

Supplementary material 1. Scanning protocol. (A) Single shot trace-weighted echo planar imaging diffusion sequence with simultaneous multislice acceleration (MDDW-SMS) was applied for diffusion tensor imaging (DTI) acquisition. A monopolar diffusion scheme with 6 diffusion-encoding directions was applied and the measurements were performed for 2 b-values (averages): 0 sec/mm² (1) and 400 sec/mm² (1). To gain uniformity of the acquired slice profiles and to reduce specific absorption rate (SAR), a 'low SAR' radio frequency pulse was applied along with the 'fast' gradient mode and interleaved multi-slice acquisition. Strong spectral attenuated inversion recovery fat suppression was used along with the echo planar imaging (EPI) acceleration factor of 2 in both phase and slice directions (iPAT=4). (B) To minimize the effect of field inhomogeneity on further assessment of the pelvic floor, all volunteers were placed in the scanner in the head-first-supine position using additional cushions to bring the periurethral area closest to magnetic resonance isocenter.

Supplementary Table 1. Details of the magnetic resonance imaging protocol and acquisition parameters for evaluation of the pelvic floor muscles in 10 healthy female volunteers

	FOV (mm)	Voxel size (mm ³)	TR/TE (ms)	Flip angle	TI (ms)	TF	Acceleration	Averages	BW (Hz/pixel)	Echo spacing (ms)	ADC noise threshold
T1 TSE Tra	210/170	1.1 × 1.1 × 3.0	772/12	135°	-	3	iPAT=2	1	130	12.5	-
T2 TIRM Tra	400/300	0.6 × 0.6 × 5.0	7,500/38	130°	220	7	iPAT=2	2	252	9.62	-
T2 TIRM Cor	400/400	0.5 × 0.5 × 5.0	6,000/39	140°	220	7	iPAT=2	1	250	9.76	-
MDDW-SMS Tra	210/170	3.0 × 3.0 × 3.0	2,500/44	90°	-	56 (EPI)	iPAT=4*	1	2,552	0.5	10

TSE, turbo spin echo; TIRM, turbo inversion-recovery magnitude; MDDW-SMS, multi-directional diffusion imaging with simultaneous multi-slice acquisition; Tra, anatomical transverse plane; Cor, anatomical coronal plane; BW, bandwidth; FOV, field of view; iPAT, integrated parallel imaging technique; TE, time to echo; TF, turbo factor; TI, slice-selective inversion time; TR, time to repetition; ADC, apparent diffusion coefficient.

*See Supplementary Material 1B.

Supplementary material 2. Diffusion tensor imaging (DTI) postprocessing and analysis. (A) All DTI indexes were computed using dedicated, commercial software (Syngo.via Neuro 3-dimensional workflow, Siemens Healthcare, Germany), following manufacturer's instructions for improved usability of the workflow for evaluation of DTI from the regions other than the brain (available from the manufacturer under request). (B) For each subject, no change in positioning during the scanning was confirmed by overlaying the respective T1-weighted images acquired before (first) and after (second) DTI scanning. Afterwards, DTI from each phase of the experiment was automatically realigned to a reference (first) T1-weighted image. The automatic realignment algorithm matched the dimensional specification of the diffusion data, and included 6 degrees of freedom rigid-body registration in translation and rotation planes. Visual assessment confirmed accuracy of the alignment results and manual improvement was required in 3 volunteers only. Subsequently, the T2-weighted turbo-inversion recovery magnitude image acquired in the transverse plane was aligned to the first T1-weighted image - as a reference for subsequent manual segmentation of the urethral sphincter muscle.

Supplementary Table 2. Average values for MD (10⁻³ mm²/sec, upper table) and FA (lower table) measured for each subject by reader-1 (A) and reader-2 (B)

A. Reader-1

Subject No.	Rest-1		Contraction-1		Rest-2		Contraction-2	
	MD		MD		MD		MD	
	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator
1	1,840	1,743	1,809	2,060	1,779	2,015	1,758	2,172
2	1,857	1,522	1,732	2,184	1,974	1,675	1,661	2,349
3	1,749	1,770	1,586	1,989	1,573	1,680	1,806	2,019
4	1,622	2,432	1,479	1,656	1,742	2,062	1,729	1,886
5	1,474	1,716	1,624	2,023	1,578	1,830	1,963	2,369
6	1,794	1,591	1,997	2,265	1,589	1,553	2,399	3,149
7	1,205	1,449	1,904	1,817	1,501	1,615	1,833	1,989
8	1,590	1,627	1,880	2,044	1,595	1,555	1,860	2,203
9	1,669	1,843	1,637	1,618	1,408	1,767	1,176	1,803
10	1,967	1,911	2,552	3,029	1,892	1,638	2,106	2,629
Overall	1,677 ± 220	1,760 ± 275	1,820 ± 303	2,069 ± 397	1,663 ± 178	1,739 ± 179	1,829 ± 314	2,257 ± 399

