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CLINICAL ARTICLE

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Comparing male and female pelvic floor muscle function by the number and type of pelvic floor symptoms

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Abstract

Aims: Pelvic floor symptoms (PFS), including lower urinary tract symptoms, defecation problems, sexual dysfunction, and pelvic pain, are common in males and females. Comparing pelvic floor musculature (PFM) function between sexes may reveal important differences relevant to clinical care. This study aimed to compare male and female PFM function and to assess the function of both sexes with the number and type of PFS.

Methods: We purposively enrolled males and females aged ≥ 21 years with 0–4 PFS based on questionnaire responses in an observational cohort study. Participants then underwent PFM assessment, and muscle function in the external anal sphincter (EAS) and puborectal muscle (PRM) were compared between sexes. The relationships between muscle function and the number and type of PFS were explored.

Results: Of the invited 400 males and 608 females, 199 and 187 underwent PFM assessment, respectively. Compared with females, males more often showed increased EAS and PRM tone during assessments. Compared with males, females more often showed weaker maximum voluntary contraction (MVC) of the EAS and dysfunctional endurance of both muscles; additionally, those with zero or one PFS, sexual dysfunction, and pelvic pain more often showed a weak MVC of the PRM.

Conclusions: Despite a few similarities between males and, females we found differences in muscle tone, MVC, and endurance between male and female PFM function. These findings provide useful insights into the differences in PFM function between males and females.

KEYWORDS
females, males, pelvic floor musculature assessment, pelvic floor symptoms

1 | INTRODUCTION

Males and females both frequently report pelvic floor symptoms (PFS) that reduce quality of life. These include lower urinary tract symptoms (LUTS), defecation problems, sexual dysfunctions, and pelvic pain.[1,2] Although both sexes may experience similar PFS, sex-specific symptoms can occur, sometimes presenting in dominant combinations, due to differences in the complex anatomy of the urinary tract, genitals and pelvic floor musculature (PFM).[3,4] For example, sexual symptoms and pelvic pain often co-occur in females, while defecation problems, sexual symptoms, and LUTS co-occur in males.[5]

PFS may be related to PFM dysfunction in either sex.[6] However, a recent scoping review found less research about concomitant PFS in male populations compared with female populations.[7] Few studies have described the differences in PFS between males and females, and those that have, have mainly focused on double incontinence.[7] We have previously described the relationships between PFM function in males with and without PFS.[8] This research showed that neither sex had a clear dose–response relationship between PFM function and the number of PFS. Nevertheless, given the clear anatomical differences in the urogenital tract and PFM between sexes, we may also expect differences in PFM function. This information could open new avenues to improve the treatment of PFS in both sexes. In this study, we compare data on male and female PFM function, exploring the differences and similarities in muscle function between sexes and assessing the relationship of PFM function to the number and type of PFS.

2 | MATERIALS AND METHODS

2.1 | Study design, setting, and participants

This exploratory work was part of a larger observational cohort study among inhabitants from a municipal area in the Netherlands who had consented to participate in a sub-study concerning PFM assessment.[5] General practitioners performed the initial selection in the parent study.[5] The current sub-study took place from July 2019 to December 2020. Participants aged ≥ 21 years with and without PFS were included by purposive sampling from among those with complete baseline questionnaires. Details of the questionnaires and sampling procedures for the previous studies are provided in Supporting Information: File 1. We aimed to include two groups comprising 200 males and 200 females with or without PFS based on responses to the baseline questionnaire. The local medical ethics committee approved the study. All participants provided written informed consent, and for their contribution to the sub-study, received a €20 gift card after participation.

2.2 | PFSs

We compared females and males based on four types of PFS (called domains), defined as follows:

- LUTS: upper quartile of International Consultation on Incontinence Questionnaire (ICIQ)- male lower urinary tract symptoms (sum score of the two subscales) and ICIQ-FLUTS (sum score of the three subscales) for males and females, respectively.[9]
- Defecation problems: upper quartile of the combined Wexner score (constipation and incontinence), based on the Groningen Defecation and Fecal Continence questionnaire.[10]
- Sexual symptoms: only assessed in sexually active participants, using the Pelvic Organ Prolapse/Incontinence Sexual Questionnaire, IUGA-Revised (PISQ-IR),[11] the Sexual Health in the Netherlands questionnaire (one item),[12] and additionally the ICIQ-MLUTS sex for assessing erectile, ejaculation, and orgasm problems in males.[9]
- Pelvic pain: assessed by report of pain in the pelvic region.

