



**de Fysiotherapeut**

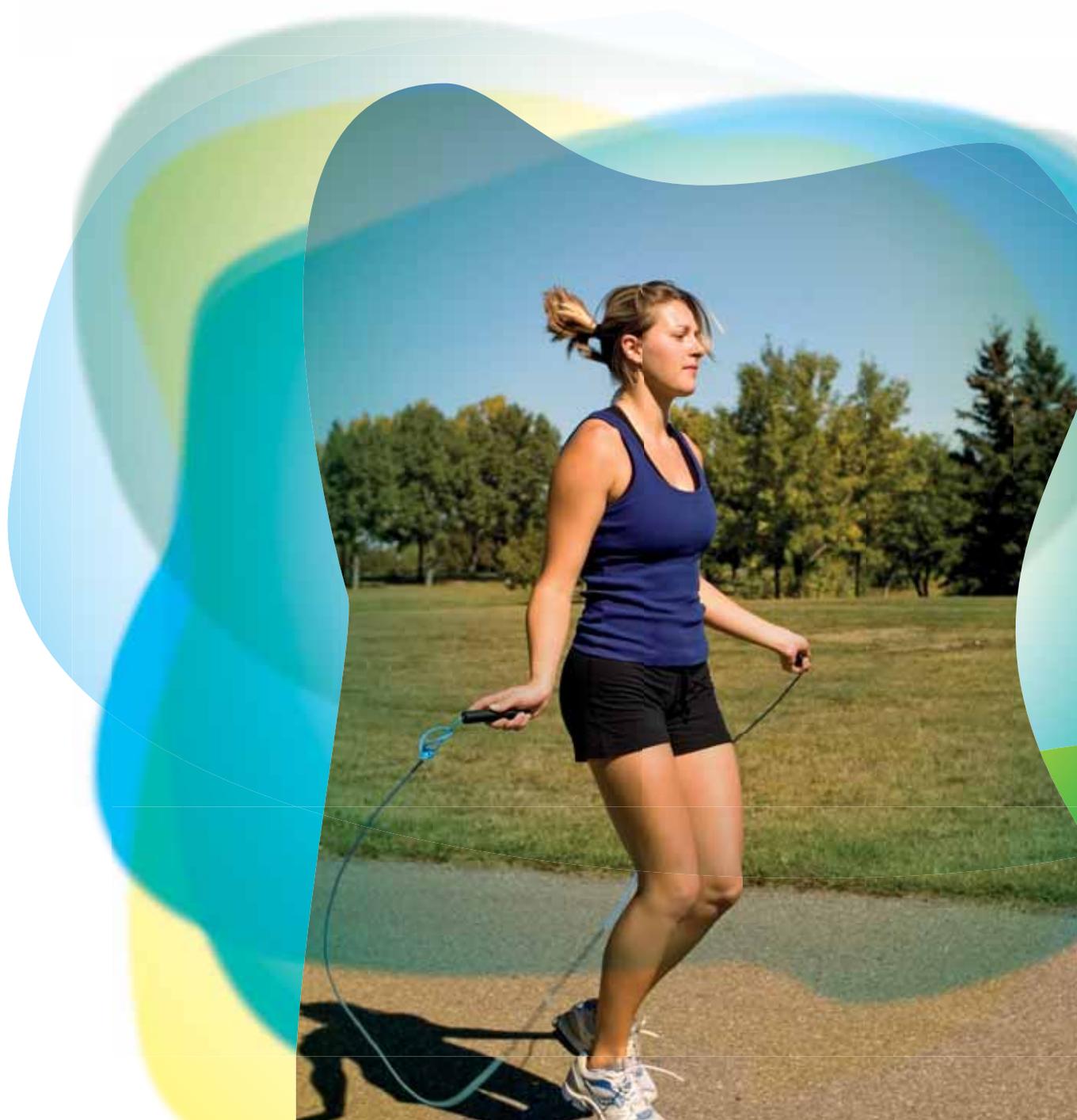
Royal Dutch Society for Physical Therapy

# ***KNGF Guideline***

## **for Physical Therapy in patients with Stress urinary incontinence**

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In the context of international collaboration in guideline development, the Royal Dutch Society for Physical Therapy (Koninklijk Nederlands Genootschap voor Fysiotherapie, KNGF) has decided to translate its Clinical Practice Guidelines into English, to make the guidelines accessible to an international audience. International accessibility of clinical practice guidelines in physical therapy makes it possible for therapists to use such guidelines as a reference when treating their patients. In addition, it stimulates international collaboration in the process of developing and updating guidelines. At a national level, countries could endorse guidelines and adjust them to their local situation if necessary.

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KNGF's objective is to create the right conditions to ensure that high quality physical therapy care is accessible to the whole of the Dutch population, and to promote recognition of the professional expertise of physical therapists. KNGF represents the professional, social, and economic interests of over 20,000 members.

The guideline is summarized on a flowchart; the Practice Guidelines as well as the flowchart can be downloaded from [www.fysionet.nl](http://www.fysionet.nl).

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# Practice Guidelines

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## A Introduction

This KNGF Guideline describes the physical therapy treatment of women and men with stress urinary incontinence (SUI) or mixed incontinence with SUI as the predominant component. The guideline is supplemented by a *Review of the Evidence*, which sets out and explains the choices made as regards the definition of the health problem at hand, its diagnostics and treatment, as well as offering background information to support the Practice Guideline.

### A.1 Objective and target group

The *KNGF Guideline on SUI* is intended for pelvic physical therapists involved in the diagnostics and treatment of urinary incontinence. The pelvic physical therapist must have proven specific knowledge and understanding of this group of patients, and have a suitable attitude towards them. Pelvic physical therapists engaging in internal examinations and treatments of patients with SUI must be aware of the fact that, based on current Dutch law, KNGF regards these as 'special procedures' (including palpation of the vagina or anus or introducing an electrode into the vagina or anus), which means that they are subject to special conditions.

KNGF advises physical therapists to leave internal physical therapy procedures in the pelvic floor area to registered pelvic physical therapists\*. Pelvic physical therapists are allowed to perform internal examinations and treatments with a patient's consent, after the latter has been fully informed of the proposed treatment and possible alternatives. We recommend that the patient's consent to undergo special procedures be confirmed in writing, in a signed informed consent form.

### A.2 Development

The guideline consists of three components: the actual *Practice Guideline*, a *Review of the Evidence* and a *Flowchart* summarizing the guideline. The clinical problem definition has been formulated by a team of experts on the subject, who have also selected and evaluated the scientific evidence.

The guideline is being introduced and disseminated using a standardized implementation strategy. The guideline is structured on the basis of the stages mentioned in the 'Methodical Approach of the Physiotherapeutic Health Care Process' document. Further information is presented in the *Review of the Evidence*.

### A.3 Definition of SUI

The International Continence Society (ICS) and the International Urogynecological Association (IUGA) define urinary incontinence as a 'complaint of involuntary loss of urine.' De ICS/IUGA define SUI as 'involuntary loss of urine on effort or physical exertion, or on sneezing or coughing.' They also suggest using the term 'activity-related incontinence' when talking to patients, to avoid confusion with psychological stress.

SUI occurs as a result of a dysfunctional urethral closure mechanism. The resulting involuntary loss of urine can affect someone's participation in social life (participation problems), to a varying extent.

### A.4 Epidemiology

Involuntary loss of urine is a common problem. Although the exact number of people suffering from it is unknown, it is estimated that about 5% of the Dutch population suffer from urinary incontinence to some degree.

Reported prevalence figures for SUI in women vary from 10 to 40%, a variation which is explained by differences between study populations and the use of different definitions of SUI in different studies. About 20% of women with incontinence problems seek professional help. The annual incidence of SUI ranges from 7 to 11%. The prevalence of SUI among men aged up to 65 years is lower than that among women, ranging from 0.9 to 5%.

### A.5 Etiology

Two mechanisms combine to ensure urinary continence, an intrinsic and an extrinsic mechanism. The former is the urethral closure

\* Throughout this text, 'pelvic physical therapist' refers to a registered pelvic physical therapist.

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mechanism, while the latter is the pelvic floor function. The pelvic floor has a supportive function. SUI can develop if one or both of these mechanisms dysfunction.

The intrinsic closure mechanism involves the tunica mucosa, the tunica spongiosa and the tunica muscularis. Etiological factors contributing to the development of urethral closure dysfunction include atrophy of the tunica mucosa and the tunica spongiosa (e.g. postmenopausal) or a dysfunctional tunica muscularis (e.g. due to catheterization). Estrogen deficiency can cause the loss of supportive tissue around the urethra, reducing the closing function of this tissue.

Etiological factors contributing to dysfunction of the supportive extrinsic mechanism include weak pelvic floor muscles and ligaments (which may be congenital or may have been caused or aggravated by pregnancy and/or vaginal delivery), vacuum or forceps delivery, episiotomy and/or pudendal block and advanced maternal age at first delivery. Parity also plays a role – with the risk of SUI development increasing after three or more deliveries – as does a prolapse. Overweight ( $25 \leq \text{BMI} < 30$ ), and especially obesity ( $\text{BMI} \geq 30$ ) and urinary tract infections increase the risk of SUI, which also increases with age, showing a peak at the age of 45–50 years. The risk decreases somewhat after the menopause.

