

# Treatment of Urinary Incontinence with Functional Magnetic Stimulation (FMS)



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## Abstract

**Objectives,** Undesired, uncontrolled leakage of urine occurs when the sphincter muscles, the muscles of the pelvic floor and bladder muscles do not work properly and consistently. Pelvic floor muscles training is a first-line conservative treatment for all types of incontinence in women. Functional magnetic stimulation (FMS) allows automated and standardized pelvic floor muscles training.

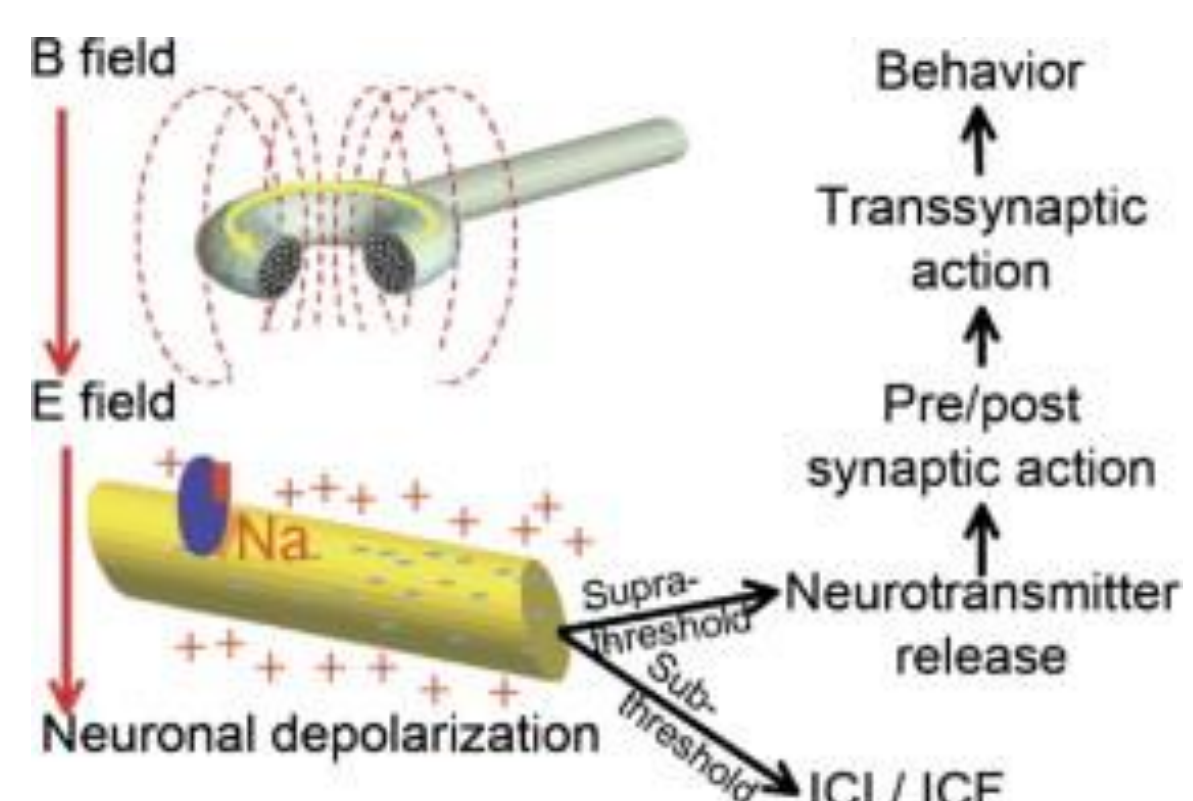