We applied a two-step approach. First, for each PFS (LUTS, defecation problems, sexual symptoms, and pelvic pain), the presence or absence was defined, based on the mentioned questionnaires. Second, the total number of PFS domains was assessed to categorize participants into groups (i.e. 0, 1, 2, and 3 or 4), and invite them for this additional study. Participants were categorized by their age and the number of affected domains, from zero to three or four, aiming to achieve an equal age distribution in each group.

2.3 | PFM assessment

A digital assessment was performed for measurement of PFM function in both sexes. This assessment, based on the P(ower) E(ndurance) R(epetitions) F(ast) E(very) C (contraction) T(imed) scheme is, despite its subjective character, a valuable tool for PFM function measurement.[13] An experienced pelvic floor physical therapist, blinded to the PFS status, performed all digital PFM assessments. She created a safe and agreeable environment for the participants, so outcomes specifically of

tone, would be as little as possible influenced by any stress reactions. PFM function was compared based on complete assessment of the external anal sphincter (EAS) and the puborectal muscle (PRM) by internal digital palpation (per rectum) in both males and females. Participants received a description of the PFMs in a short presentation with instruction to facilitate proprioception, contraction, and relaxation. The muscle function aspects of tone, voluntary contraction, voluntary relaxation, maximum voluntary contraction (MVC), frequency, and endurance were assessed for both muscles. In the absence of well-defined standards, we used International Continence Society standards and prevailing pelvic floor physical therapy protocols specifically developed for PFM assessment in the Netherlands, when assessing male and female PFM function.[14–17] Concerning relaxation, a "delayed relaxation" was defined as "a slow relaxation", "a partial relaxation" as "an incomplete relaxation", "a delayed partial relaxation" as "a slow and incomplete relaxation" and "endurance" as "the ability to maintain a contraction within a certain time span on the same level". Full details of the PFM assessment have been published elsewhere [8] and can be found in Supporting Information: File 2.

2.4 | Statistical analysis

Patient characteristics are reported as absolute numbers and percentages. Differences and similarities in EAS and PRM function between sexes are displayed in figures that show the percentages for different muscle function aspects. Finally, EAS and PRM function aspects with >10% dysfunction are compared with the total number of PFS (i.e., 0, 1, 2, and 3 or 4), and the type of PFS (i.e., LUTS, defecation problems, sexual symptoms, and pelvic pain) between males and females. Muscle function aspects with <10% dysfunction were excluded, since the numbers of the participants in those groups would be too small and would have limited meaning. The cut-off value of 10% was chosen arbitrarily. We refrained from further statistical testing because of the exploratory study design.

3 | RESULTS

3.1 | Participants and descriptive statistics

Of the 400 males and 608 females invited, 199 (age 63.0 ± 12.5 years) and 187 (age 58.6 ± 14.1 years) took part in the PFM assessment, respectively. Figure 1 summarizes participant flow.

3.2 | Comparison of male and female muscle function

3.2.1 | EAS (Figure 2A)

Overall, the prevalence of normal tone did not differ between males and females (78% for both), but more males had increased tone (14.1% vs. 7.0%) and more females had decreased tone (15.0% vs. 8.0%). In addition males more often exhibited partial relaxation compared to females (18.7% vs. 4.3%), whereas females more often exhibited weak or absent MVC (33.1% vs. 22.1%) and less often exhibited strong MVC (4.3% vs. 15.1%). Males more often had normal muscle function on the endurance test than females (83.4% vs. 64.2%).

3.2.2 | PRM (Figure 2B)

Overall, the prevalence of normal tone did not differ between males and females (51.8% vs. 50.3%), but more men had increased tone (39.7% vs. 30.3%) and more females had decreased tone (19.5% vs. 8.5%). Males more often showed no relaxation compared to females (14.1% vs. 9.2%) and females more often showed weak or absent MVC (44.6% vs. 39.7%).

Functional patterns for voluntary contraction, frequency and sphincter closure (EAS) were comparable between males and females, showing high percentages of normal function.