SUI in men is almost exclusively due to sphincter defects caused by trauma or surgical interventions (transurethral prostate resection or radical prostatectomy).

#### A.6 Prognosis

Many of the etiological factors increasing the risk of developing SUI also affect the persistence of the incontinence problems. Pregnancy-related factors such as the number of pregnancies, or delivery-related factors such as a prolonged second stage of labor or a perineal rupture reduce the chances of spontaneous recovery and of recovery after physical therapy. Recovery chances can also be considerably reduced by severe prolapse (POP-Q stage 3 or 4). Negative predictors for recovery from SUI include overweight, the presence of other diseases or disorders, such as diabetes mellitus (risk of neuropathy), cardiovascular diseases, psychological strain and patient-perceived low physical condition. The chances of a favorable outcome of physical therapy are also small if the patient has previously been unsuccessfully treated for SUI by a pelvic physical therapist, or if their current SUI is very severe. Patients with a higher educational level have a greater chance of recovery.

#### A.7 Referral versus direct access to physical therapy

In the Netherlands, patients are usually referred to a pelvic physical therapist with a letter of referral from a family physician, company doctor or medical specialist (e.g. a urologist or a gynecologist). But patients can also consult a pelvic physical therapist directly, sometimes on the advice of a midwife or menopausal counselor. Therapists collaborate with family physicians and specialists through reciprocal referrals, after consultation with and consent from the patient.

##### A.7.1 Referral

If a Dutch patient has been referred to a pelvic physical therapist by their doctor, the letter of referral should include at least the following information:

- date of referral and personal details (date of birth, gender,

address, insurance details, and *burgerservicenummer* [Dutch national identification number]);

- diagnosis or presumptive diagnosis and severity of urine loss;
- diagnostic findings: whether the patient is able to voluntarily and/or involuntarily contract or relax their pelvic floor muscles, and some indication of the functioning of the pelvic floor muscles;
- contraindications to internal examinations to assess the pelvic floor muscle function;
- the presence and grading of prolapse and/or other urogynecologically relevant problems of the small pelvis;
- the information from the patient's micturition diary;
- any previous interventions;
- possible causative (etiological) and prognostic factors, such as rupture during vaginal delivery, damaged pudendal nerve, diabetes mellitus, psychological condition, prior urogynecological surgery, etc.;
- use of medication (i.e. drugs that may relate to the incontinence and may affect the treatment outcome);

These are potential causative factors for the development of SUI and factors that may predict an unfavorable course.

If some of the necessary medical data are missing, the therapist should contact the patient's family doctor or specialist, with the patient's consent.

After referral, no specific screening is required, so the diagnostic process can be started immediately, though the therapist should continue to be attentive to any signals (red flags) during the diagnostic and therapeutic process that may require contact with the referring doctor.

##### A.7.2 Direct access to physical therapy

Since January 1, 2006, Dutch patients have been allowed to present directly to a pelvic physical therapist, without a letter of referral. As a result, the systematic approach described in this guideline also includes a screening process. This screening process consists of four components: presentation, identifying the problem, screening for pathology that requires urgent medical attention and informing the patient of the results of the screening process and giving them advice.

The screening process involves asking specific questions, doing tests or using other diagnostic procedures to decide, within a limited period of time, whether the patient exhibits a pattern of signs and symptoms that is compatible with the individual therapist's area of competence.

##### Presentation

If a patient presents without referral, the pelvic physical therapist should ask for the necessary medical data, such as use of medication, other pathology, or prior surgery. If the information supplied by the patient is incomplete or insufficiently clear, it is up to the individual therapist to contact their family physician or specialist (with the patient's consent) to ask for supplementary information.

##### Problem identification

The patient's presenting problem should be identified by assessing their main complaints, the course of the complaints, and the objective of the therapy.

**Screening for pathology requiring urgent medical attention**

The pelvic physical therapist should be able to decide whether the patient's signs and symptoms are alarming or reassuring, based on their age and sex, available incidence and prevalence data, the development of the problem and the current signs and symptoms, in order to decide whether to continue with further physical therapy examinations without consulting a physician. The pelvic physical therapist should focus on recognizing typical patterns and identifying possible 'red flags' (alarm signals).

**Red flags in stress urinary incontinence**

- unexplained incontinence
- pain while urinating
- loss of blood
- signs of inflammation
- infections
- fever
- (nocturnal) perspiring
- signs of general malaise
- severe loss of weight

**Symptoms of SUI**

- loss of urine at moments of increased intra-abdominal pressure, without the patient feeling the urge to empty their bladder and without pain

**Information and advice**

At the end of the screening process, the physical therapist should inform the patient of the findings. If there are signs of pathology requiring urgent medical attention, the physical therapist should advise the patient to consult their family physician. This is the case if the individual pelvic physical therapist detects an unfamiliar pattern of signs and symptoms, or if one or more symptoms deviate from the normal pattern for SUI, if the pattern shows abnormal development, or if there are any red flags present. The physical therapist should also inform the patient if the findings do not suggest any pathology requiring urgent medical attention (i.e. the pattern of signs and symptoms fits in with the normal pattern for SUI). If the pattern indicates pure SUI without any red flags, there is no need to contact the patient's family physician, and the further diagnostic process can be initiated immediately.

**B Diagnostic process**

The aim of the diagnostic process in physical therapy is to examine the nature and severity of the patient's health problem and to assess the extent to which it can be modified. During the diagnostic process, the therapist describes the health problems in terms of impairments of body structures and body functions, limitations of activities and restrictions of participation, and identifies relevant personal and environmental factors.

This method of identifying and recording the problems makes it possible to monitor changes over time, and to use the data as an evaluation instrument to measure the effect of the care provided by the therapist.

The terms 'impairment', 'limitations of activity' and 'restrictions of participation' do not, however, provide any information about the nature of the underlying disorder and/or disease processes respon-

sible for the SUI, nor about their possible modifiability.

This means that the pelvic physical therapist must also use the process of physical therapy diagnostics to collect information that will allow conclusions to be drawn about the nature and modifiability of the factors responsible for the development of the SUI. This requires an analysis of the way the problem developed and identification of the etiological factors and the extent to which the SUI can be modified, based on prognostic factors. The necessary information can be obtained by means of history-taking, the patient's self-reports, questionnaires, micturition diaries and the therapist's own physical examination of the patient. We recommend using standardized questionnaires to collect data, such as the PRAFAB questionnaire (see Supplement 3.1).

In the analytical stage, the pelvic physical therapist then establishes the physical therapy diagnosis, based on the patient's presenting complaints and the information collected during the history-taking and physical examinations. The therapist decides, on the basis of the diagnosis, whether physical therapy is indicated and whether the patient can be treated in accordance with the guidelines. The therapist then draws up a treatment plan in consultation with the patient.

The information obtained about the nature, severity and modifiability of the individual patient's health problems can be used to establish the prognosis and the objectives of the physical therapy treatment, in terms of reducing impairments, limitations of activities, and restrictions of participation, or in other words improving body functions, activities, and participation.

**B.1 History-taking**

History-taking is used to clarify and supplement the information from the presentation/referral stage or the screening process. The questions have the following aims.

1. Confirming the type of incontinence (is it really a case of stress urinary incontinence)? See Text Box 1.
2. Assessing the severity of the health problem by identifying the impairment(s) (such as loss of urine when coughing), limitations (including aspects of hygiene), and restrictions of participation (such as social isolation). See Text Box 2.
3. Identifying the possible nature of the underlying disorder by assessing the potential causative or risk factors (such as the course of deliveries). See Text Box 3.
4. Identifying local factors (such as uterine prolapse) that can influence the prognosis by adversely affecting the recovery and adjustment processes. See Text Box 4.
5. Identifying other factors (such as overweight) that can influence the prognosis by adversely affecting the recovery and adjustment processes. See Text Box 5.
6. Personal aspects (such as what the patient has done so far to cope with the problems). See Text Box 6.

**Box 1. The 3IQ test**

- 1 During the last 3 months, have you leaked urine (even a small amount)?  
Yes (please continue with questions 2 and 3) or no (questionnaire completed).
- 2 During the last 3 months, did you leak urine: (check all questions that apply)
  - a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?
  - b. When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?
  - c. Without physical activity and without a sense of urgency?
- 3 During the last 3 months, did you leak urine most often: (check only one)
  - a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?
  - b. When you had the urge to empty your bladder, but you could not get to the toilet fast enough?
  - c. Without physical activity and without a sense of urgency?
  - d. About equally as often with physical activity as with a sense of urgency?

Definitions of type of urinary incontinence are based on responses to question 3:

- a. Most often with physical activity → stress only or stress predominant urinary incontinence
- b. Most often with the urge to empty the bladder → urge only or urge predominant urinary incontinence.
- c. Without physical activity or sense of urgency → other cause.
- d. About equally with physical activity and sense of urgency → mixed urinary incontinence.