Subject No.	FA		FA		FA		FA	
	FA		FA		FA		FA	
	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator
1	0.50	0.73	0.48	0.70	0.51	0.65	0.55	0.72
2	0.51	0.71	0.46	0.69	0.51	0.66	0.49	0.72
3	0.66	0.73	0.72	0.66	0.67	0.61	0.66	0.78
4	0.46	0.69	0.52	0.68	0.60	0.76	0.54	0.68
5	0.64	0.64	0.49	0.68	0.56	0.63	0.51	0.62
6	0.47	0.63	0.59	0.81	0.49	0.63	0.60	0.71
7	0.77	0.81	0.74	0.76	0.68	0.73	0.76	0.77
8	0.48	0.74	0.43	0.69	0.51	0.68	0.44	0.72
9	0.65	0.68	0.74	0.78	0.74	0.54	0.76	0.60
10	0.39	0.54	0.59	0.68	0.40	0.63	0.54	0.69
Overall	0.55 ± 0.12	0.69 ± 0.07	0.58 ± 0.12	0.71 ± 0.05	0.58 ± 0.10	0.65 ± 0.06	0.59 ± 0.11	0.70 ± 0.06

MD, mean diffusivity; FA, fractional anisotropy.

Values are calculated from regions of interest manually placed in DTI images on the urinary sphincter and levator ani muscle in each phase of the experiment, separately. Overall = mean ± standard deviation from the average values at subject.

B. Reader-2

Subject No.	Rest-1		Contraction-1		Rest-2		Contraction-2	
	MD		MD		MD		MD	
	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator
1	2,129	1,866	1,797	2,001	1,931	1,807	1,955	1,944
2	1,769	1,673	1,805	2,077	1,848	1,393	1,619	2,481
3	2,112	1,848	1,716	2,012	1,481	1,724	1,756	1,783
4	1,482	905	1,570	1,540	1,705	1,496	1,699	2,244
5	1,609	1,818	1,928	2,166	1,653	1,855	2,086	1,695
6	1,600	1,742	1,757	2,487	1,737	1,725	2,091	2,709
7	1,313	1,411	1,831	2,098	1,526	1,805	1,813	1,764
8	1,533	1,520	1,829	2,604	1,678	1,516	1,779	2,547
9	1,623	1,702	1,734	1,561	1,578	1,709	1,370	1,740
10	2,039	1,635	2,118	3,117	1,841	1,750	1,916	2,742
Overall	1,721 ± 283	1,612 ± 287	1,809 ± 143	2,166 ± 474	1,698 ± 146	1,678 ± 155	1,809 ± 220	2,165 ± 426
	FA		FA		FA		FA	
	FA		FA		FA		FA	
	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator	Sphincter	Levator
1	0.46	0.69	0.55	0.71	0.47	0.68	0.49	0.74
2	0.46	0.72	0.47	0.70	0.47	0.64	0.44	0.71
3	0.58	0.74	0.68	0.72	0.63	0.67	0.21	0.09
4	0.46	0.90	0.44	0.78	0.51	0.66	0.53	0.78
5	0.53	0.67	0.47	0.57	0.55	0.55	0.51	0.67
6	0.51	0.65	0.49	0.73	0.46	0.57	0.55	0.70
7	0.67	0.81	0.69	0.80	0.71	0.83	0.71	0.8
8	0.48	0.74	0.53	0.73	0.44	0.63	0.53	0.72
9	0.60	0.66	0.68	0.68	0.68	0.59	0.70	0.64
10	0.41	0.68	0.60	0.67	0.48	0.72	0.55	0.68
Overall	0.52 ± 0.08	0.73 ± 0.08	0.56 ± 0.10	0.71 ± 0.06	0.54 ± 0.10	0.66 ± 0.08	0.52 ± 0.14	0.65 ± 0.21

MD, mean diffusivity; FA, fractional anisotropy.

Values are calculated from regions of interest manually placed in DTI images on the urinary sphincter and levator ani muscle in each phase of the experiment, separately. Overall = mean ± standard deviation from the average values at subject.