3.3 | Muscle function and the number of PFS

3.3.1 | EAS (Table 1)

Females with 3 or 4 PFS more often showed decreased tone compared to males (28.1% vs. 5.6%). Compared to females, males with 0 or 1 PFS more often showed increased tone and males with 0 and 3 or 4 PFS more often showed partial (delayed) relaxation. Differences in strong MVCs between males and females were highest for those with 0 (27.3% vs. 7.5%) or 1 (13.2% vs. 2.0%) PFS. Females with 2–4 PFS more often had weak MVC compared to males. Of the males with 0 PFS, 89.4% had normal endurance compared to 61.2% for females. However, females with 0 PFS and 3 or 4 PFS more often showed dysfunctional endurance (3–7 s/10 s) compared with males, whereas these differences were less for females and males with 1 or 2 PFS.

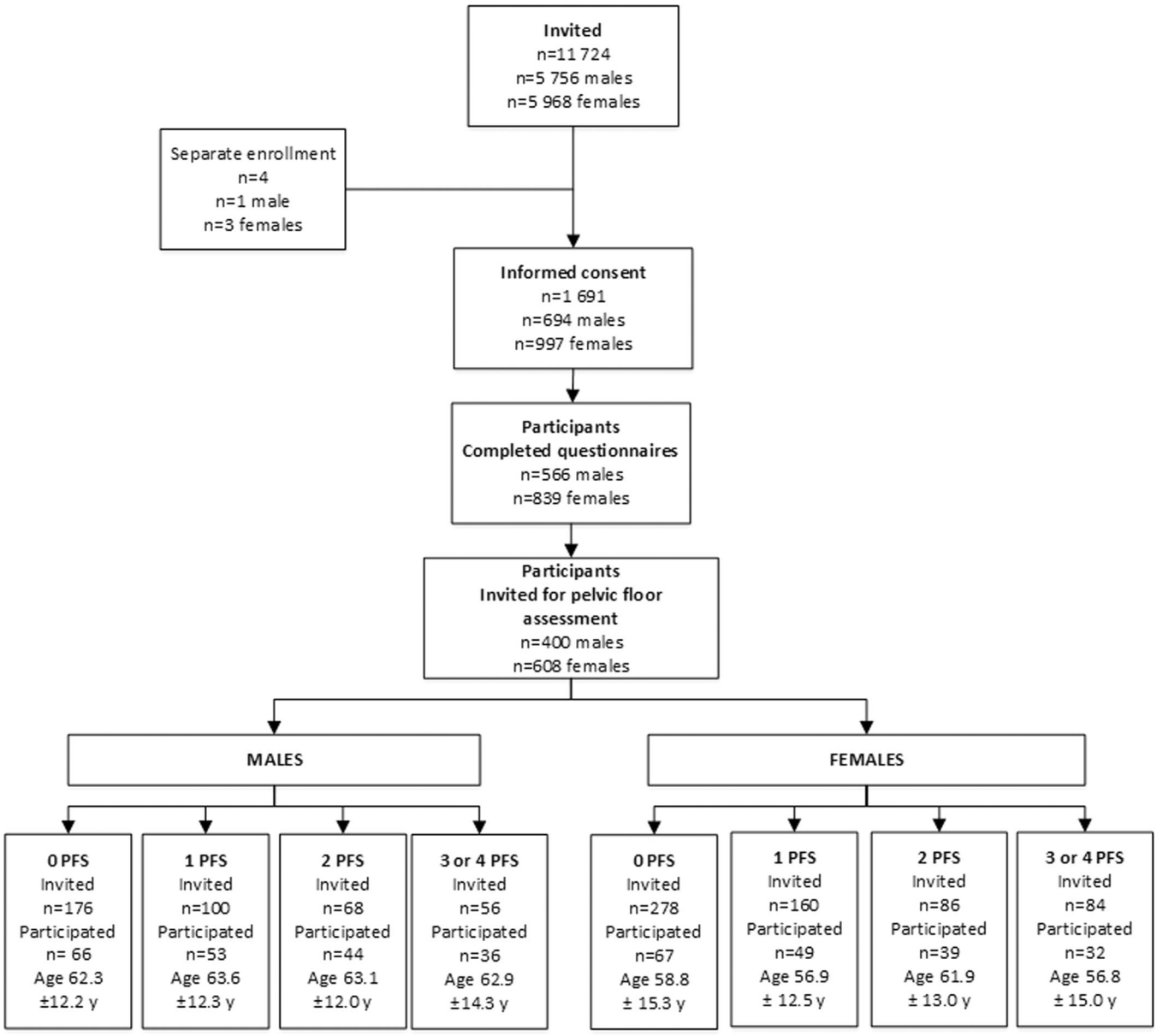

FIGURE 1 Participant flow chart. PFS, pelvic floor symptoms.