**Box 2. Assessing the severity and course of the urinary incontinence (including use of urinary incontinence products)**

- The amount of urine lost on each occasion (stream+++ , trickle ++, drops +).
- The frequency of losing urine (once or more times a day).
- The time of the day when loss of urine occurs (morning, afternoon, evening, or night).
- Whether any urinary incontinence pads are being used (how frequently changed; using mini, midi or maxi size).
- Frequency of going to the bathroom and reasons for doing so (fear of leakage, increased micturition frequency).
- Any consequences of loss of urine for daily life (work, sports, housework, family life, social life, and sex life).
- Voiding posture and behavior (initial position during voiding, taking enough time, straining, etc.).

We recommend that patients be always asked to complete the PRAFAB questionnaire (see Supplement 3.1) during history-taking.

**Box 3. Identifying the possible nature of the underlying disorder by assessing etiological factors**

- The moment when the complaints started and their further course (during pregnancy, after delivery, after a prolapse, after surgery, postmenopausal etc.).
- Number and course of deliveries (duration of pushing, baby's birth weight, size/diameter of the baby's head, forceps or vacuum delivery, perineal tearing, cesarean section).
- Abdominal/pelvic surgery (vaginal or abdominal uterus extirpation, sling or suspension surgery, anterior or posterior colpoplasty, prostate surgery, sphincter surgery), surgery for slipped disc, possible denervation problems.
- Traumas.
- Congenital disorders.

**Box 4. Identifying local prognostic factors that can adversely influence the recovery and adjustment processes**

- Constipation problems.
- Complaints before, during, or after menstruation.
- Use of diuretics.
- Vaginal wall defects or urogenital prolapse, as diagnosed by a doctor.

**Box 5. Identifying other prognostic factors that can adversely influence the recovery and adjustment processes**

- Overweight ( $25 \leq \text{BMI} < 30$ ) (BMI = weight in kilograms divided by square of height in meters) or obesity (BMI  $\geq 30$ ).
- Other disorders or complaints (cardiovascular diseases; neurological disorders; back, pelvic, and/or hip problems; diabetes; COPD).
- Sexual problems.
- Use of medication (psychotherapeutic agents, sympathicomimetics/sympathicolitics, parasympathicomimetics/parasympathicolitics, or estrogens).

**Box 6. Identifying personal factors**

- How the patient is coping with their complaints, their understanding of the problem, perceptions, fears, 'illness beliefs' (i.e. the patient's ideas and views about the incontinence problem itself, its causes, its possible consequences, chances of recovery, what they can do about it themselves and what help can be expected from other care providers).
- Any previous diagnostics and treatments the patient has had.
- Use of incontinence products.
- Use of incontinence-related medication.
- Patient's objectives and expectations.

The pelvic physical therapist designs a strategy for examination and possible physical therapy intervention(s), based on the information gained from the history-taking plus the information provided by the referring doctor. The therapist proposes this to the patient and discusses possible alternatives with them.

If the strategy involves any 'special procedures', this is the moment to inform the patient (in writing) about the nature of the possible examinations and treatment options. This information should enable the patient to make an informed decision as to possible further examinations and treatment at the next session. We recommend asking the patient to sign an 'informed consent' form.

The diagnostic and therapeutic procedures should conform to the 2005 *Richtlijn voor hygiënisch werken in het bekkenbodengebied* (Guidelines on hygiene in procedures in the pelvic floor area) by the Nederlandse Vereniging voor Fysiotherapeuten bij Bekkenproblemen en pre- en postpartum gezondheidszorg (NVFB; Dutch association of physical therapists specializing in pelvic problems and pre- and postpartum care).

## B.2 Physical examination

The severity of the SUI does not depend only on the condition of the pelvic floor. It is also influenced by the patient's respiration, movement patterns and general physical and psychological status. It is therefore important to not only examine the patient locally (i.e. their abdominal and pelvic region), but also to assess their overall condition.

Not all physical therapists are licensed to carry out internal examinations and treatments of patients with pelvic floor problems. Hence, this guideline always indicates explicitly when internal examination or internal treatment of the genito-anal region is involved.

The physical examination consists of inspection at rest and during movement, palpation and functional examination, and has the following objectives:

- assessing the extent of voluntary control over the pelvic floor;
- assessing pelvic floor muscle function;
- assessing whether and to what extent other parts of the musculoskeletal system are hampering the function of the pelvic floor muscles;
- identifying any local and other (i.e. general) unfavorable prognostic factors.

### B.2.1 Inspection

#### *Inspection at rest*

General:

- general impression:
- posture while standing and sitting (e.g. to assess urethral angle, anorectal angle and abdominal pressure);
- respiration (respiratory pattern and vocal behavior).

Local/regional:

- observing the abdominal and pelvic region;
- local examination of genito-anal region.

See Box 7 for examinations.

#### **Box 7. Examinations – 'inspection at rest'**

Initial position of patient: supine, with knees bent and spread (lithotomy position).

The pelvic physical therapist should wear gloves and apply hygienic procedures.

*Inspecting the upper thighs, the skin of the perineal region and the outer labia.*

Note any skin irritations (which often indicate more or less permanent moistness or use of unsuitable urinary incontinence products).

*Inspecting the perineum and the entrance and distal part of the vagina*

This requires spreading the outer and inner labia. Gel or luke-warm water may be used.

- Inspect the perineum, note any rupture scars or scars due to episiotomy, or atrophy of the pelvic floor muscles.
- Locate the urethral opening.
- Inspect the entrance to the vagina.
- Note any signs of vaginitis (red and dry instead of pink and moist), any leukorrhea (exclude fungal infection).

*Inspecting the vagina*

Note any signs of:

- anterior or posterior vaginal wall defects, uterine prolapse (use POP-Q, Supplement 3.6).

*Inspecting the anus*

Note any signs of:

- hemorrhoids;
- fissures.

#### *Inspection during movement*

General:

- mobility and muscle tone (spine, abdominal and pelvic region);
- movement patterns.

Local/regional:

- inspect and/or observe the abdominal, buttock and leg muscles.

See Box 8 for examinations.

**Box 8 Examinations – 'inspection during movement'***Inspection/observation during contraction and relaxation of pelvic floor muscles*

Use a standardized protocol and procedure to briefly explain to the patient what the internal examination entails and why it is necessary, and instruct them how to tighten their pelvic floor muscles ('tighten the pelvic floor muscles and simultaneously draw them inwards and upwards', i.e. contraction and elevation of the pelvic floor). Then ask them to tighten and relax their pelvic floor muscles. Give the patient enough opportunity (e.g. by allowing them to practice 3 times) to achieve conscious, voluntary pelvic floor contraction, before scoring the results. Record the initial position, the circumstances and the time of examination.

Ask the patient to tighten their pelvic floor muscles as best they can; if necessary they should imagine that they are trying to stop themselves from breaking wind.

Record:

- whether voluntary contraction results in any visible movement, whether the movement is inward, in a cranial and ventral direction, or whether it is downward: voluntary contraction should lead to a normal 'puckering and retraction' of the vaginal entrance, anal sphincter and perineal region, while a downward movement of the perineum is dysfunctional;
- whether voluntary contraction leads to visible co-contractions of muscles not belonging to the pelvic floor.

Ask the patient to relax their pelvic floor muscles after having tightened them.

Record:

- whether the relaxation is visible.

*Inspection/observation during coughing*

Ask the patient to cough with sufficient force.

Record:

- whether coughing produces any movement, whether this movement is inward, in a cranial and ventral direction, or whether the movement is downward; when a person coughs, their pelvic floor should not move in a caudal direction as a result of unconscious, involuntary contraction of the pelvic floor muscles. A minor ventral movement is regarded as normal. If the unconscious, involuntary contraction is dysfunctional, the therapist will observe a downward movement of the perineum and/or gaping and/or bulging of the vaginal entrance (possible prolapse) and/or loss of urine.

Ask the patient to cough again, but this time after voluntarily tightening their pelvic floor.

Observe whether there is any visible difference between the two tests.

*Inspection/observation while patient strains (unconscious, involuntary relaxation)*

Ask the patient to give a strong push.

Record:

- whether the straining causes any movement, and whether this movement is inward, in a cranial and ventral direction, or whether the movement is downward; straining should normally result in an unconscious, involuntary relaxation of the pelvic floor, and the perineum should move in a caudal direction.

**B.2.2 Functional examination***Functional examination of pelvic floor muscles using direct and indirect palpation*

The procedure and evaluation are the same as for the examination and inspection during movement, except that the therapist observes the movements of the perineum by means of indirect palpation. The patient's initial position is 'crouk lying', with the patient in underwear. The therapist puts one hand on the patient's posterior rugae at the level of the anus, and one hand on the lower abdomen, with the thumb at the level of the pubis, and then asks the patient to successively:

- voluntarily tighten their pelvic floor muscles;
- relax the pelvic floor muscles again;
- cough;
- voluntarily tighten the pelvic floor muscles and then cough;
- give a strong push.

