

Assessing prevalence of urinary incontinence in Scottish fitness instructors and experience of teaching pelvic floor muscle exercises: an online survey

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ABSTRACT

Background The aim of this study was to assess the prevalence of urinary incontinence in fitness instructors, experience of teaching pelvic floor muscle exercises (PFME), and attitudes to incorporating such exercises into classes.

Method An online survey was undertaken of fitness instructors working in Scotland based on the Urinary Incontinence Short Form (ICIQ-UI).

Results The survey was at least partially completed by 106, of whom 73.6% (53/72) were female and 52.8% (38/72) were in the 35–54 years age group. Prevalence of UI was 28.2% (24/85), and severity based on ICIQ-UI scores was ‘slight’ 65.2% (15/23), or ‘moderate’ in 26.1% (6/23). Leakage of urine was associated with physical activity in 36% (9/25), of whom 31.8% (7/22) had not taken actions to reduce the impact, and 86.4% (19/22) had not sought professional advice or treatment. There was widespread willingness to incorporate PFME into classes if given appropriate training 86.1% (62/72), and 67.1% (49/73) would be happy to recommend a PFME app.

Conclusion A significant proportion of fitness instructors are in need of PFME and those who perform PFME do so at a level below that which is recommended. However, many have had some training on PFME or are willing to provide this.

Keywords educational settings, physical activity, population-based and preventative services

Introduction

Studies of populations of women around the world have found that urinary incontinence (UI) is a common gynaecological problem, neglected and characterized by stigma and poor healthcare seeking behaviour.^{1,2} Although UI is associated with older age,³ studies have shown younger women to be affected,⁴ including those who are physically active.^{5,6}

A study by Thompson *et al.*⁷ found that UI was common in women attending fitness classes and gyms and a Norwegian study, which found that UI is prevalent in female fitness instructors concluded that they were also in need of training in pelvic floor muscle exercise (PFME).⁸ Furthermore, the prevalence of both stress and urgency UI has been found to be higher in female elite athletes and women who participate in strenuous exercise.^{9–11} Annett *et al.*¹² found that ‘stress urinary incontinence, once an idea revolving around elderly and parous women, has been shown to be quite a common

condition in endurance-trained women’. In an overview of published studies on prevalence of UI in elite athletes, Bo found a ‘high prevalence of symptoms of both stress and urge UI in young null parous, as well as parous elite athletes’.¹³

High impact exercise can be considered to cause and have a worsening effect on the symptoms of stress UI and PFME is recommended.¹⁴ Bø¹³ argued that there is ‘huge potential for improvement in the function and strength of pelvic floor muscles’ if athletes undertook PFME training.

Screening of females participating in exercise classes and at gyms along with the promotion of pelvic floor friendly exercise options has been recommended.⁶ However, this places significant reliance on fitness instructors. Relatively little is known about the general health of fitness instructors

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but recent Norwegian studies have highlighted several health issues in this group including disordered eating behaviour, especially in women.¹⁵ This is important, as there is a recognized relationship between UI and eating disorders,¹¹ where contributing factors such as oestrogen deficiency, the high pressure on the pelvic floor muscles during vomiting, and general lack of energy and muscle weakness have been identified.

Low levels of awareness of the prevalence of UI symptoms in younger women have resulted in lack of access to preventative and treatment resources.⁶ Indeed, 90% of the younger women in the study by Carls⁵ were unaware of PFME. Low levels of awareness, the higher risk associated with high impact physical activity, combined with delays in help seeking behaviour suggest that there is an immediate need for education and awareness in younger women.

Siegel argued that ‘despite evidence of efficacy, PFME in males remains under-recognized and underutilized’.¹⁶ PFME can be beneficial to male genitourinary health, and it ‘should achieve the same recognition, utilization, status and traction as in females’.

Perera *et al.*¹ concluded that community based education is likely to be beneficial and Brubaker *et al.*¹⁷ suggested that a non-medical model around pelvic floor fitness may be both more cost effective and more accessible than current clinical models. Bø and Haakstad¹⁸ have emphasized the need for more population based studies of PFME training in fitness classes.

It is clear from the findings of previous research that there is potential benefit for community based PFME and that there are opportunities for fitness instructors to both benefit from that training and also incorporate PFME into their classes. There is a need for data about the experience of UI in fitness instructors based in Scotland in order to establish if they would benefit from PFME training. Research is also required into the potential role of fitness instructors in relation to their knowledge of PFME and their willingness to teach it.¹⁹

The aim of this study was, therefore, to assess the prevalence of UI symptoms in fitness instructors in Scotland, investigate their training in and teaching of PFME, and to assess their attitudes incorporating PFME into classes that they undertake.

