

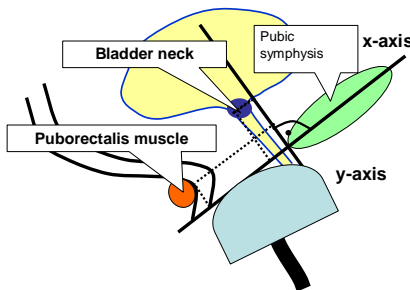
GYMNASTICS FOR URINARY INCONTINENCE – DESTROYING THE MYTH

Hypothesis / aims of study

Bladder neck (BN) support and elevation is important to maintain continence. Conservative treatment of stress urinary incontinence sometimes includes gymnastic exercises that are thought to co-activate the pelvic floor and therefore would be helpful in urinary incontinent patients. The aim of this study was to assess sonographically whether selected exercises elevate the bladder neck and thereby contribute to the continence mechanism.

Study design, materials and methods

Ten healthy women without pelvic floor disorders (screening with validated pelvic floor questionnaire) or previous pelvic floor surgery performed selected exercises: abdominal crunch, shoulder bridge, “on all fours”-arm and leg, clam exercise, external ankle to ankle push standing and toe stand. The first set was performed without any additional instructions. During the second set directions were given to activate the pelvic floor before beginning each exercise (pelvic floor pre-contraction= PFpreC) and to maintain this contraction throughout the exercise. All women were able to voluntarily contract the pelvic floor on palpation and perineal ultrasound. Perineal ultrasound was employed to measure the position of the bladder neck and puborectalis muscle behind the ano-rectal angle using the pubic symphysis as the basis for a coordinate system. Vectors (movement of bladder neck from the resting position) were calculated using $Vector = \sqrt{(x1-x2)^2 + (y1-y2)^2}$. Figure 1 demonstrates the application of the ultrasound and the validated measurements. Only those exercises were selected that allowed concurrent placement of a perineal ultrasound probe.



Results

Subjects were 35 – 45 years old with a median BMI of 26 kg/m². One woman was nulliparous, the others had one or two caesarean sections. There were wide variations between women: Although all women were able to elevate the bladder neck with a voluntary pelvic floor contraction, none of the exercises were performed identically by all women despite the same instructions. During exercises without a pelvic floor pre-contraction, the bladder neck descended between 0 – 17 mm. The clam exercise was associated with the most stable bladder neck position whereas with the bridge exercise there was greatest variability with bladder neck descent and elevation. During all exercises with a PFpreC, the bladder neck was elevated initially. Bladder neck support was kept by only half of the women during all exercises with a PFpreC.

Interpretation of results

Common exercises taught in gymnastic, Pilate or Yoga classes do not necessarily elevate the bladder neck. In the contrary, they might result in bladder neck descent. Only with a voluntary pelvic floor pre-contraction that is maintained throughout the exercise there was bladder neck elevation during all selected exercises.

Concluding message

Although certain gymnastic, Pilate and Yoga exercises might strengthen the pelvic floor via co-activation, they do not automatically support the bladder neck. Especially in women who are unable to contract the pelvic floor or who are unable to maintain a pelvic floor contraction these exercises might result in undesired bladder neck descent. Further studies have to include incontinent patients.

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| Specify source of funding or grant | none |
| Is this a clinical trial? | Yes |
| Is this study registered in a public clinical trials registry? | No |
| Is this a Randomised Controlled Trial (RCT)? | No |
| What were the subjects in the study? | HUMAN |
| Was this study approved by an ethics committee? | Yes |
| Specify Name of Ethics Committee | Ethikkommission der Charité |
| Was the Declaration of Helsinki followed? | Yes |
| Was informed consent obtained from the patients? | Yes |