**Box 9. Internal examination / functional examination of the pelvic floor muscles using direct 'palpation'**

The pelvic floor can be examined by vaginal or anal palpation in women, but obviously only by anal palpation in men.

Patient's initial position for vaginal palpation: supine, with knees bent and spread (lithotomy position).

The pelvic physical therapist evaluates:

- the vaginal entrance, in terms of muscle tone and accessibility;
- the tone of the musculus (m.) levator ani and the urogenital diaphragm;
- scars;
- proprioception;
- sensory function left/right;
- pain, ventral, left/right;
- pain, dorsal, left/right;
- pain, trigger points left/right;
- atrophy of the m. levator ani;
- presence of defects in posterior/anterior vaginal wall;
- whether the patient is wearing a pessary.

Patient's initial position for anal palpation: left lateral position, with legs drawn up.

The pelvic physical therapist evaluates:

- the resting tone of the anus;
- the degree of anal deficiency;
- the presence of any posterior vaginal wall defects.

Palpation is also used to assess whether the pelvic floor muscles contract and relax correctly during voluntary tightening and relaxation, during coughing and while straining.

Ask the patient to tighten their pelvic floor muscles as best they can; if necessary they should imagine that they are trying to stop themselves from breaking wind.

Sufficient contraction is perceived by the pelvic physical therapist during intravaginal/anal palpation as a vaginal/anal tightening action around the therapist's index finger, with the palpating finger being drawn inwards as a result of the contraction (simultaneous contraction and elevation).

Record:

- whether the conscious and voluntary contraction of the pelvic floor muscles results in bladder neck lift;
- whether the diastasis of the levator plates is closed.

Ask the patient to tighten their pelvic floor muscles and draw them upward as forcefully as possible (3 times, 10 seconds rest).

Record, as the average of 3 contractions:

- a contraction score of absent, weak, normal, or strong;
- whether the sideways and front-to-back movements are asymmetrical.

Ask the patient to tighten their pelvic floor muscles and draw them upward applying 50% of their maximum strength, and to hold this as long as possible (3 times, 10 seconds rest) as a test of endurance strength.

Record, as the average of 3 contractions:

- the average time, in seconds, that the patient is able to keep up the contraction.

Ask the patient to tighten their pelvic floor muscles 10 times, briefly but forcefully (explosive strength).

Record:

- the number of times the patient is able to forcefully apply this brief contraction;
- a muscle power score of absent, weak, normal, or strong;
- whether the patient is able to contract their pelvic floor muscles without excessive contraction of other muscles.

Ask the patient to relax their pelvic muscles as fully as possible after the tightening.

Record:

- whether the relaxation can be felt;
- a relaxation score in terms of absent, partial, or complete.

Ask the patient to cough with sufficient force.

Record:

- whether the coughing causes an unconscious, involuntary contraction of the pelvic floor muscles;
- whether this movement is inward, in a cranial and ventral direction, or whether the movement is downward; when a person coughs, their pelvic floor should not move in a caudal direction as a result of unconscious, involuntary contraction of the pelvic floor muscles. A minor ventral movement is regarded as normal. If the unconscious, involuntary contraction is dysfunctional, the therapist will feel a downward movement of the perineum;
- whether there is any loss of urine.

Ask the patient to give a strong push.

Record:

- whether the pelvic floor muscles can be felt to relax;
- whether the pelvic floor moves in a downward, caudal direction; straining normally cause an unconscious, involuntary relaxation of the pelvic floor, with the perineum moving in a caudal direction;
- whether the patient actually contracts their pelvic floor muscles (paradoxically).

#### ***Assessing the strength of the pelvic floor muscles using direct and indirect palpation***

Initial position of patient: 'crook lying', with patient in underwear. The pelvic physical therapist puts one hand on the patient's posterior rugae at the level of the anus, and one hand on the lower abdomen, with the thumb at the level of the pubis. The test is carried out as follows:

The therapist asks the patient to tighten their pelvic floor muscles, and palpates to feel via the lower abdomen whether the fascia linking the pelvic floor to the lower abdominal muscles is being stretched. Tightening the pelvic floor muscles also results in the posterior rugae being drawn inward and the perineum being drawn upward. If this does not happen, it means that the patient's pelvic floor is dysfunctional. The therapist observes the patient's respiratory patterns during this activity. During the test, the therapist evaluates the force and location of the contraction (ventral/dorsal, left/right) as well as the possible presence of co-contractions of the abdominal, buttock and leg muscles.

The therapist then asks the patient to give feedback (through proprioception). This provides an indirect test of the pelvic floor muscles. The physical therapist tries to assess:

1. strength;
2. endurance (the time the patient can maintain contraction at 50% of the maximum force);
3. the number of repeats of rapid (1 second) contractions.

#### ***Assessing voiding posture and behavior***

The pelvic physical therapist discusses with the patient what sitting or standing posture they normally use for voiding, to assess its suitability. Tilting the pelvis forward results in a more vertical position of the urethra, while the bladder is lifted in a ventrocranial direction as the trunk is extended. Tilting the pelvis as a toileting exercise promotes the development of a suitable voiding

posture. The therapist can use anatomical pictures and a model of the pelvis to demonstrate the right posture.

The therapist asks the patient about their toileting behavior, in terms of the circumstances of micturition, i.e. how often a day they urinate, and evaluates whether enough time is available for undisturbed micturition. The therapist also assesses whether the patient sufficiently relaxes their pelvic floor muscles to elicit the micturition reflex, and whether they apply undue abdominal pressure during micturition. The guidelines for toileting behavior are included in Supplement 2.

### B.3 Measurement instruments

Objective information can be obtained during the diagnostic process by using a number of recommended measurement instruments, questionnaires and tests. These provide objective measures of the severity of the patient's health problems in terms of impairments of body functions, limitations of activities and restrictions of participation, as well as the impact that the health problem is having on the patient. They can also be used to evaluate the patient's recovery during and after the treatment.

#### B.3.1 The PRAFAB questionnaire

This questionnaire assesses the severity of urine loss in terms of the use of urinary incontinence products ('protection'), the amount of urine lost ('amount'), and the number of times the patient experiences leakage ('frequency'), as well as measuring the impact of the leakage, which is recorded in more subjective aspects such as the way the patient adjusts to the loss of urine in daily life ('adjustment') and the consequences of this urine loss for their self-image ('body or self-image'). The PRAFAB questionnaire thus combines key objective and subjective aspects of the incontinence problem.

The advantage of the PRAFAB questionnaire is that it is short, and records both the severity of leakage and the perceived impact of the problem on the patient's everyday activities and self-image. It also allows changes in the individual patient's health status to be recorded. Research into the psychometric characteristics of the test has shown that improvements in PRAFAB scores correlate closely with the improvements in health status perceived by the patients themselves.

The PRAFAB questionnaire is available from [www.meetinstrumentenindezorg.nl](http://www.meetinstrumentenindezorg.nl).

#### B.3.2 Micturition diary

A micturition diary (bladder diary) provides information about a number of variables relating to micturition, involuntary loss of urine and activities during which the loss of urine takes place. The following variables are systematically recorded, preferably covering at least 3 consecutive days that are representative of the patient's daily activity patterns, for instance 2 working days and 1 weekend day.

- the times when the patient drinks fluids and the amounts they consume;
- what the patient drinks;
- the level of urge to empty their bladder;
- the amount and timing of micturition;
- the moments when loss of urine occurs and the amounts of urine lost;

- the activity/activities the patient was engaged in just before or during the loss of urine.

An example of a micturition diary is presented in Supplement 3.

#### B.3.3 Pad test

The severity of leakage and the amounts of urine lost can be objectively measured by means of a 'pad test'. Short, standardized pad tests involve doing various jumping, hopping and walking exercises over a 1-hour period to provoke involuntary loss of urine. Long-term pad tests involve wearing a sanitary pad in one's underwear underneath the perineum for 24 to 48 hours. Immediately after use, the patient puts the pads in an air-tight plastic container, with or without the help of others. The pads are preferably weighed on calibrated digital scales. The weight of an equivalent number of dry pads is subtracted from the weight of the used pads to determine the weight of the urine collected in them, which is a measure of the severity of urine loss. Since the 1-hour pad test has limited diagnostic value, the 24-hour pad test is to be preferred. For a more complete protocol for 24-hour pad tests, see Supplement 4.

#### B.3.4 Patient-specific complaints

The Patient-Specific Complaints (PSC) instrument can be used to assess the impairments perceived by a specific patient. The PSC enables the patient to indicate the main activities in which they feel restricted. Changes over time in the PSC score reflect changes in perceived health status, and hence indirectly in quality of life. The PSC is available from [http://www.maic.qld.gov.au/forms-publications-stats/pdfs/the\\_patient\\_specific\\_functional\\_scale.pdf](http://www.maic.qld.gov.au/forms-publications-stats/pdfs/the_patient_specific_functional_scale.pdf).