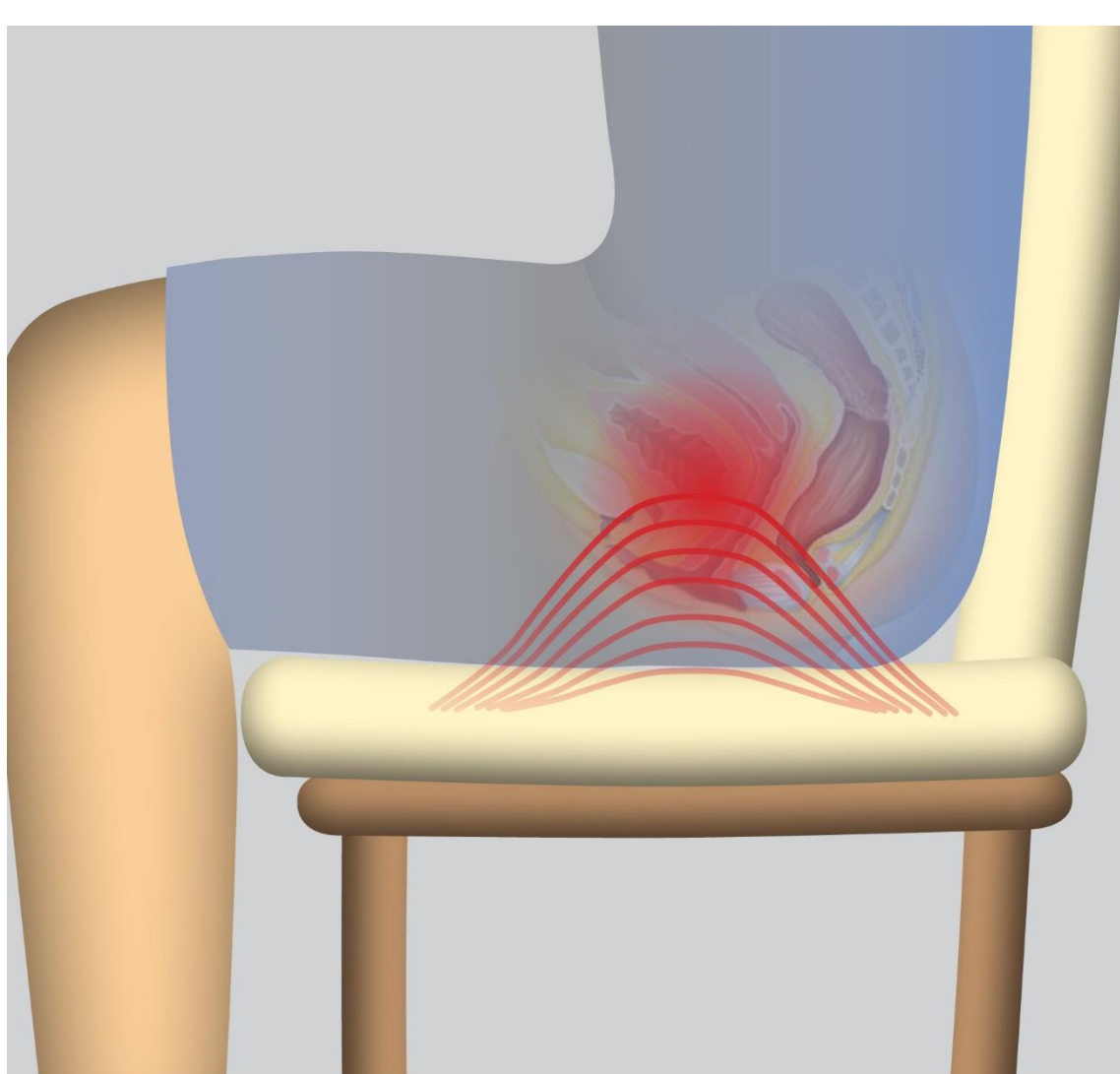
**Methods,** From 160 women included in the study of effects of an FMS, 36 suffered from urge urinary incontinence (UUI), 61 from stress urinary incontinence (SUI), 42 from mixed urinary incontinence (MUI), and 21 from incontinence after childbirth. All patients were treated with FMS twice a week for 8 weeks (16 therapies in total) using the treatment protocol adequate for the type of urinary incontinence. The results were obtained using a patient self-evaluation questionnaire and collected before starting the treatment and after finishing the last therapy.

