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DO WE PERFORM INVOLUNTARY MAXIMAL PELVIC FLOOR MUSCLE CONTRACTIONS IN DAILY LIFE?

Hypothesis / aims of study

A maximal voluntary pelvic floor muscle contraction (PFMC) is often used as a surrogate parameter of pelvic floor function during vaginal palpation (e.g. modified Oxford grading) or perineal ultrasound to assess bladder neck elevation. However, it is not clear, whether a maximal PFMC is physiologically performed in daily life.
The aim of this study was to assess pelvic floor muscle activity during daily life tasks in comparison to a voluntary maximal PFMC.

Study design, materials and methods

Ten women without pelvic floor disorders (median age 43, range 23-71; median vaginal deliveries 0, range 0-2) who were able to voluntarily contract their pelvic floor muscles (on palpation) were recruited. A vaginal EMG probe (Periform electrode) was used to measure pelvic floor muscle activity. The Telemyo 2400T G2 EMG system (receiver, transmitter) was connected and data were transmitted wireless to the PC. Data were assessed using the MyoResearch software.
Women were initially asked to perform a maximal PFMC to have a reference value. Further tasks were: nose blow, coughing, lifting a weight (approx. 10 kg), fast walking, walking upstairs and downstairs, getting up from sitting to standing and from lying to standing, sitting down, jogging, dancing, supine straight leg raise, voiding and at strong desire to void. The longest measurement was 2 hours and also involved cleaning and carrying children.

Results

The maximal PFMC ranged from 47-143 µV, median 93.5 µV. None of the above described tasks reached the value of the maximal PFMC. All measurements were significantly different from the maximal PFMC. Closest were tasks that involved gluteal muscle activity. Selected data are summarised in Table 1. Pelvic floor tone was lowest supine (median 4, range 2-6) and during voiding (median 6, range 2-8; p>0.05).
Figures1 displays examples of maximal PFMC in comparison to jogging, nose blowing, coughing and sitting down.

Fig. 1 shows raw data as well as corrected measurement line during maximal PFMC.

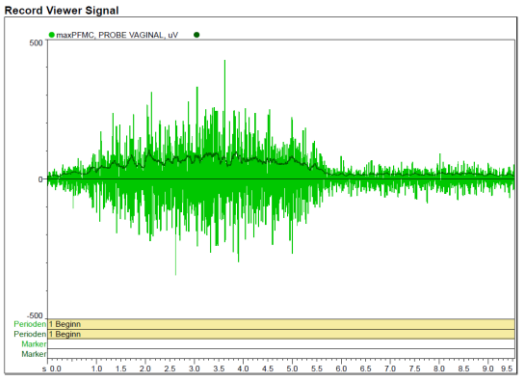

Fig. 2 displays amplitude correction line for jogging

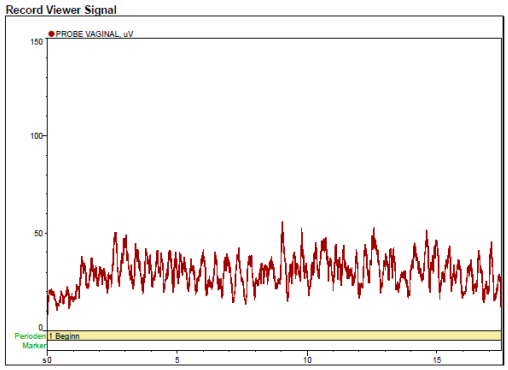

Table 1: Displayed are selected tasks and according median (range) pelvic floor muscle activity in µV.

Max PFMC	Nose blow	Cough	Sit-stand	Lift weight	Up-stairs	Jogging	Desire to void
93.5 (47-143)	25 (21-80)	25.5 (22-83)	44 (17-61)	51 (21-86)	32.5 (21-63)	31 (22-42)	21 (14-22)

Interpretation of results

Maximal pelvic floor muscle contraction does not seem to be a physiological activity in women without pelvic floor disorders.

Concluding message

Maximal pelvic floor muscle contraction is not necessarily a useful parameter when assessing pelvic floor function.

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 Charité Universitätsmedizin**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**