Methods

An online survey of fitness instructors was undertaken across Scotland between September and December 2016. Recruitment of participants was undertaken by searching online for gyms and fitness providers in the public or private

sector. Where no email address was available, phone calls were used to identify an appropriate email address by one of the authors (K.S.). Emails were sent to gatekeepers for each sports/fitness facility, which ranged from one person to large organizations. A total of 580 fitness facilities across Scotland were contacted.

Eligibility criteria for inclusion in the study were: literacy in English; over 18 years; qualified to work as a sports coach, fitness instructor or fitness group leader; and working in Scotland.

A questionnaire was designed using Smart Survey, an online survey software and questionnaire tool.²⁰ Respondents were provided with information on the nature of the study and could choose which questions they wished to answer. More detailed questions around incontinence were automatically skipped if respondents reported no experience of leakage of urine.

The questionnaire included a validated measure from the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI) to establish the experience of incontinence on a scale of 0–21.²¹ A small addition was made to this by asking respondents to provide detail about the type of exercise when they experienced leakage. The European Health Risk Monitoring indicator ‘SMK3’²² was adapted and used to indicate cigarette smoking which is risk factor for UI.²³ Demographic details were also collected. The questionnaire is available from the authors and the data is available from the Dryad Digital Repository: <http://dx.doi.org/10.5061/dryad.786f5>.

The questionnaire did not collect identifiable data such as name, address or date of birth, but it did include an option for respondents to provide an email address to facilitate further research. The CHERRIES checklist was used to inform reporting of results.²⁴ Ethical approval for the study was obtained from the University of the Highlands and Islands Research Ethics Committee.

Results

The survey website was accessed by 125 individuals and partially or fully completed by 106 individuals. The geographical area in which respondents worked is provided in Table 1. There was a slightly higher proportion from the north of Scotland, where the authors had stronger contacts with the fitness industry. Gender was predominantly female 73.6% (53/72; 95% CI: 62.4–82.4%) with males at 26.4% (19/72; 95% CI: 17.6–37.6). The majority of respondents indicated that they worked for the public sector or arm’s length public sector organizations: 18 worked for private companies, 25 were self-employed and 7 worked on a voluntary basis. Just

Table 1 Characteristics of participants

Location	Response total	Response percent (%)
Central Scotland and Fife	21	21
Dumfries and Galloway	8	8
Grampian	7	7
Highland	21	21
Lothian & Borders	13	13
Northern Isles	7	7
Strathclyde	15	15
Western Isles	7	7
ALL	72	100
Age group		
18–24	10	14
25–34	14	19
35–54	38	53
55+	10	14
ALL	72	100
Experience as a fitness instructor		
Under 1 year	9	9
Between 1 and 10 years	39	40
Between 10 and 20 years	33	34
More than 20 years	16	16
All	97	100

over half of respondents were 35–54 years, and respondents had typically been qualified as fitness instructors for between 1 and 10 years 40.2% (39/97; 95% CI: 31.0–50.2), see Table 1.

The prevalence of UI symptoms in fitness instructors in Scotland was 28.2% (24/85; 95% CI: 19.8–38.6) although the frequency of incontinence was generally ‘once a week or less often’. Only one participant who reported incontinence was male (23 were females) and the aetiology of incontinence in this participant was atypical, as incontinence had only occurred ‘when excessively drunk’. Comments were recorded in a comments box and, as illustrated by Respondent 2: ‘I only leak a little urine if I’m bursting for a pee, have left it a bit late and then sneeze. This happens maybe once every 3 months’ (Respondent 2).

The categorized ICIQ-UI scores for respondents reporting incontinence were: slight (1–5) 65.2% (15/23); moderate (6–12) 26.1% (6/23); severe (13–18) 8.7% (2/23); very severe (19–21) 0%. Leakage of urine was associated with physical activity/exercising in 36.0% (9/25; 95% CI: 20.2–55.5) of respondents who answered this question. The types of exercise where respondents experienced leakage of urine were: jumping and specifically jumping with legs apart as in star jumps or jumping jacks; aerobic exercise; running; and hopping. The duration of physical activity was also

mentioned as a factor. A significant proportion of those reporting incontinence, 31.8% (7/22; 95% CI: 16.4–52.7) did not appear to have taken any of a range of common actions to reduce the impact, and 86.4% (19/22; 95% CI: 66.7–95.3) had not sought advice or treatment for their problem (Table 2). Of the instructors who experience symptoms of UI three had previous abdominal or gynaecological surgery and three were occasional smokers.