3.3.2 | PRM (Table 1)

In the presence of 3 or 4 PFS, females more often (28.1%) showed decreased tone compared to males (5.6%), while in the presence of 0 PFS, males more often showed increased tone and partial (delayed) relaxation than females (less often for males and females with 1 PFS). Males with 2 PFS more often showed no relaxation compared to females (27.3% vs. 13.2%), and females with 1 PFS more often showed weak MVC compared to males (42.6% vs. 26.4%). Of those with 0 PFS, more males than females showed normal endurance (80.3% vs. 64.2%), while more females showed dysfunctional endurance (3–7 s/10 s).

3.4 | Muscle function and type of PFS

3.4.1 | EAS (Table 2)

Females in all domains had decreased tone more often than males. Compared to females, males with defecation problems (12.1% vs. 3.6%) and sexual symptoms (14.5% vs. 4.7%) more often had increased tone and males with both defecation problems and pelvic pain more often showed partial (delayed) relaxation. Males with LUTS and defecation problems more often showed strong MVC (8.6% vs. 1.8% and 9.1% vs. 1.8%, respectively), whereas females more often showed weak MVC (36.4% vs. 14.3% and 30.9% vs. 18.2%, respectively). Males with LUTS also

FIGURE 2 (A, B) Comparison between female and male pelvic floor muscle function. Data show the percentages with each function item for the external anal sphincter and puborectal muscle.

showed normal endurance (80.0% vs. 60.0%) compared with females, while females who had defecation problems and sexual symptoms more often showed dysfunctional endurance compared with males (3–7 s/10 s).

3.4.2 | PRM (Table 2)

Again, females in all domains had decreased tone more often than males. Compared to females, males with defecation problems and sexual symptoms more often had increased tone. Females with pelvic pain more often showed partial (delayed) relaxation compared to males who more often (18.2%) showed no relaxation compared to females (1.8%). Males with LUTS and defecation problems more often had weak MVCs compared to females, whereas females with sexual symptoms and pelvic pain more often had weak MVCs. In addition, males with LUTS showed normal endurance compared to females (80.0% vs. 67.3%), whereas females with sexual symptoms more often showed dysfunctional endurance compared to males (3–7 s/10 s). Finally, females with LUTS and males with sexual symptoms and pelvic pain more often showed dysfunctional endurance compared to the other sexe (0–3 s/10 s). Females with LUTS more often showed no increase in the anorectal angle at contraction.

TABLE 1 External anal sphincter and puborectal muscle functional assessment compared to the number of pelvic floor symptoms, in males and females.

		0 PFS		1 PFS		2 PFS		3 or 4 PFS	
		Males	**Females**	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
External anal sphincter									
Tone	(*n*)	(66)	(67)	(53)	(49)	(44)	(39)	(36)	(32)
	Decreased (%)	9	9	6	14	11	15	6	28
	Normal (%)	73	82	77	78	84	82	81	66
	Increased (%)	18	9	17	8	5	3	14	6
Voluntary relaxation	(*n*)	(66)	(67)	(53)	(49)	(44)	(38)	(36)	(31)
	Complete (delayed) (%)	62	76	76	80	77	71	67	77
	Partial (delayed) (%)	36	19	23	18	12	21	31	16
	No (%)	2	5	2	2	12	8	3	7
Maximum voluntary contraction	(*n*)	(66)	(67)	(53)	(49)	(44)	(39)	(36)	(32)
	Strong (%)	27	8	13	2	7	3	6	3
	Normal (%)	55	66	57	61	73	59	75	63
	Weak (%)	18	22	28	35	16	33	19	31
	Absent (%)	0	5	2	2	5	5	0	3
Endurance	(*n*)	(66)	(67)	(53)	(49)	(44)	(39)	(36)	(32)
	7–10 s (%)	89	61	81	71	82	59	78	66
	3–7 s (%)	9	27	11	25	11	26	14	31
	0–3 s (%)	2	12	8	4	7	15	8	3
Puborectal muscle									
Tone	(*n*)	(66)	(67)	(53)	(48)	(44)	(38)	(36)	(32)
	Decreased (%)	12	24	6	10	9	16	6	28
	Normal (%)	49	51	55	58	50	47	56	41
	Increased (%)	39	25	40	31	41	37	39	31
Voluntary relaxation	(*n*)	(66)	(67)	(53)	(48)	(44)	(38)	(36)	(32)
	Complete (delayed) (%)	38	49	45	35	27	37	36	44
	Partial (delayed) (%)	47	39	49	58	46	50	56	53
	No (%)	15	12	6	6	27	13	8	3
Maximum voluntary contraction	(*n*)	(66)	(67)	(53)	(47)	(44)	(38)	(36)	(32)
	Strong (%)	8	6	2	0	0	0	0	3
	Normal (%)	53	46	68	55	48	53	61	63
	Weak (%)	32	37	26	43	41	37	36	31
	Absent (%)	8	10	4	2	11	11	3	3
Endurance	(*n*)	(66)	(67)	(53)	(48)	(44)	(38)	(36)	(32)
	7–10 s (%)	80	64	85	77	68	66	81	78
	3–7 s (%)	9	22	8	15	11	16	11	19
	0–3 s (%)	11	13	8	8	21	18	8	3