#### B.3.5 Global Perceived Effect

Changes in the patient's perceived health status can also be measured by asking them about the effect they perceive of their treatment. In this case, the effect relates to the severity of their incontinence after the treatment, compared to the severity before treatment. The Global Perceived Effect instrument is a simple questionnaire that enables patients to indicate what changes they have perceived as a result of the treatment.

The GPE instrument is included as Supplement 5.

### B.4 Analysis

The objective of the diagnostic process in physical therapy is not only to assess the severity of the patient's health problem, but also to try and identify the nature of the underlying disorder and/or the disease process that is causing the SUI, as well as to determine the extent to which these can be modified.

It is essential to identify the prognostic factors that can have local or general effects on the recovery and adjustment processes, in view of the potential influence of these factors on the outcome of the physical therapy intervention.

The analysis stage involves the explicit decision whether 'physical therapy' is the treatment indicated for the patient, based on the findings of the diagnostic process, supplemented by the medical information that came with the referral. To this end, the pelvic physical therapist has to answer the following questions:

- Does the patient suffer from SUI and SUI-related health problems?

- What is the severity of the SUI?
- Are the pelvic floor muscles dysfunctional?
- What is the cause of this dysfunction?
- Are there currently any local prognostic factors that can adversely affect the recovery and/or adjustment processes, and can these local impeding factors be modified by physical therapy?
- Are there currently any general prognostic factors that can adversely affect the recovery and/or adjustment processes, and can these general impeding factors be modified by physical therapy?

### B.5 Generating conclusions from the diagnostic process

The severity of the SUI is important for the prognosis and the evaluation of the effect of the intervention, but has no implications for the treatment strategy.

After the diagnostic process has been completed and a diagnosis of SUI has been established, the nature of the underlying disorder is still not entirely certain for most female patients. Hence, it is impossible to say with absolute certainty beforehand whether and to what extent the SUI can be modified by physical therapy. This means that the treatment must be regarded as a 'diagnostic' treatment. Predictions about the possible modifiability of the incontinence can only be made on the basis of factors presumed to have prognostic value.

SUI in men is usually not caused by a dysfunction of the pelvic floor muscles but is almost exclusively due to sphincter defects caused by trauma or surgical interventions (transurethral prostate resection or radical prostatectomy). It is possible, however, that in such cases pelvic floor dysfunction is a limiting factor for compensation of the sphincter defect. Patients may also have no voluntary control over their pelvic floor muscles, and may not know how to tighten them. The ability to voluntarily contract and relax the pelvic floor muscles is a precondition for pelvic floor exercises. Dysfunction of the pelvic floor muscles is sometimes seen in elderly men, as a result of damage to muscle and/or nerve tissue in the pelvic floor area, for instance after trauma or radiotherapy. Sometimes patients, both men and women, generate excessive muscle tension in the pelvic floor to prevent loss of urine.

In view of the prognostic factors described above, the following problem categories can be distinguished:

- SUI with pelvic floor muscle dysfunction:
  - The patient is unable to identify their pelvic floor muscles, has no awareness, cannot manage contraction or relaxation; shows no effective involuntary contraction of the pelvic floor muscles associated with increased abdominal pressure.
  - The patient is unable to identify their pelvic floor muscles, has no awareness, cannot manage contraction or relaxation; shows some involuntary contraction of the pelvic floor muscles associated with increased abdominal pressure, but the contraction is ineffective.
  - The patient is unable to identify their pelvic floor muscles, has no awareness, cannot manage contraction or relaxation, but shows effective involuntary contraction of the pelvic floor muscles associated with increased abdominal pressure.
  - The tone of the pelvic floor muscles is measurably too high, and the patient is unable to reduce this on demand

(with or without voluntary tightening and with or without effective involuntary contraction associated with increased abdominal pressure).

- The patient is able to tighten and relax the pelvic floor, but has no effective involuntary control over the pelvic floor associated with increased abdominal pressure.
- The patient has both voluntary and involuntary control over their pelvic floor muscles, but their pelvic floor muscles are too weak.
- The functioning of other parts of the musculoskeletal system, for instance in relation to respiration, voiding posture and toileting behavior, adversely affects the pelvic floor muscle function.
- SUI without pelvic floor muscle dysfunction.
- SUI plus local and/or other (general) unfavorable prognostic factors that may have adverse local or general effects on recovery and/or adjustment processes, and which may or may not be modifiable by physical therapy interventions.

It is essential to include in the analysis those local and/or other (general) unfavorable prognostic factors that may have adverse local or general effects on recovery and/or adjustment processes. If such factors cannot be modified, they adversely affect the potential outcome of the physical therapy intervention. If the factors can be modified by physical therapy, one of the objectives of the therapy should be to reduce their influence. It would constitute a malpractice to ignore this objective.

It is not always possible to decide whether and to what extent physical therapy is indicated for a particular patient. This is because the diagnostic options available to the pelvic physical therapist may not always provide decisive information about the modifiability of the disorder and/or disease process underlying the SUI. This is particularly true for any local factors that adversely affect the recovery process. Evaluating the effect of physical therapy after six treatment sessions can be regarded as a 'diagnostic' instrument to evaluate the modifiability. If the PRAFAB score for incontinence has not improved by then, the SUI must be regarded as not modifiable by physical therapy.

The pelvic physical therapist should discuss any doubts about the severity and nature of the disorder and any related health problems with the referring doctor, and/or should refer the patient for further diagnostics and/or review of the management.

### B.6 Treatment plan

The pelvic physical therapist formulates the objectives of the physical therapy treatment for each individual patient in terms of reducing the impairment(s), limitation(s), and participation restrictions, in other words improving body functions, activities, and participation. The individual treatment goals are determined, in consultation with the patient, on the basis of the information gained from the diagnostic process. It is important to formulate the treatment goals explicitly. The general objective of the physical therapy treatment is to achieve 'the fullest possible functional recovery'. The degree of functional recovery is partly determined by the prognostic factors involved in each case and the extent to which these factors can be modified by physical therapy. In some cases, a urologist may request the services of a pelvic physical therapist before a urological intervention, to teach the patient pelvic floor muscle exercises (PFME) they can use preoperatively, by

teaching them the right method of contraction and relaxation, as well as the correct way to deal with intra-abdominal pressure increases. PFMEs may improve the condition of the pelvic floor, which has a favorable effect on the postoperative course. In addition, the patient will know what to do when they are recommended to do postoperative exercises. This preoperative physical therapy can be done by a pelvic physical therapist working at the hospital or by a similar therapist working in primary care.

The general objective of the physical therapy intervention is to teach patients to adjust the physical condition of their pelvic floor to the actual strains that occur (i.e. peaks in intra-abdominal pressure). Depending on the modifiability of this condition, the therapist can define the objectives of physical therapy as 'achieving a health status in which the impairments, limitations of activities and restrictions of participation that characterized the patient's individual health problem have been eliminated or reduced to a level that is acceptable to the patient.'

The pelvic physical therapist tries to enable the patient to improve the physical condition of their pelvic floor by training the pelvic floor muscles (training produces structure); in addition, the therapist tries to eliminate as much as possible the influence of factors impeding this adjustment process. Since the physical condition of the pelvic floor ideally matches the actual strain it is subjected to, the exercises should aim not only to increase the physical condition of the pelvic floor, but also to maintain this condition ('use it or lose it'). This requires permanent active involvement on the part of the patient, and integration of the skills they have learned during the therapy into their everyday life, in other words, changes to the patient's lifestyle. The physical therapy interventions need to support this behavioral change.

In addition, it may be useful to improve the patient's general physical condition, to reduce the influence of other diseases and/or disorders on the continence mechanism.

The therapy starts with the therapist explaining the nature of the patient's problem to them and giving them information. The patient will be more motivated to start the therapy if they understand the normal anatomy and physiology, the influence of (mental) stress and relaxation on the functioning of the pelvic floor muscles and the causes of stress urinary incontinence. Professional patient education requires the therapist to know how to offer such education and what factors may favorably or adversely influence the achievement of the intended behavioral change. Knowledge and recognition of such factors is also important for the purpose of secondary prevention. In addition, the information given should be compatible with the patient's own ideas and views, which became evident during history-taking. This type of patient-specific education must be a standard component of the treatment plan.

The treatment of patients with SUI is generally based on pelvic floor muscle exercises, combined with patient education and counseling. This can only be achieved if the patient has voluntary control over their pelvic floor. If this control is lacking, it will first have to be achieved.

#### **B.6.1 Treatment plan for SUI with pelvic floor muscle dysfunction** ***Patient does not have voluntary control over their pelvic floor muscles***

The patient is unable to identify their pelvic floor, is not aware of it and is unable to consciously, voluntarily contract and relax the pelvic floor muscles.

##### *Objective*

Ensuring the patient has voluntary control over their pelvic floor.

##### *Therapy*

Electrostimulation and/or biofeedback and/or digital assessment by the pelvic physical therapist or the patient themselves, using tapping, gently tugging on the muscle, and possibly vibration. After the patient has achieved voluntary control over their pelvic floor, the focus shifts to PFME, and the patient is stimulated to do the exercises on their own.

