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| Title (type in CAPITAL LETTERS, leave one blank line before the text) | <p>PELVIC FLOOR MUSCLE STRENGTH AND THICKNESS OF THE PELVIC FLOOR MUSCLES<br/>MEASURED BY PERINEAL ULTRASOUND IN PREGNANT PRIMIGRAVIDAS</p> <p><u>Aims of Study:</u></p> <p>The purpose of the present study was to investigate a possible association between pelvic floor muscle strength measurements and measurements of the thickness of the pelvic floor muscles, in pregnant primigravidas.</p> <p><u>Methods:</u></p> <p>Twenty-eight primigravidas attending a routine ultrasound examination, were included in the study. Pelvic floor muscle strength and muscle thickness measurements were performed at 18 weeks gestation. All women were instructed in pelvic floor anatomy and how to contract the pelvic floor muscles correctly. Vaginal palpation was used to assess ability to perform pelvic floor muscle contraction. The women were in a supine position with straight legs. Pelvic floor muscle strength during maximal pelvic floor muscle contraction was measured, using a vaginal balloon catheter (balloon size 6.7x1.7 cm) connected to a pressure transducer (Camtech Ltd, 1300 Sandvika, Norway). The middle of the balloon was positioned 3.5 cm inside the introitus. Only contractions with observed inward movement of the balloon catheter were accepted. Perineal ultrasound was used to measure the thickness of the pelvic floor muscles (Vingmed CFM 800 with a 7.5-MHz vaginal probe). The women were examined in a supine position with 45° hip flexion and slight abduction. With the transducer placed in a sagittal direction on the perineum, just lateral to the vaginal introitus, the pubic bone and the pelvic floor muscles were identified. The women were asked to relax the pelvic floor muscles and then to perform a maximal pelvic floor muscle contraction. The muscle movement during contraction was visualised dynamically. Muscle thickness was measured both during relaxation and contraction. All measurements were performed as triple-measurements. For each woman values were given as mean of their triple-measurements.</p> |

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As some variables were not normally distributed, correlation was tested by Spearman's rank correlation ( $r_s$ ). P values  $< 0.05$  were considered significant.

Results:

Mean pelvic floor muscle strength was 17.7 cm H<sub>2</sub>O (Standard Deviation (SD)=6.3). Measured by perineal ultrasound mean pelvic floor muscle thickness during relaxation was 0.73 cm (SD=0.16) and during contraction 0.95 cm (SD=0.21). Mean change in muscle thickness between relaxation and contraction was 0.22 cm (SD=0.09).

Pelvic floor muscle strength was correlated with ultrasound-measures of muscle thickness during relaxation ( $r_s=0.52$ ,  $p=0.005$ ), contraction ( $r_s=0.73$ ,  $p=0.000$ ) (fig.1), and with change in muscle thickness between relaxation and

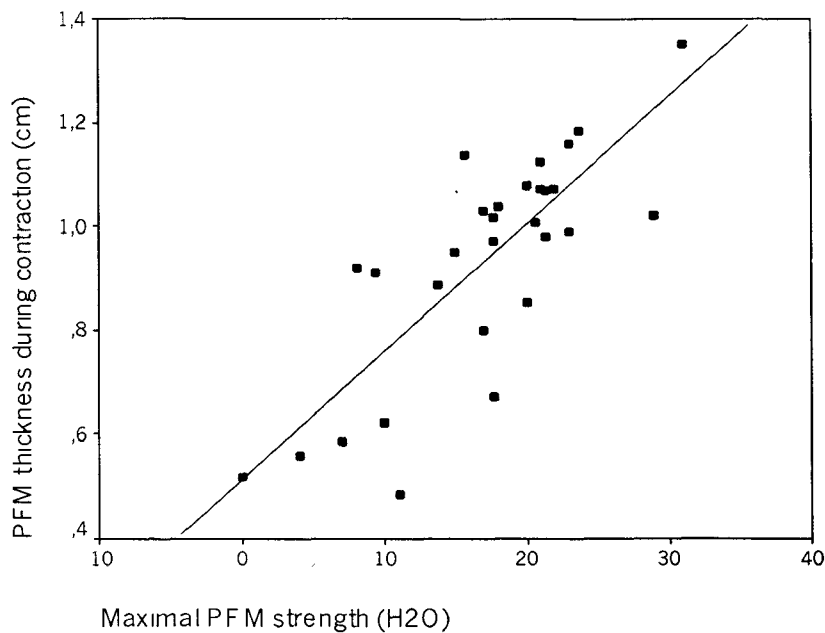


Fig.1. Correlation between maximal pelvic floor muscle (PFM) strength measured by vaginal squeeze pressure and pelvic floor muscle thickness during contraction measured by perineal ultrasound. N=28. Spearman's rank correlation ( $r_s$ ).

Conclusions:

We found a statistically significant correlation between pelvic floor muscle strength measurements and ultrasound measurements of thickness of the pelvic floor muscles.