00	20,89
Median	0,00	18,18
Mean rank	16,50	46,50
Test statistic	Z = -7,043	
p-value	1,9E-12; ( 0,000 )	

The output of the Mann-Whitney test is the average order of the values from the both compared files. The average order of data in the control group is significantly lower (16,50) than in the experimental group (46.50). The characteristics of the test: the testing statistic  $Z = 7.043$  and especially the calculated p-value  $-1,9-12$ , i.e., 0,000, testify to the significance of differences between those two groups. P-value is smaller than usual level of significance of 0.05. It was found, that in the both phases has occurred in the group of female patients who have completed the therapeutic exercise by Benita Cantieni method to significantly greater change in quality of life than in the group of women who have completed other conservative treatments of incontinence. Questionnaire of the International Consultation on Incontinence ICIQ - UI SF assesses the symptoms of urinary incontinence. Scoring system of the questionnaire assesses the symptoms in the range from 0 up to 21 points. The female patients have received also this questionnaire overall three times at the same time as the questionnaire of quality of life. The processed results of measurements (Table 4).

Table 4: Questionnaire ICIQ – UI SF – 3 measurements

Questionnaire <i>ICQ - SF</i>	<i>Control group</i>			<i>Experimental group</i>		
	1. measureme nt	2. measureme nt	3. measureme nt	1. measureme nt	2. measureme nt	3. measureme nt
Mean	15,16	9,42	9,52	15,16	5,13	3,32
Standard deviation	1,55	2,00	2,00	2,81	1,73	4,05
Count	31	31	31	31	31	31
Minimum	12	4	5	8	4	0
Maximum	18	13	15	18	10	16
Variation margin	6	9	10	10	6	16
Lower quartile	14	8	8	13	4	0
Median	15	10	10	16	4	4
Upper quartile	16	11	11	18	6	4

By comparing the average score's values of the questionnaire at individual measurement we find out a decrement of the score's values in both compared groups. In the control group was the average score before the research's beginning at the level of  $15.16 \pm 1.55$  points. Already at the second measurement was recorded the reduced occurrence of symptoms of incontinence, as the average score dropped to a level of  $9.42 \pm 2.00$  points. This score remained unchanged for the next 10 weeks and on the third measurement was the score on about the same level:  $9.52 \pm 2.00$  points. In the experimental group was the decrement of the average score's values more significantly just after the first phase of research. At the beginning of this research was the average scores of the symptoms of incontinence in this group comparable to average of the control group. The value of the average is the same: 15, 16, but the variation is slightly higher. In this selection it reaches a value of 2.81. Already the second measurement finds the values of the score in experimental group in average about 10 points lower. The average score of the questionnaire after the first phase is  $5.13 \pm 1.73$ . After the second phase, in which the female respondents had to take a therapeutic exercise were the results of the score even slightly improved. The average value in third measurement was  $3.32 \pm 4.05$ . Notable is high the standard deviation in comparison to the acquired average. The high variability explains the maximum value - 16 points. The maximum is at the third measuring even higher than at the second measuring, where it reached a value of 10 points. As the lower quartile is as a minimum equal to zero, at least 25% of responding women have received at the third questionnaire of the symptom's scores of 0 points (Graph 2).



Graph 2: Symptoms of incontinence – comparison of groups

It was assumed, that the experimental group of female patients will achieve the average higher output score than the control group. For verifying the obtained data was used the non-parametric Mann-Whitney test (Table 5, 6).

Table 5: Symptoms of incontinence – 1st phase

Symptoms of incontinence – 1st phase	Control group	Experimental group
Mean	-5,74	-10,03
Median	-5,00	-10,00
Mean rank	43,29	19,71
Test statistic	Z = 5,168	
p-value	2,4E-07; ( 0, 00000 )	

Table 6: Symptoms of incontinence – 2st phase

Symptoms of incontinence – 2st phase	Control group	Experimental group
Mean	0,10	-1,81
Median	0,00	-2,00
Mean rank	41,11	21,89
Test statistic	Z = 4,659	
p-value	3,2E-06; ( 0,000 )	

The symptoms of incontinence did not change in general during the phases in the control group. The difference of ICIQ questionnaire is in the average between the second and the third measuring in an average of 0.10, but the median of change is equal to zero. However, in the experimental group, we have found a decrease of the score of incontinence. At an average, there was a decline of value of the group by 1.81 points. Because of the testing statistic is above the critical value and p-value of the test of 3.2E-06 is below the significance level of 0.05. It was found, that in both phases happened in the group of female patients, who completed therapeutic exercise by Benita Cantieni method, significantly to the greater alleviating of incontinence than in the group of women who have completed other conservative treatments of incontinence.