If the results of the physical therapy intervention are unsatisfactory, for instance due to the presence of a (central or peripheral) neurological problem that the pelvic physical therapist is unable to identify, the therapist must refer the patient back to the referring doctor. If the patient does achieve voluntary control, the therapist continues the treatment as described below.

#### ***Patient does not have involuntary control over their pelvic floor muscles***

The pelvic floor muscles do not involuntarily contract when intra-abdominal pressure rises.

##### *Objective*

Compensation or adjustment.

##### *Therapy*

Exercising the 'knack', as a stabilizing contraction to compensate for the inadequacy of the involuntary contraction during coughing, lifting etc., with correct timing. Involuntary contraction of the pelvic floor muscles can be trained by involving the pelvic floor muscles in the patient's trunk stabilization.

#### ***Patient has voluntary control over their pelvic floor muscles***

The patient is able to identify their pelvic floor, is aware of it, and is able to contract and relax the pelvic floor muscles consciously and voluntarily, but the pelvic floor muscles are too weak.

##### *Objective*

Complete recovery of pelvic floor muscle function.

##### *Therapy*

Training and controlling the pelvic floor muscle function by means of PFMEs done by the patient at home. An option for women is the use of vaginal cones. The pelvic physical therapist starts the treatment by trying to achieve isolated pelvic floor muscle contractions. If the patient is able to achieve these, they then try to carry out single tasks (ADL functions) using voluntary control, followed by dual and then multiple tasks with voluntary control, and then the same tasks with involuntary control. The therapist should be aware that executing dual and multiple tasks with voluntary and involuntary control may be difficult for patients of very advanced age, for instance due to concentration problems.

An unsatisfactory result may be due to the SUI being complicated by simultaneous dysfunction of the urethral closure mechanism, or an endopelvic fascia lesion after traumatic delivery. Postmenopausal women may have a dysfunctional intrinsic urethral closure mechanism due to changes in their hormonal status.

If the result of the physical therapy is unsatisfactory, the pelvic physical therapist must refer the patient back to the referring doctor.

#### ***Other parts of the musculoskeletal system are adversely affecting pelvic floor muscle function***

The functioning of the pelvic floor muscles is impeded by factors like respiratory dysfunction, problems in other parts of the musculoskeletal system, voiding posture, toileting regime or toileting behavior.

#### ***Objective***

Reducing or eliminating the adverse influence of respiratory dysfunction and/or problems in other parts of the musculoskeletal system, voiding posture, toileting regime or toileting behavior, and improving the pelvic floor muscle function.

#### ***Therapy***

Providing exercise therapy for these problems, including exercises to achieve a correct respiratory technique, relaxation and posture correction, effective use of pelvic floor muscles in trunk stabilization, improving voiding posture, toileting regime and toileting behavior, and instructions for the correct way to lift objects. In addition, the patient is prescribed PFMEs and other exercises to improve their pelvic floor muscle function, which they can do without supervision.

If the result of the physical therapy is unsatisfactory, the pelvic physical therapist must refer the patient back to the referring doctor.

#### **B.6.2 Treatment plan for SUI without pelvic floor muscle dysfunction**

If there is no pelvic floor muscle dysfunction, the SUI is presumably due to a dysfunctional intrinsic closure mechanism (internal sphincter). The therapy is intended to reduce the impairments and limitations of activities.

#### ***Objective***

Compensation.

#### ***Therapy***

Pelvic floor muscle exercises (PFMEs) and exercises the patient can do without supervision. In view of the cause of the complaints, the chances of full recovery with the help of PMFE are poor. An option for women is the use of PFMEs with vaginal cones. If vaginal cones are used, the therapist should check immediately after the vaginal insertion of the cone whether the patient is able to respond to this by contracting their pelvic floor muscles. If she is unable to do so, the use of cones is pointless. Patients who have no voluntary control over their pelvic floor muscles and do not know how to voluntarily contract them, will have to be taught this control, since no pelvic floor exercises can otherwise be executed. If the result of the physical therapy is unsatisfactory, the pelvic physical therapist must refer the patient back to the referring doctor.

#### **B.6.3 Treatment plan for SUI with unfavorable prognostic factors**

Unfavorable prognostic factors are factors which can have adverse local or or general influence on the recovery or adjustment processes; the factors may or may not be modifiable by interventions by a pelvic physical therapist.

#### ***Objective***

Reducing the adverse influence of the factors as much as possible.

#### ***Therapy***

The treatment focuses on reducing the adverse influence of modifiable unfavorable factors on an individual patient by:

- improving the patient's general physical condition, so as to reduce the effects of other diseases and/or disorders on the continence status;
- reducing the patient's overweight as an unfavorable prognostic factor for the effect of exercise therapy;

#### ***Points for consideration***

Some factors, such as cardiovascular diseases or changes in hormonal balance, cannot be modified by physical therapy. These factors do have prognostic significance, however, as they can slow down the recovery or adjustment processes. Other factors, such as ignorance, shame, avoidance behavior and problems of (social) participation can be modified by effective patient education and counseling by a pelvic physical therapist. The same is true for compliance.

## **C Therapeutic process**

The therapeutic process includes the treatment, evaluation, and termination of the treatment.

### **C.1 Treatment**

#### **C.1.1 Stages, objectives, and interventions**

The analytical process allows a number of problem categories to be distinguished, which the patient must be informed about, using patient education materials.

The therapist can discuss what is meant by SUI, what causes it, what its prognosis is, what factors may influence it, whether favorably or unfavorably, what patients themselves can do, and what the patient can expect from the physical therapy intervention.

The therapeutic process is implemented on the basis of the treatment plans that have been drawn up for the various specific problem categories.

These treatment plans must have a logical design in terms of structure and timing of the stages.

- The patient must be provided with information and instructions about their pelvic floor and lower urinary tract functions, using diagrams, drawings, pictures and models.
- The patient must be given a full explanation of the correct way to tighten their pelvic floor muscles. The patient must be given the opportunity to practice before the therapist assesses whether they are able to effectively contract their pelvic floor muscles. The patient can only be taught to tighten the correct muscles if they are able to voluntarily control their pelvic floor. Only when the patient is able to contract the right muscles, can these be used in exercises. If the patient proves able to exer-

cise under the therapist's supervision, they can then continue the exercises at home.

- The patient must be given a full explanation of what happens if the pelvic floor muscles are correctly tightened, and the therapist should enable the patient to experience this.
- If the patient is unable to contract their pelvic floor muscles, the therapist can use the following techniques: gently tugging on the muscle, tapping, massage and rapid stretching, or electrostimulation and/or EMG-feedback. If patients are given the time to exercise on their own at home, most of them soon master the correct way of contracting their pelvic floor muscles.
- If the patient is able to voluntarily contract their pelvic muscles, the therapist designs a program of home exercises tailored to their individual situation. The patient should use maximum contractions; the program should involve increasing the frequency to 8–12 contractions, 3 times a day. A fatigue stimulus at the end of each exercise session is required to achieve strength improvements. The patient should start with maximum strength contractions lasting 1–3 seconds, and gradually increase this to 6–8 second contractions (to exercise endurance strength). These should be practiced at least 2–3 times a week. Finally, patients should do these exercises on a daily basis.
- The patient should be instructed to tighten their pelvic floor and hold the contraction just before and during coughing, laughing, sneezing, and lifting objects (the voluntary pre-contraction known as 'the Knack').
- The patient is asked to indicate when and where they intend to practice the exercises. The patient is given an exercise diary, unless use is made of computer-controlled biofeedback with data recording. If no biofeedback has been used so far, it may be useful to discuss with the patient whether this might increase their motivation. This obviously presupposes the availability of such equipment.

A lasting treatment result can only be achieved if the patient learns to integrate the skills they were taught during the therapy into everyday life.

### C.1.2 Duration and frequency of treatment

The duration and frequency of treatment will be different for individual patients. They are determined by the patient's specific treatment goals and problems and their ability to understand the information and to practice the exercises. Hence, this guideline can only provide rough indications.

The total duration of treatment will generally not exceed 3–6 months. Patients who have a dysfunctional pelvic floor and have no voluntary control over their pelvic floor muscles will require more intensive assistance in the first stage of treatment, in order to achieve voluntary control as soon as possible. This may imply a higher treatment frequency at this early stage.

If any prognostic factors for recovery are present that can be modified by physical therapy, their modification must be part of the treatment plan. Once the influence of unfavorable prognostic factors has been reduced, the effect of PFME mostly depends on the frequency and intensity of exercising, with or without supervision. Once the patient is able to do the exercises without supervision, the frequency of physical therapy sessions can be reduced, provided the patient continues to do the exercises independently.

- The exercises should be practiced under supervision once or twice a week, individually or in a group.
- After the first 6 treatment sessions, evaluate the treatment and ask, or assess, whether the severity of the patient's incontinence problems has decreased, in terms of a lower score on the PRAFAB questionnaire.
- Assess progress after 3 months; by this time, clear progress must have been made.
- Evaluate the result after 6 months: it is usually only by then that the intended effect is achieved.

