

## PROSPECTIVE FOLLOW – UP INVESTIGATION OF A SPECIFIC PELVIC FLOOR REHABILITATION PROGRAM WITH FOCUS ON COORDINATION USING A VALIDATED PELVIC FLOOR QUESTIONNAIRE

### Hypothesis / aims of study

The aim of this study was to prospectively evaluate the effectiveness of a pelvic floor rehabilitation program employing pre-contraction and coordination of the pelvic floor and transverse abdominis muscles and addressing individual functional deficiencies identified at vaginal palpation and perineal ultrasound.

### Study design, materials and methods

This prospective study included 41 consecutive women aged 34-79 years (median 52 years) with pure stress urinary incontinence (SUI; n=7), pure overactive bladder symptoms (OAB; n=8) and mixed OAB-SUI (n=26). Additionally, 27 women complained of anal incontinence.

Assessment and rehabilitation consisted of vaginal palpation and perineal ultrasound to evaluate the pelvic floor muscle at rest, during voluntary contraction and coughing and to control for accurate, timely and lasting contractions. Abdominal palpation and ultrasound was used to assess transverse abdominis and internal oblique muscle activation. Ultrasonography was performed standing or supine as appropriate.

Adequate treatment was selected according to the dysfunction and included instructions on duration of the pelvic floor contraction, quality and timing of contractions, coordination and maintenance of contractions during breathing, coughing, lifting, at urgency etc. Patients were advised to integrate these components into their daily life. Elimination of undue internal and external oblique muscle activation was sought and maximal pelvic floor contractions avoided in order to prevent an increase in intraabdominal pressure (1). The initial treatment session lasted approximately 60 min. Further appointments were scheduled as necessary.

A validated self-administered pelvic floor questionnaire assessing bladder, bowel, prolapse and sexual symptoms (2) was completed by all women before and 1-16 months (median 7 months, mean 7.6 months) after treatment. Improvement scales (much better, a little better, no change, a little worse, much worse) were developed for bladder, bowel, prolapse and sexuality domains of the pelvic floor questionnaire. Satisfaction with treatment and care was assessed using a 10-cm visual analogue scale (VAS; 0 = not at all satisfied, 100 = very satisfied). Further questions regarding coordination and pre-contraction were developed to check patient's compliance and comprehension understanding of the daily life integration of the specific muscle contractions. Follow-up assessment was performed by an independent health care provider.

### Results

Patients were self-referred or referred by gynaecologists, urologists or general practitioners and had 0-4 children (median 2; one nullipara, vaginal birth in 38 and caesarean sections only in 1). Body mass index ranged between 16.9 and 32.05 (median 23.5).

Treatment consisted of 1-6 sessions (median 2, mean 2.5) lasting 15 - 90 minutes each with a total of 75 – 225 minutes treatment time (median 130 min, mean 135.4 min). 63% of women were followed for more than 6 months.

Of 33 women with stress urinary incontinence symptoms 23 (70%) denied SUI after treatment and 7 (21%) further women reported improvement (p=0.001; Wilcoxon test). Overactive bladder symptoms ceased in 26 of 34 women (76%) and improved in 4 (12%) (p=0.002; Wilcoxon test).

Self-reported improvement rates were reported at 88% (15 of 17) for mixed incontinence, 88% (6 of 7) for pure SUI, 100% (8 of 8) for OAB, 50% (4 of 8) for faecal incontinence and 27% (7 of 26) for flatus incontinence. Bladder, bowel and sexual function domain scales improved significantly after treatment (Tab. 1). Of two patients with faecal incontinence as a major symptom, both reported great improvement.

**Table 1:**

Results of the pelvic floor questionnaire. Bladder, bowel and sexual function domain scores improved significantly (max. domain score=10). Values represent median (range)

	Before treatment	After treatment	P Wilcoxon Test
Bladder function	2.2 (0.44-4.9)	1.55 (0.0-3.1)	<0.001
Bowel function	2.65 (0.88-7.06)	2.06 (0.88-5.59)	0.007
Prolapse symptoms	0.67 (0.0-6.0)	0 (0.0-7.3)	0.138
Sexual function	1.43 (0.0-4.76)	0.71 (0.0-4.29)	0.044

Patients satisfaction with treatment ranged from 15-100 (median 80) and satisfaction with care from 40-100 (median 90) on the 10cm-VAS scale.

After treatment, 36/41 (88%) women routinely contracted their pelvic floor muscles before coughing, lifting etc. (pre-contraction). Women who performed pre-contractions were more likely to report fewer SUI (Chi-square test; p=0.008). There was a significant correlation between frequency of pre-contractions (3-never, 0-always) and patient satisfaction with treatment (Spearman -0.31; p=0.049).

### Interpretation of results

The individual dysfunction-related pelvic floor rehabilitation after evaluation of specific muscle and functional deficiencies is highly effective for SUI and OAB with improvements/dry rates of 91% and 88%, respectively. These results are comparable with strength programs in the literature. Treatment goals were achieved after approximately 2-3 sessions and persisted for more than 6 months in more than half of the women without the need of further supervised physiotherapy. An important component of the treatment is the coordination of sustained pre-contractions and their routine integration into daily life, sports activities and urge episodes.

Patient's compliance and mental health are essential prerequisites.

### Concluding message

As strength training showed disappointing long term results (3), pre-contraction and coordination training of the pelvic floor with subsequent integration into daily life might be more suitable in the treatment of pelvic floor disorders. Obviously further studies are needed to prove the efficiency of this program.

### References

- (1) Proceedings of the 6<sup>th</sup> Interdisciplinary World Conference on Low back and Pelvic Pain 2007, p 285.
- (2) Neurourol Urodyn (2004) 23; 398-399
- (3) Neurourol Urodyn (2007) 26; 667.

<b><i>Specify source of funding or grant</i></b>	<b>None</b>
<b><i>Is this a clinical trial?</i></b>	<b>Yes</b>
<b><i>Is this study registered in a public clinical trials registry?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Ethics Committee, Charité University Hospital, Campus Benjamin Franklin</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>Yes</b>