**Results,** 58% of patients suffering from UUI were completely dry, 31% of patients showed significant improvement and 11% did not show any improvement after the treatment. 80% of patients suffering from SUI were completely dry after the therapy, 15% of patients showed significant improvement and 5% did not show any improvement. 69% of patients suffering from MUI were dry, 29% of patients showed significant improvement and 2% of women did not show any improvement. The best results are achieved with patients with urine incontinence after childbirth. 95% of women were completely dry after even less than 16 therapies.

**Conclusions,** The presented patients' improvement and their positive feedback confirm previous literature reports that magnetic stimulation is an effective non-invasive therapeutic method for all types of incontinence. Further studies are required to determine other diagnostic parameters, long term effectiveness and the need to include a control group.

## Materials and Methods

During magnetic therapy, a focused, time-varying magnetic field penetrates into the perineum and activates the motor neurons of the pelvic floor muscles. The pelvic muscles contract and relax with each magnetic pulse, thereby strengthening the muscles. The goal of the therapy is the rehabilitation of the pelvic floor musculature to reduce urinary incontinence (Ishikawa et al., 1998; Yamanishi et al., 2000)



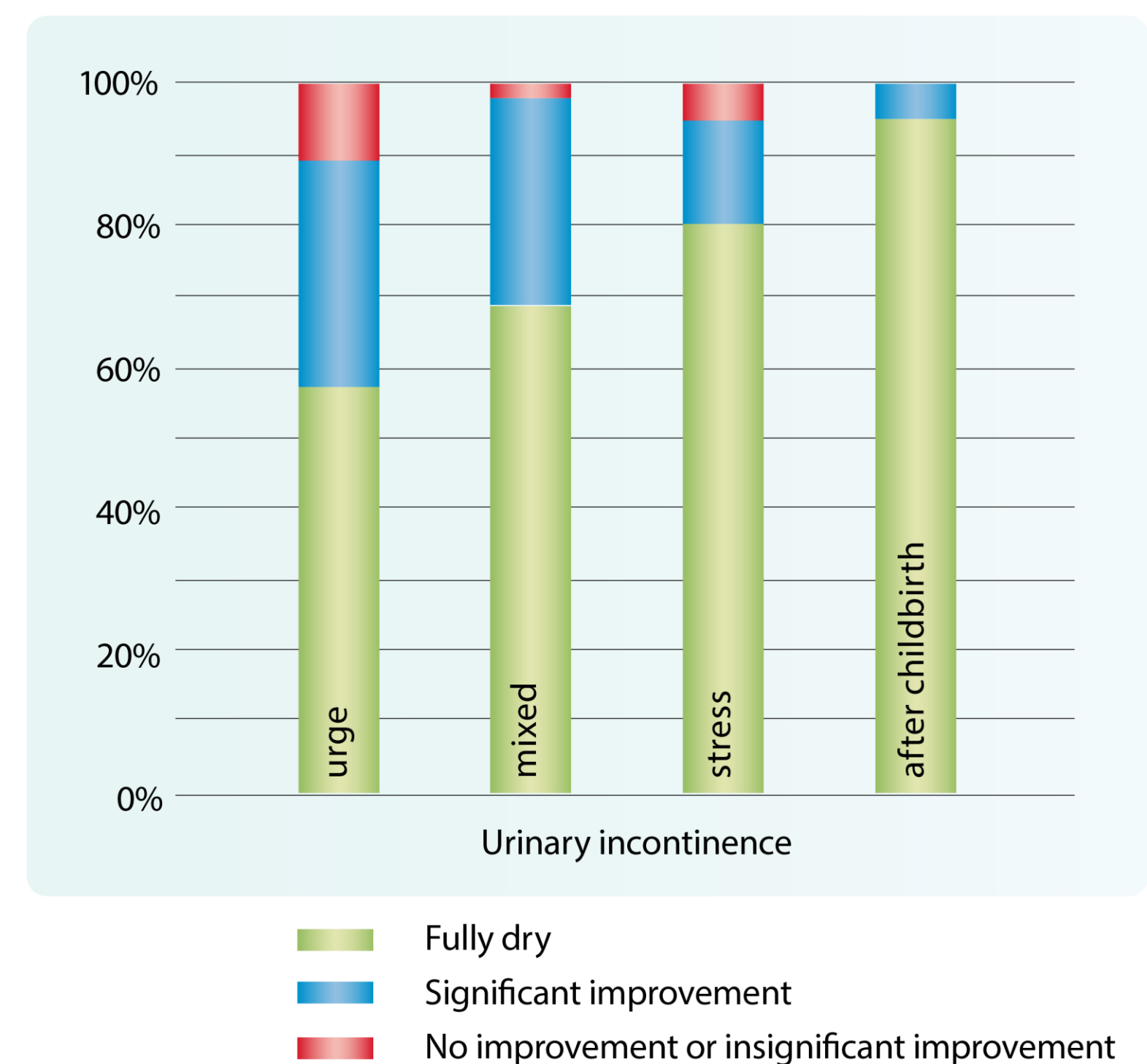
The patient seated dressed on an electromagnetic chair. Magnetic stimulation of the muscles is conducted by an electromagnetic coil built into the seat and controlled by an external unit. The stimulus intensity is gradually increased up to the limit of tolerability as indicated by the patient.

FMS is not appropriate for patients with a history of epilepsy, severe cardiac arrhythmias, a pacemaker or metal implants, as well as concurrent pregnancy, malignancy or acute pelvic infections.



## Results

	UUI		MUI		SUI		After childbirth	
	n	%	n	%	n	%	n	%
Completely dry	21	58	29	69	49	80	20	95
Significant improvement	11	31	12	29	9	15	1	5
No improvement or insignificant improvement	4	11	1	2	3	5	0	0
All	36	100	42	100	61	100	21	100



Results in treating urge urinary incontinence (URGE - 36 women), mixed urinary incontinence (MIXED - 42 women), stress urinary incontinence (STRESS - 61 women) and incontinence after childbirth (21 women – AFTER CHILDBIRTH) acquired at three medical centers using FMS therapy.

## Conclusions

The presented patients' improvement and their positive feedback confirm previous literature reports that magnetic stimulation is an effective non-invasive therapy for all types of incontinence. It is, however, necessary to emphasize that the presented results are based on the patients' personal observations revealed in a questionnaire. Since patient satisfaction is an important part of every rehabilitation and medical treatment, the goal is achieved with magnetic stimulation therapy.

With the aid of the electromagnetic chair, patients also learned how to perform pelvic floor muscle exercises themselves. This is going to help them maintain muscle strength after the conclusion of the therapy. The 8-week therapy block offers a good basis for the long-term pelvic floor muscles ability for urine flow control. However, the muscles need to stay active in order to maintain their strength and function (Doğanay et al., 2010). This is achieved by performing regular Kegel exercises correctly by the patients themselves. One of the limitations of the present study is the lack of a control group. It is difficult to design an effective placebo treatment because the patients are aware of the strong contractions of the pelvic floor muscles during the treatment.

Further studies are required to determine other diagnostic parameters and the need to include a control group. However, based on the presented results, it can be concluded that magnetic stimulation therapy offers a suitable alternative treatment option for all types of female urinary incontinences.

## References:

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