### C.1.3 Preventing pelvic floor insufficiency

An important goal of pelvic floor education is the prevention of pelvic floor insufficiency. Based on the etiological factors that may be involved in the development of SUI, the therapist can assess which patients may benefit from preventive measures. The development of SUI is associated with a number of factors, such as 'congenital weakness of supportive tissues' or 'prolapse'. Another factor is pregnancy. Primary prevention, that is, preventing SUI from developing, is an important issue in the pre- and postnatal care provided to women. Usually, however, pelvic physical therapists are only consulted after the SUI has already developed.

### C.2 Evaluation

The patient's recovery must be evaluated after 6 treatment sessions. This is because the treatment itself is regarded as a diagnostic instrument, since the diagnosis of SUI does not enable reliable conclusions about the nature of the underlying disorder, or about the presence of local impediments for recovery and whether such local impediments are modifiable by physical therapy. We recommend always using the PRAFAB questionnaire.

If no substantial reduction of the severity of the incontinence is observed, the conclusion must be that there may be impediments to recovery that cannot be modified by physical therapy. An example of such an impediment is an intrapelvic fascia lesion. The results of pelvic floor muscle training may also be modest in the case of severe prolapse, which is a major unfavorable prognostic factor. In both cases, the pelvic physical therapist must refer the patient back to their family doctor or specialist. Surgical intervention may then be an option.

Although in these cases, the pelvic floor muscle training has not had any clear effect on the severity of the incontinence, the treatment has nevertheless been useful, as a good physical condition of the pelvic floor is a favorable prognostic factor for postoperative recovery after surgical intervention.

Termination of the therapy must be followed by a final evaluation, once again using the recommended measurement instruments. The treatment goals that were defined must by then have been met, or the patient must be sufficiently able to continue the exercises without supervision.

The patient must be referred back to the referring doctor if there are complications (during the physical therapy treatment), or if the treatment goals have not been met (while the pelvic physical therapist estimates that the patient has achieved the maximum possible result).

### C.3 Concluding the treatment, record-keeping and reporting

Upon terminating the treatment, the pelvic physical therapist must record at least the date and the reasons for termination (e.g. whether the goals have been achieved, or not, or only partly). Any specific arrangements made with the patient (e.g. continuing to exercise at home) must also be recorded.

The therapist should keep records during the entire treatment process, in accordance with the systematic steps described in the 2011 KNGF guideline on record-keeping in physical therapy (*KNGF-richtlijn Fysiotherapeutische Verslaglegging*).

Any deviations from this guideline must be recorded, with the reasons for doing so, as well as any contraindications for further physical therapy treatment.

Upon termination of the treatment, the therapist must report to the patient's family physician about the results; if the patient was referred by a specialist, the latter must also be informed. If applicable, details on aftercare (monitoring) must also be reported. The patient's family doctor must also be informed if the patient originally presented directly to the therapist.

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# Supplements

## Supplement 1 Summary of recommendations

### Introduction

The level of evidence of the conclusions based on the literature has been categorized on the basis of Dutch national agreements (EBRO/CBO) Four levels are distinguished, based on the quality of the articles which the evidence was obtained:

- Level 1: one study at A1 level or at least two independent A2 level studies
- Level 2: one study at A2 level or at least two independent B level studies
- Level 3: one B or C level study
- Level 4: expert opinion

### Quality levels (intervention and prevention)

- A1 Systematic review of at least two independent A2 level studies
- A2 Randomized, double-blind, comparative clinical trial of good quality and sufficient sample size
- B Comparative study not meeting all criteria mentioned under A2 (including case-control studies and cohort studies)
- C Non-comparative study
- D Opinions of experts, for instance the members of the guideline development team

If a systematic review comprised RCTs of moderate quality, the quality of the literature was classified as B rather than A1. Depending on the number of moderate quality (B-level) studies, the conclusion was allocated an evidence level of 2 ( $\geq 2$  RCTs of moderate quality) or 3 (1 RCT of moderate quality). If a comparative study failed to meet any of the criteria for A2 level research, it was allocated a C quality status.

### Summary of recommendations

#### Problem definition

##### 1 Identifying etiological factors

The therapist should systematically identify etiological factors, in order to assess the nature of the dysfunction of the continence mechanism.

#### Diagnostic process

##### 2 Establishing the type of incontinence

The guideline development team recommends using the 3IQ test to establish the type of incontinence.

##### 3 Palpation

The guideline development team recommends the use of the assessment procedure described in the practice guideline to evaluate the pelvic floor muscle function.

##### 4 Functional examination

The guideline development team recommends that breathing patterns, postural control, voiding posture and toileting behavior be examined in relation to the functioning of the pelvic floor muscles.

##### 5 PRAFAB questionnaire

The guideline development team recommends using the PRAFAB questionnaire to assess the changes in the patient's health status and the effect of physical therapy intervention.

##### 6 Quantifying the loss of urine

The guideline development team recommends quantifying the loss of urine using the 24-hour pad test in case of uncertainty about the quantities of urine being lost.

##### 7 Patient-Specific Complaints (PSC)

The guideline development team recommends using the PSC both to identify the health problem and to evaluate the effect of treatment.

**8 Global Perceived Effect (GPE)**

The guideline development team recommends using the GPE to evaluate the health status improvement perceived by the patient.

**9 Micturition diary**

The guideline development team recommends having patients keep a micturition diary in order to identify the severity of the loss of urine and to evaluate the results of treatment.

**Therapeutic process****10 Information and advice**

The guideline development team recommends the use of anatomical plates and pelvic phantoms, as well as other educational materials such as lifestyle advice.

**11 Improving general physical condition**

The guideline development team recommends the inclusion in the treatment plan of interventions to improve the patient's general physical condition.

**12 Frequency and performance of pelvic floor muscle training (PFMT)**

The guideline development team recommends treating SUI by means of daily PFMT with sufficient intensity and duration, while paying attention to the correct performance of the exercises and integrating the exercises into activities of daily life.

**13 Selective contraction of pelvic floor muscles**

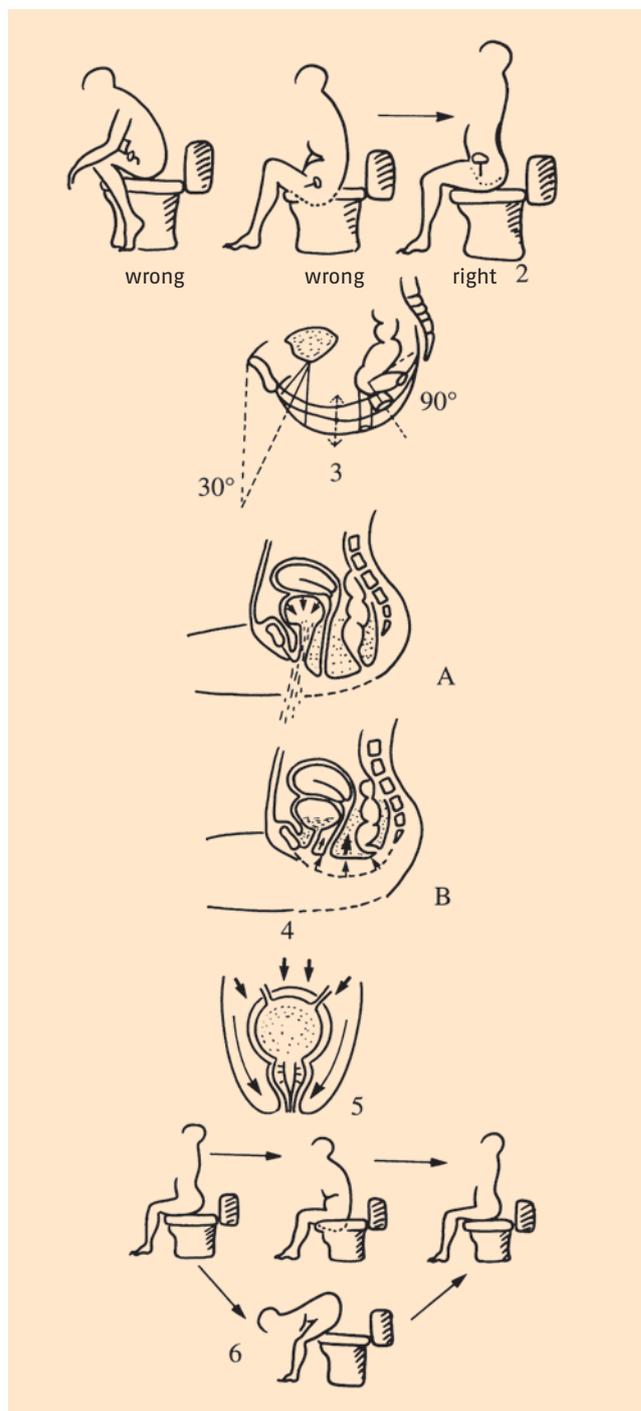
The guideline development team recommends combining pelvic floor muscle exercises with electrostimulation for the treatment of patients who are unable to voluntarily and/or selectively contract their pelvic floor muscles.