Most instructors had received some training in relation to PFME 72.2% (52/72; 95% CI: 60.1–81.2), and 34.7% (25/72; 95% CI: 24.7–46.2) of respondents currently taught pelvic floor exercises (Table 3). The survey included a question about current practice of PFME by the trainers themselves. The pattern of PFME used by respondents is shown in Table 4. Although 83.9% (52/62) of respondents to this question undertook some PFME, only 11.5% (6/52) of those who undertook PFME followed the NICE guidelines to undertake three sets of PFME daily.²⁵

Several questions were asked regarding the promotion of PFME. Of those who responded to these questions, 86.1% (62/72; 95% CI: 76.3–92.3) agreed or strongly agreed with the proposal that they could incorporate PFME in their classes if given appropriate training, and 67.1% (49/73; 95% CI: 55.7–76.8) agreed or strongly agreed with a statement that they would be happy to recommend a mobile phone app on PFME. A slightly lower percentage 60.3% (44/73; 95% CI: 48.8–70.7) agreed or strongly agreed that they would be comfortable talking about incontinence and recommending PFME (Table 3).

Discussion

Main finding of this study

Results from this study confirm that a significant proportion of fitness instructors themselves need to undertake PFME. This study has found various patterns of exercise behaviour amongst those who currently perform PFME, most of whom do so at a level below that which is recommended. However, many fitness instructors have had some training on PFME, and are willing promote it.

The conversations that were had with organizations involved asking them to disseminate the email to their staff. Some organizations said that they would check the survey first before sending it to their staff. It is possible to speculate that the gap between the 125 individuals who opened the survey and those who completed it may in part be due management staff who were not fitness instructors who opened and read the survey to check it out before forwarding it to staff.

Table 2 Prevalence of urinary incontinence

Category	Response total	Response percent (%)
Never	61	71.8
About once a week or less often	16	18.8
Two or three times a week	3	3.5
About once a day	3	3.5
Several times a day	2	2.4
All the time	0	0.0
All	85	100
When does urine leak?		
Leaks before you can get to the toilet	7	28.0
Leaks when you cough or sneeze	10	40.0
Leaks when you are asleep	0	0.0
Leaks when you have finished urinating and are dressed	5	20.0
Leaks all the time	0	0.0
Leaks for no obvious reason	2	8.0
Leaks when you are physically active/exercising	9	36.0
Other	2	8.0
All	25	100
Which of these actions would you take to avoid or contain urine leakage at a class?		
Empty bladder prior to a class	15	68.2
Reduce intake of liquids prior to a class	0	0.0
Reduce intake of caffeine prior to a class	1	4.5
Wear additional layers of clothing	0	0.0
Use sanitary protection or an incontinence pad	3	13.6
Contract pelvic floor muscles prior to exertion or jumping	4	18.2
Contract pelvic floor muscles prior to coughing, sneezing or laughing	4	18.2
I have stopped teaching/leading a class because of urine leakage	0	0.0
I have not taken any of these actions	7	31.8
Other (please specify):	1	4.5
All	22	100
Have you sought advice or treatment about urine leakage from any of the following?		
GP or Practice Nurse	0	0.0
Family or friends	0	0.0
The internet	0	0.0
Gynaecologist/Urologist	0	0.0
Continence Nurse	0	0.0
Continence Physiotherapist	1	4.5
Midwife/Health Visitor	1	4.5
I have never sought advice or treatment	19	86.4
Other (please specify):	2	9.1
All	22	100

What is already known on this topic

Despite the conclusions by Perera *et al.*,¹ and Brubaker *et al.*¹⁷ that a non-medical, community based approach to PFME education might be beneficial, there is some controversy around who should teach it and in what setting.²⁶ The importance of the correct identification of pelvic floor muscles has been highlighted in ensuring the efficacy of PFME

training.²⁷ Thompson and O'Sullivan²⁸ found that incorrect exercise could 'contribute to the pathology of urinary stress incontinence and genital organ prolapse'. More specifically, evidence from Goldstick and Constantini,¹¹ suggests that 'common exercises taught in gymnastics, pilates and yoga classes do not necessarily elevate the bladder neck, and they might even result in bladder neck descent' with resulting

Table 3 Proportion of fitness instructors that had received training on pelvic floor muscle exercises and level of agreement with statements related to promoting PFME

