

## EFFECT OF PHYSICAL ACTIVITY MEASURED BY THE INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (IPAQ) ON THE PREVALENCE OF STRESS URINARY INCONTINENCE IN YOUNG WOMEN

### Hypothesis / aims of study

Many authors have compared the incidence of urinary incontinence (UI) and other pelvic floor dysfunctions in sportswomen and non-sportswomen. To date, however, there is a lack of studies investigating the impact of UI as a risk factor for various aspects of quality of life (QoL) among sportswomen in relation to high-intensity physical activity. The aim of this study was to compare the intensity of physical activity in sportswomen and non-sportswomen using the IPAQ questionnaire, measured in metabolic equivalent of task (MET)-min/wk, and to determine the prevalence of symptoms of stress urinary incontinence (SUI) according to the calculated load, as well as to investigate the impact of UI on QoL.

### Study design, materials and methods

The research population comprised a convenience sample of sportswomen and non-sportswomen (n = 537), paired by age and body mass index (BMI). The sportswomen were randomly selected from the National Register of Sports Clubs. Non-sportswomen were randomly selected from three universities.

We determined the prevalence of SUI according to the following estimation:  $n = Z^2P(1-P)/d^2$ , where  $Z = 1.96$  (95% level of confidence),  $P = 0.2$  for expected UI prevalence of 20% and  $d = 0.05$  (10% confidence interval [CI] width). Based on this calculation, the minimum number was set at  $n = 246$  probands in each group. We used the International Consultation on Incontinence Questionnaire – Short Form (ICIQ-SF), the Overactive Bladder Questionnaire (OAB-q), the Incontinence Quality of Life (I-QOL) scale and the International Physical Activity Questionnaire (IPAQ, short version).

The inclusion criteria were as follows: nulliparous women aged 18–35 years; in sportswomen, high-intensity physical activity confirmed by IPAQ (over 3000 MET-min/wk) in the last three months, performing sports at least three days a week for more than two years; in non-sportswomen, low-intensity physical activity confirmed by IPAQ (under 600 MET-min/wk) in the last three months.

The exclusion criteria were: sportswomen with handicaps, combinations of multiple sports, irregularity of sport performance, performing sport for less than two years, childbirth, surgical treatment of gynaecological and urological illnesses, infection of urinary tract, respiratory disease, incomplete questionnaires, refusal to participate in the study, BMI above 30 (BMI =  $m/h^2$ , where  $m$  = body weight in kg,  $h$  = body height in m), urgent urine incontinence (UUI) according to the OAB-q.

### Results

The sample consisted of 270 sportswomen and 287 controls. The IPAQ results confirmed the high intensity of physical activity among sportswomen (over 3000 MET-min/wk) and low intensity in the control group (up to 600 MET-min/wk). The ICIQ-SF results confirmed mild difficulties with urine leakage in 33 (6.14%) sportswomen and in 11 controls (2.04%). The I-QOL recorded significantly worse parameters (total score and scores of 3 subscales: avoidance and limiting behaviour score, psychosocial impact score and social embarrassment score) in the group of sportswomen ( $p < .000$ ). Odds ratio [OR] = 3.49 ( $p < .000$ ), 95% CI (1.727–7.064). The results are summarized in Table 1.

Table 1. Statistical comparison of monitored parameters in sportswomen and non-sportswomen

Parameter	Sportswomen mean ± SD n=270	Non-sportswomen mean ± SD n=287	p-value t-test
ICIQ total score of UI symptoms	0.6 ± 1.9	0.1 ± 0.7	$p < .000$
Age	20.7 ± 3.3	21.1 ± 2.3	.143
BMI – body mass index	21.3 ± 2.5	20.8 ± 2.8	.213
MET-min/wk (cumulative)	5429.7 ± 1696.2	575.3 ± 165.0	$p < .000$
MET-min/wk (vigorous)	4073.4 ± 1682.6	0.0 ± 0.0	$p < .000$
Minutes of exercise per day	105.2 ± 29.8	0.0 ± 0.0	$p < .000$
Days of exercise per week	4.8 ± 1.3	0.0 ± 0.0	$p < .000$
SS – symptom score on OAB-q	4.3 ± 5.4	4.5 ± 4.9	.265
HR – quality of life on OAB-q	96.6 ± 4.4	96.2 ± 7.7	.384
I-QOL (ABS – avoidance and limiting behaviour score)	98.0 ± 6.5	99.4 ± 3.4	$p < .000$
I-QOL (PIS – psychosocial impact score)	98.5 ± 5.0	99.5 ± 3.0	$p < .000$
I-QOL (SES – social embarrassment score)	98.4 ± 5.6	99.3 ± 4.7	$p < .000$
I-QOL (TS – total score)	98.3 ± 5.5	99.4 ± 3.3	$p < .000$

#### Interpretation of results

We evaluated the intensity of physical activity through the IPAQ in MET-min/wk. We found that in the high-intensity physical activity group, the risk of urine leakage was 2.49 times higher than in the low-intensity control group. Other authors have evaluated the intensity of physical activity in terms of its duration in years and the number of hours per week [1]. We used the IPAQ, which evaluates the cumulative metabolic equivalent of task (MET-min/wk).

#### Concluding message

Sportswomen (nulliparous) engaging in high-intensity physical activity according to the IPAQ (MET-min/wk) have a 2.49 times higher chance of developing SUI compared to non-sportswomen and this has a negative impact on QoL.

#### References

1. Fozzatti C, Riccetto C, Herrmann V, Brancalion MF, Raimondi M, Nascif CH, Marques LR, Palma PP. Prevalence study of stress urinary incontinence in women who perform high-impact exercises. *Int Urogynecol J* 2012; 23:1687-1691.

#### Disclosures

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**Informed Consent:** Yes