**Prevention****14 Pelvic floor muscle training to promote postoperative recovery after prostatectomy**

The guideline development team recommends preoperative pelvic floor muscle training for men who have to undergo prostatectomy.

## Supplement 2 Guidelines for toileting behavior

1. *Take enough time to go to the bathroom.* Voiding the bladder will take a few moments.
2. *Adopt the right position for urinating.* This means tilting your pelvis forward. Keep your feet on the ground and relax your leg muscles.
3. *Consciously try to relax your pelvic floor muscles.* This 'voluntarily' activates micturition.
4. *Do not interrupt the flow of urine once micturition has started.* After micturition has started, the reflex will continue as long as the pelvic floor muscles remain relaxed and urine flows through the bladder neck, until the bladder is empty.
  - A Contracting the pelvic floor muscle leads to reciprocal inhibition of the bladder muscle via the sacral micturition center and the autonomous pontine micturition center. Contraction of the pelvic floor muscles during micturition pushes the urine back against the flow to the reflexly relaxed bladder. The supportive tissue of the corpus intra-pelvinum presses the urethrovesical angle upwards. There is a risk of cystitis.
  - B After repeated interruption of the micturition reflex, the bladder content becomes so low that the stretch receptors in the bladder wall stop producing afferent nerve impulses. The urge disappears, and the patient stops urinating too soon because the reflex is not voluntarily restarted. This may result in urine residues.
5. *Do not strain during micturition.* Transmission of the intra-abdominal pressure to the urethra means that the resistance in the urethra increases with increasing pressure. It is all right for the abdominal muscles to be contracted at the end of micturition, provided this is done in the correct manner.
6. *Check whether the bladder is empty.* This can be checked by tilting the pelvis a few times. This will remove any residual urine in the bladder as completely as possible.
7. *After the end of micturition, briefly strain while exhaling,* that is, with little force. Then tighten the pelvic floor muscles to achieve good closure of the bladder.



### Guidelines for toileting behavior

Source: E.S. Versprille-Fischer. *Begeleiding van patiënten met bekkenbodemdysfunctie*. 2nd revised edition. Maarsse: Elsevier Gezondheidszorg; 2001.

## Supplement 3 An example of a micturition diary

### How to use this diary

The purpose of this diary is to give us as much information as possible about your urinary problems. It is therefore very important that you read the instructions below very carefully and follow them precisely. Only a correctly kept diary will allow us to draw useful conclusions.

- Write your name, the day, date, and month at the bottom of each page.
- Day 1 starts in the morning as you get up, and includes the following night.  
Day 2 starts in the morning as you get up.
- Please write down the times when you drink, empty your bladder or lose urine, in hours and minutes, for example 8:15 a.m.
- Write down the amounts of fluid you drink in milliliters (ml). We use the following approximations:

1 tea cup = 150 ml

1 glass = 200 ml

1 mug or large glass = 250 ml

1 can = 330 ml

Check whether these values are correct for the cups, glasses etc. you use at home.

- Write down the amount of urine you produce at each voiding, in milliliters.  
Measure the amount of urine with the help of a measuring jug.
- Did you feel any urge to empty your bladder when you went to the bathroom?  
Please answer yes or no.
- Please write down the time when you experienced involuntary leakage? (e.g. 10:00 p.m.)
- Use the following letters to indicate how much urine you lost:  
  
d = a few drops  
t = a trickle  
m = much
- Under 'Activity' please write down what you were doing when you lost some urine, for example coughing, lifting an object, etc.



## Supplement 4 24-hour pad test

This test is intended to measure the severity of urine loss.

The pads are worn continuously over a 24-hour period and exchanged when necessary. The pads used over the 24-hour period are collected and weighed, and the amount of urine collected in them is determined.

Ask the patient to buy a box of sanitary pads and to put one aside so you can determine the weight of a dry pad later on.

After a pad has become wet and has been exchanged, it must be kept in a sealable plastic bag (ziplock bag). Since there is little variation in the weight of unused pads of the same type as the ones that are used, the weight of the urine collected can be determined by subtracting from the total weight of the used pads the weight of an equal number of dry pads.

The 24-hour pad test should not be used if the patient is menstruating or has a significant amount of vaginal discharge.

### Instructions for the patient

Measuring how much urine you lose involuntarily each day is part of the assessment of your incontinence.

You can measure your urine loss per day (i.e. per 24-hour period) by doing the '24-hour pad test', using the following instructions:

1. During the day and night preceding your next consultation, please collect all the sanitary pads you use over this 24-hour period (e.g. from 8 p.m. to 8 p.m. the following day).
2. Put each pad you have used immediately in a sealable plastic bag (ziplock bag). It is important to keep the pads in a sealed plastic bag, to ensure that the urine you have collected does not evaporate.
3. Please continue your normal everyday activities during the time you collect the pads.
4. On the day of your consultation, please bring along the plastic bag with the used pads, and bring an unused (new) pad of the same type you used during the 24-hour period.

## Supplement 5 Global Perceived effect (GPE)

To what extent have your complaints changed since the time before your treatment?

My complaints are now ...

- 1. very much improved
- 2. much improved
- 3. moderately improved
- 4. slightly improved
- 5. unchanged
- 6. slightly worse
- 7. moderately worse
- 8. much worse
- 9. very much worse

... than before the treatment.

Comments:

4-6 may be combined as 'unchanged'

## Supplement 6 Pelvic Organ Prolapse Quantification (POP-Q)

The Pelvic Organ Prolapse Quantification (POP-Q) is a validated instrument to assess vaginal prolapse. The instrument was introduced by Bump et al. in 1996, and has increasingly replaced the well-known Baden-Walker method.

The use of POP-Q has become a routine procedure at pelvic floor centers to assess the severity of vaginal prolapse. The severity is assessed in terms of stages 0 – 4. The method can also be used by pelvic physical therapists.

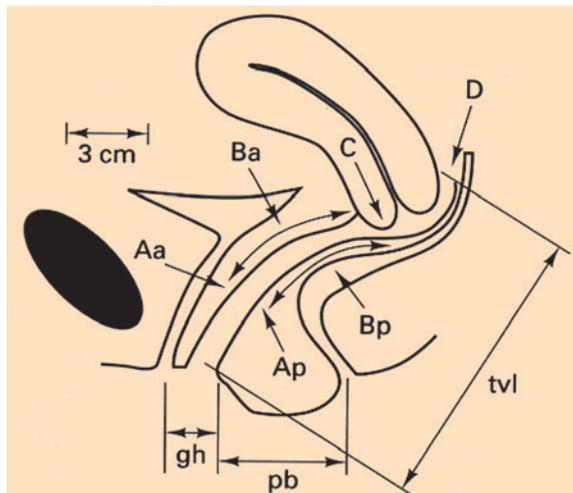


Figure 1 Distances between the defined anatomical points and the hymen.

### Fixed point

Hymen is the reference point.

### Defined anatomical points:

- Aa Point on the anterior vaginal wall 3 cm proximal of the urethral meatus, in the midline.
- Ba The most distal part of the upper part of the anterior vaginal wall; if there is no prolapse, this point is, by definition, located at -3 cm from the anterior fornix.
- C The most distal point of the cervix.
- D Posterior fornix if uterus is in situ. After hysterectomy, it is the level where the sacro-uterine ligaments have been attached; C and D then coincide.
- Bp The most distal portion of the upper part of the posterior vaginal wall; if there is no prolapse, this point is fixed at -3 cm.
- Ap Point on the posterior vaginal wall 3 cm from the hymen, in the midline.
- Gh Genital hiatus, measured from the center of the external urethral meatus to the posterior midline hymen.
- Pb Perineal body, the posterior boundary of the genital hiatus, up to the center of the anus.
- TVL Total vaginal length, measured from the hymen to point D, with point C or D returned to its original position.

Staging is based on the findings during the valsalva maneuver.

anterior wall Aa = .... cm	anterior wall Ba = .... cm	cervix or apex C = .... cm
genital hiatus gh = .... cm	perineal body pb = .... cm	total vaginal length tvL = .... cm
posterior wall Ap = .... cm	posterior wall Bp = .... cm	posterior fornix D = .... cm

### Stages

- stage 0 = no prolapse  
Aa/AP/Ba/Bp = -3 cm  
C and/or D = between -TVL and -(TVL - 2 cm)
- stage I = distal portion of prolapse  $\geq$  1 cm above the hymen (< -1 cm)
- stage II = distal portion  $\leq$  1 cm above the hymen and < 1 cm below the hymen  
( > -1 cm and < +1 cm)
- stage III = distal portion of prolapse > 1 cm below the hymen and less than TVL -2 cm
- stage IV = distal portion of prolapse > TVL -2 cm below the hymen

### References

1. Bump RC, Mattiasson A, Bo K, Brubaker LP, DeLancey JO, Klarskov P, et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol.* 1996;175:10-7.
2. Vierhout ME. Diagnostiek van uterovaginale prolaps. *Ned Tijdschr Geneeskd.* 2004;148:2432-6.





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