<i>What is your experience of being taught pelvic floor muscle exercise?</i>	<i>Response total</i>	<i>Response percent (%)</i>
I have never been taught	20	23.5
I was taught in pregnancy	19	22.4
I have been taught in a clinical setting (e.g. continence physiotherapist)	5	5.9
I have been taught in a non-clinical setting (e.g. yoga, pilates, fitness class)	38	44.7
I used a DVD/app/website (please specify)	3	3.5
ALL	85	100
<i>What is your experience of teaching pelvic floor muscle exercise?</i>		
I have never taught pelvic floor muscle exercise	28	38.9
I currently incorporate pelvic floor muscle exercise in a class I teach	25	34.7
I do not currently teach pelvic floor muscle exercise but I have done so in the past	13	18.1
Other (please specify):	6	8.3
All	72	100
<i>'I am confident that I could incorporate pelvic floor muscle exercise in my classes if I was given appropriate training'</i>		
Strongly agree	33	45.8
Agree	29	40.3
Neither agree nor disagree	5	6.9
Disagree	2	2.8
Strongly disagree	3	4.2
All	72	100
<i>'I would be happy to recommend an app for pelvic floor muscle exercise to people who take my classes'</i>		
Strongly agree	18	24.7
Agree	31	42.5
Neither agree nor disagree	20	27.4
Disagree	3	4.1
Strongly disagree	1	1.4
ALL	73	100
<i>'I would be comfortable talking about incontinence and recommending pelvic floor muscle exercises in my classes'</i>		
Strongly agree	17	23.3
Agree	27	37.0
Neither agree nor disagree	18	24.7
Disagree	7	9.6
Strongly disagree	4	5.5
All	73	100

pelvic floor weakness. There is clearly a need for PFME to be taught correctly in order to avoid harm from incorrect exercise.

Kisner and Colby suggest that 'although all physical therapists can fairly easily incorporate activation of the pelvic floor muscles...true expertise can only come with further training and mentoring'.²⁹ In Brubaker's study, all community based fitness instructors 'completed the same, standardized training and were trained before the initiation of the research classes'. This would suggest that, if community based PFME training is to be made more widespread, non-clinical instructors require high quality training in order to ensure they teach correctly.

Difficulties in sustaining motivation and lack of ongoing adherence to PFME have been identified as barriers to the efficacy of the exercises in treating symptoms of incontinence. The use of appropriate behaviour-change techniques is therefore important, to ensure maximum adherence and subsequent efficacy.²⁷ Training for non-clinical instructors should incorporate a behaviour change component, as well as a good understanding of the relevant physiology.

Of the fitness instructors who reported that they currently incorporate PFME into their classes or sports instruction, or who had done so in the past, the majority were taught the exercises in a non-clinical setting. In addition, despite being taught in a clinical setting, previous studies have found that

Table 4 Pattern of PFME undertaken by respondents

Number of contractions undertaken						
	1–5	6–10	11–20	21–30	Over 30	Response Total
Duration of contractions (s)						
3 sets daily	2	1	2	0	1	6
1 set daily	6	3	3	2	1	15
3 sets weekly	4	2	2	1	2	11
1 set weekly	5	2	2	0	2	11
3 sets monthly	1	0	0	1	0	2
1 set monthly	4	1	1	0	1	7
None						10
Number of repetitions in set						
3 sets daily	2	4	0	0	0	6
1 set daily	6	6	2	1	0	15
3 sets weekly	4	3	2	0	2	11
1 set weekly	5	3	3	0	1	12
3 sets monthly	1	1	0	0	0	2
1 set monthly	3	1	0	0	1	5
None						7

women can still lack confidence in identifying their pelvic floor muscles or can be unsure as to whether they were doing the exercises correctly. This may mean that some instructors have not been taught correctly, or may have forgotten how to exercise correctly, and may not be teaching exercises to a high standard.

Relatively few of the fitness instructors who experience UI symptoms, undertook the recommended three sets of PFME per day.²⁵ This would suggest that there is a lack of awareness of the required level of exercise to achieve benefits from PFME, or that fitness instructors would benefit from behaviour change techniques to improve their own levels of adherence.

The integration of mobile phone apps might also improve adherence.³⁰ There is evidence that multi-modal approaches to behaviour change may be more effective and may complement each other.

What this study adds

Results from this study confirm that a significant proportion of Scottish fitness instructors experience UI symptoms. This study had found that who currently perform PFME do so at a level below that which is recommended.

Relatively little is known about the capacity of fitness instructors to deliver PFME teaching but this paper provides some evidence that they may be an untapped resource.

Fitness instructors appear to have some training in teaching PFME and to be interested in pursuing this further.

Training and supporting fitness instructors in how to teach PFME correctly could be explored further as a method for reducing demand on health services and providing easier access to support for a common problem. Furthermore, there would be value in follow up to assess changes over time.

Limitations of this study

This study has a number of weaknesses. There is potential for significant bias in the results, due to the self-selecting nature of respondents and the variable level of completion across different questions. Information provided to gatekeepers in organizations and to potential participants mentioned UI and this may have dissuaded individuals who had no interest or found the subject off putting. However, it is unclear how one could develop more reliable methods for obtaining such information. Participants may be increasingly reluctant to click on hyperlinks in emails, as these can sometimes result in the installation of malware, even when appearing to come from a safe university email address.

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