TABLE 1 (Continued)

		0 PFS		1 PFS		2 PFS		3 or 4 PFS	
		Males	Females	Males	Females	Males	Females	Males	Females
Anorectal angle (Increase at contraction)	(*n*)	(66)	(67)	(53)	(48)	(44)	(38)	(36)	(32)
	Yes (%)	67	70	74	63	59	62	78	75
	No (%)	33	30	26	38	41	37	22	25

Note: Data are shown as percentages unless in the number (*n*) row. Participants in the PFS groups are not mutually exclusive (i.e., may be present in all groups).

Abbreviation: PFS, pelvic floor symptoms.

4 | DISCUSSION

This study of the anorectal PFM found relevant differences between the sexes. Overall, females more often had decreased tone, males more often showed partial relaxation, a stronger MVC, and a normal endurance in the EAS, whereas males more often had increased tone, no relaxation, and normal endurance in the PRM. For a better understanding of this complex topic, we discuss the differences and similarities in PFM function between males and females both in the total group and by the number and type of PFS. We premise that a digital PFM assessment is not an objective measurement and several factors, concerning both the assessor and the participant could influence outcomes. Nevertheless, we chose digital PFM assessment and think this a valuable tool best reflecting first-line PFM assessments in daily general practice and for PFM assessment in pelvic floor physical therapy.

Overall, we found more cases of dysfunctional tone in the PRM, with females more often showing decreased tone and males more often showing increased tone. It may be that an increase in PRM tone compensates for the decrease in EAS tone, which was more common in females than males; however, it does not explain why even more males showed increased PRM tone compared to increased EAS tone. Assessing tone is difficult because no rating scale exists to define "normal," which is a variable that fluctuates in response to different participant and assessor characteristics between males and females. In the participant, factors include neuromuscular conditions, noncontractile viscoelasticity of the biomechanical component, sensibility, reaction to digital palpation, and reaction to the assessor. In the assessor, factors include differences in finger size, palpation technique, experience, interpretation, and gender.[18] To prevent increase of tone by stress reactions, the pelvic floor physical therapist provided an agreeable and safe environment for the participant. Besides, the assessor works for 14 years as a pelvic floor physical therapist, is aware of the factors of influence during PFM assessment and has experience in detecting a decreased, normal or increased tone of the EAS and the PRM. Add to this research findings that emotion and LUTS symptoms may affect pelvic floor function[19] and the issues with tone assessment are abundantly clear. We want to emphasize that the assessment of the muscle property of tone, via digital palpation, is less well understood than that of strength or endurance.[17] By omitting the severity of PFS from our analysis, confounding could have been introduced since the severity of PFS could differ between both sexes.[6] Based on the higher percentage of males with partial EAS relaxation, males seemed to have more trouble with complete EAS relaxation than females. No comparable difference for partial relaxation was shown for the PRM. According to the number of PFS and partial (delayed) EAS relaxation, the groups with 0 PFS and 3 or 4 PFS showed the greatest differences between males and females. Again, this contrasted with the PRM, in which irrespective of sex, these differences were less for all PFS groups. These differences by sex and muscle grouping are difficult to explain solely by muscle function and the number of PFS, indicating that we must find other explanations.