## Discussion

The object of research was urinary incontinence, women's quality of life with the stress urinary incontinence, the symptoms of urinary incontinence and carefully targeted exercises, that it used the elements of the Benita Cantieni method. In the world, 65 million women suffer from urinary incontinence, 240,000 women in Slovak Republic suffer from urinary incontinence. About half of all women have this problem during their lives. Less than 5% of suffering patients from urinary incontinence look for a doctor immediately after the first symptoms, 60% of women begin to look for cure after a significant worsening of incontinence. The reason is that the incontinence still remains a taboo disease. More often it occurs in socially poorer groups, in women with the inferiority of tissues, that they suffer from varicose veins, hernias and all that. The urinary incontinence is the most common problem around the 45th year of life and in the elderly, which is probably related to hormonal changes during menopause and involution processes, caused by deficiency of estrogen. We meet with urinary incontinence also in women age of 23-35 years, although less frequently. We can say that the age limit of the incidents of incontinence is reducing (Vašíňová, 2006). The adverse effects of urinary incontinence are severe; they include medical, psychological, economic and other problems. Medical problems represent irritation and skin maceration in the genital area and the possible origin of the infections. The psychosocial impact of urinary incontinence burden on the female patients and their families, the isolation increases, depression forms and the quality of life reduces. Urinary incontinence is an emotional burden; it carries with it a feeling of dirt, odors, which it often disrupts social and sexual relations. The economic consequences of the urinary incontinence are severe and the assumption is that by the ageing of the population they will still increase. The women with urinary incontinence are trying to fight with this problem alone for few years until they contact the gynecologist. If urinary incontinence is cured or at least improved, it would be a substantial improvement in the quality of life of individual patient (Džurný, 2002). The conservative treatment, behavioral, is less invasive than surgery, but its success depends on the interest and the cooperation of the female patient. The success of full recovery and improving of the condition is lesser than the surgical treatment. It is considered as a first line therapy. Conservative treatment includes the training of urine bladder, which is focused at the strengthening of pelvic floor muscles. Kegel exercises. Provides the control of urine leakage by the increasing of intra abdominal pressure. The effect of therapeutic gymnastic depends on the intensity and method of the exercise, whereby the main problem is the cooperation of the female patient. At the beginning of the treatment it is high, but it decreases over time (Mosnárová, 2003). The urinary incontinence largely affects everyday's life, reduces the quality of life, deteriorates the general health, but especially puts the patient into isolation absent from the social life and contacts. A patient is in many cases by the feelings of inferiority and shame enclosed to such an extent, that there will be disruption and collapse of the partner's relationship, and partner of the patient often does not know what is the real reason for their alienation. The urinary incontinence in this area becomes a significant psychosocial problem which if it is not solved, it means the patient losses self-esteem, limiting her daily activities and becoming enclosed from the community. As a consequence of this there is the loss of courage to confide their problems.

## Conclusion

The urinary incontinence causes a significant deterioration in the quality of life. In many cases it is possible to completely cure it, or at least substantially alleviate the symptoms. Based on the findings of research it can be concluded, that the evaluated Cantienica® method has an impact on improving the quality of life and alleviate the symptoms of urinary incontinence. As it was demonstrated by the acquisition of a significant improvement in the group of women who completed the therapeutic exercises using the elements of Cantienica® method, and it in a greater change in the quality of life and a greater alleviation of incontinence as it happened in the group who has completed the other conservative treatments.

The human body, which has been created by nature, is beautiful. It is an integrated complex of the assorted organs and their functions, lead to the phenomenon - The life. During life the body is stimulated, encouraged, punished, rewarded and shaping by the world to which it was thrown. The body becomes something what it does and receives. And if it does not do, when it's done what we don't use and devastate, we will lose it (Farkašová, 2014).



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