Partial (delayed) relaxation might result not only from pelvic pain and discomfort but also from the PFM assessment itself.[20] Of note, more females reported pain in the EAS and the PRM during the PFM assessment compared to males, possibly due to higher levels of pain in the vaginal pelvic floor. Factors other than pain or PFS that we did not report, such as the awareness of the PFM and the feeling of anorectal flatus, may also have influenced the findings of partial (delayed) relaxation.[20] Given that males need a less profound PFM relaxation during voiding than females the capacity for PFM relaxation in males could be more compromised. Partial (delayed) relaxation could also be related to defecation problems that females reported more often, indicating a relationship between constipation and insufficient relaxation of both the EAS and PRM.[21]

Concerning the number and type of PFS, females more often showed weak MVC of the EAS compared to

TABLE 2 External anal sphincter and puborectal muscle functional assessment compared to the type of pelvic floor symptoms, in males and females.

		LUTS		Defecation problems		Sexual dysfunction		Pelvic pain	
		Males	Females	Males	Females	Males	Females	Males	Females
External anal sphincter									
Tone	(*n*)	(70)	(55)	(66)	(55)	(76)	(64)	(44)	(56)
	Decreased (%)	9	26	6	22	4	16	14	21
	Normal (%)	83	69	82	75	82	80	75	71
	Increased (%)	9	6	12	4	15	5	11	7
Voluntary relaxation	(*n*)	(70)	(54)	(65)	(53)	(75)	(64)	(44)	(54)
	Complete (delayed) (%)	74	76	68	76	73	73	73	78
	Partial (delayed) (%)	19	15	25	15	24	23	23	17
	No	7	9	8	9	3	3	5	6
Maximum voluntary contraction	(*n*)	(70)	(55)	(66)	(55)	(76)	(64)	(44)	(56)
	Strong (%)	9	2	9	2	7	3	5	4
	Normal (%)	76	56	68	62	66	59	75	64
	Weak (%)	14	36	18	31	28	36	18	29
	Absent (%)	1	6	5	6	0.0	2	2	4
Endurance	(*n*)	(70)	(55)	(66)	(55)	(76)	(64)	(44)	(56)
	7–10 s (%)	80	60	77	60	84	67	77	68
	3–7 s (%)	14	29	14	31	11	28	11	25
	0–3 s (%)	6	11	9	9	5	5	11	7
Puborectal muscle									
Tone	(*n*)	(70)	(55)	(66)	(54)	(76)	(63)	(44)	(55)
	Decreased (%)	9	26	9	22	3	14	9	20
	Normal (%)	60	47	47	44	55	52	50	42
	Increased (%)	31	27	44	33	42	33	41	38
Voluntary relaxation	(*n*)	(70)	(55)	(66)	(54)	(76)	(63)	(44)	(55)
	Complete (delayed) (%)	37	38	30	43	36	35	34	42
	Partial (delayed) (%)	49	49	53	48	55	59	48	56
	No (%)	14	13	17	9	9	6	18	2
Maximum voluntary contraction	(*n*)	(70)	(55)	(66)	(54)	(76)	(62)	(44)	(55)
	Strong (%)	0	0	0	2	1	2	0	2
	Normal (%)	57	56	53	59	62	55	59	60
	Weak (%)	41	33	39	30	30	42	32	36
	Absent (%)	1	11	8	9	7	2	9	2
Endurance	(*n*)	(70)	(55)	(66)	(54)	(76)	(63)	(44)	(55)
	7–10 s (%)	80	67	76	70	80	78	71	78

TABLE 2 (Continued)

		LUTS		Defecation problems		Sexual dysfunction		Pelvic pain	
		Males	Females	Males	Females	Males	Females	Males	Females
Anorectal angle (Increase at contraction)	3–7 s (%)	11	16	12	19	7	14	14	18
	0–3 s (%)	9	16	12	11	13	8	16	4
	(*n*)	(70)	(55)	(66)	(54)	(76)	(63)	(44)	(55)
	Yes (%)	71	64	67	69	72	70	71	71
	No (%)	29	36	33	32	28	30	30	29

Note: Data are shown as percentages unless in the number (*n*) row. Participants in the PFS groups are not mutually exclusive (i.e., may be present in all groups).

Abbreviation: PFS, pelvic floor symptoms.

males, but this pattern only appeared for the PRM among females in two groups and two domains, namely those with 0 or 1 PFS, sexual symptoms, and pelvic pain. This indicates that a PRM with a weak MVC is more related to the type than the number of PFS. Overall, we found a large difference for normal endurance of the EAS in males compared to females, whereas this was less pronounced for the PRM. For both the EAS and the PRM, females more often had dysfunctional endurance (3–7 s/10 s) compared with males, irrespective of the level of analysis. Other differences in EAS function were found between the sexes, mostly for strong and weak MVC with 0–1 and 2–4 PFS, respectively. An impact of PFS type on EAS most often occurred for strong and weak MVC with LUTS and defecation problems. Differences between sexes in a weak MVC of the PRM also appeared with 1 PFS and sexual dysfunction. The differences in EAS function between sexes may be explained by the female hormonal status or a history of vaginal (instrumental) delivery.[22] Although the anorectal angle in females might be larger than in males, 30% of both sexes had a dysfunctional anorectal angle during contraction. It seems logical that an association between the MVC and anorectal angle of the PRM exists, given that PRM dysfunction leads to no or little change in the anorectal angle.[3]

Some limitations need to be considered. First, despite setting out to recruit participants of all ages, the final cohort mainly included older age groups, as is often the case with such studies. Second, male participants were significantly older than female participants, which might have influenced our results because aging causes a decline in striated muscle function.[23] Third, the unequal distribution of PFS between sexes might have influenced our results by the over-representation of certain groups. Fourth, although the same experienced female pelvic floor physical therapist performed all assessments in this study to prevent interobserver variation, we acknowledge the lack of previous studies on inter-rater and intrarater reliability in male PFM assessment.[24] While our reliance on one assessor for PFM assessments might have introduced systematic errors, it will also have prevented differences in outcomes of PFM function due to different assessors. Fifth, bias may have resulted from enquiring about PFM function and by virtue of participants having complaints. Sixth, patient characteristics such as the association of different PFS with sexe, symptom severity, and education level about PFM function might have affected PFM function differently.[25] Finally, despite the relevance of vaginal PFM function to the assessment of female LUTS and sexual dysfunction, we focused solely on the EAS and the PRM because these muscles are comparable in both sexes.

5 | CONCLUSION

This study improves knowledge and understanding of the differences between male and female PFM function and can initiate efforts to improve consultations about PFS in both sexes.

Overall, females more often have decreased tone, a weak MVC, and dysfunctional endurance of the EAS, whereas males more often have increased tone, no relaxation, and normal endurance of the PRM. In addition, the EAS and PRM both show distinct patterns of decreased tone for females and increased tone for males, while the EAS shows a pattern of strong MVC for males and weak MVC for females. For the PRM females with either 0 or 1 PFS, sexual dysfunction, or pelvic pain more often show a weak MVC. Dysfunctional endurance (3−7 s.) of the EAS and the PRM for females appeared both in the total group and by the number and type of PFS.

AUTHOR CONTRIBUTIONS

Study conception and design: Françoise J. M. Notenboom-Nas, Grietje E. Knol-de Vries, Marijke C. P. Slieker-ten Hove, Janny H. Dekker, Debby G. Keuken, Gommert A. van Koeveringe, Marco H. Blanker. *Data collection*: Françoise J. M. Notenboom-Nas. *Data analysis*: Françoise J. M. Notenboom-Nas, Grietje E. Knol-de Vries, Marijke C. P. Slieker-ten Hove, Marco H. Blanker. *Interpretation of results*: Françoise J. M. Notenboom-Nas, Grietje E. Knol-de Vries, Marijke C. P. Slieker-ten Hove, Janny H. Dekker, Debby G. Keuken, Gommert A. van Koeveringe, Marco H. Blanker. *Writing of the paper*: All authors.

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CONFLICT OF INTEREST STATEMENT

Marijke Slieker-ten Hove: KOL Indiba (Indiba. com). She has an advising role for pelvic floor physical therapists who want to use Tecar therapy in pelvic floor dysfunction. The remaining authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author (FJMNN), upon reasonable request.

ETHICS STATEMENT

The Medical Ethical Committee of the University Medical Center of Groningen approved the study with no. NL67503.042.18. All participants provided written informed consent.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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