Urinary Incontinence among competitive female Rope Skipping athletes: A cross-sectional study (Abstract #20050)

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Background

- **Stress urinary incontinence (SUI)** can be a barrier to sport and physical activity participation.[1]
- **SUI prevalence** is 10% in young nulliparous women (mean 21 yrs), and increases with higher impact activities e.g. 80% prevalence among female trampoline athletes (mean 15 yrs).[2,3]
- **Rope Skipping (RS)** is a high impact sport, and anecdotally SUI has affected some athletes' participation.

Objectives

To determine **1)** the prevalence, impact and management practices of SUI among RS athletes, and **2)** whether SUI contributes to RS athlete retirement.

Study Methods

- Cross-sectional observational survey design.
- **Survey #1 (current athletes)** - Female athletes ≥13 years who attended the 2017 Rope Skipping Canada (RSC) championships.
- **Survey #2 (retired athletes)** – Disseminated by RSC via email and social media May-August, 2017.

SURVEY #1 Results

- **Response rate** = **55%** (89/162).

Table 1. Participant Demographics (n=89)

Demographic Variable	Range	Median [IQR]
Age (years)	13 - 59	16 [15-21]
BMI (kg/m^2)	15 – 30	21 [20-23]
Years of RS participation ‡	1 - 28	8 [6-11]
RS training Volume ‡ (min/wk)	60 - 1170	360 [240-360]

‡1 missing

Table 2. Athlete Characteristics (n=89)

Athlete Characteristics	n (%)
Nulliparous	83 (**93**)
Menarchal ‡, §	78 (**90**)
Caffeinated carbonated drink consumption	49 (**55**)
Coffee consumption ‡, §	41 (**47**)
Alcohol consumption ‡	29 (**33**)
Hormonal contraceptive	25 (**28**)
Constipation ¶	10 (**12**)
Pelvic surgery	1 (**1**)
History of eating disorder	1 (**1**)
Presence of medical condition	1 (**1**)
Current smoker	0 (**0**)

‡1 missing, ¶2 missing, § 1 'prefer not to answer'

Table 3. SUI Risk Factors (n=89)

SUI Risk Factor	SUI during RS n=67 (%)	Odds Ratio§ (CI)	*p*
Menarchal ‡	63 (**96**)	**8.1** (1.5-56.0)[d]	**<0.05***
Caffeinated drink consumption	36 (**54**)	**0.8** (0.3-2.2)	**NS**
Coffee consumption ‡	29 (**45**)	**0.7** (0.2-1.8)	**NS**
Alcohol consumption ¶	23 (**34**)	**1.3** (0.4-4.1)	**NS**
Hormonal contraceptive	17 (**26**)	**0.6** (0.2-1.7)	**NS**
Constipation ‡	8 (**12**)	**1.3** (0.2-13.7)[d]	**NS***
Parous	5 (**8**)	**1.7** (0.2-83.9)[d]	**NS***
Pelvic surgery	1 (**1**)	**N/A**	**N/A**
History of eating disorder	1 (**1**)	**N/A**	**N/A**
Presence of medical condition	1 (**1**)	**N/A**	**N/A**
Current smoker	0 (**0**)	**N/A**	**N/A**

‡ 2 missing; ¶ 1 missing; § Conditional maximum likelihood estimate of Odds Ratio;
* Fisher Exact Method used to calculate *p* and CI

Table 4. SUI Management Strategy (n=67)

SUI Management Strategy	n (%)	Missing, n
Void before rope skipping	46 (**72**)	3
Void between rope skipping events	45 (**71**)	4
Containment (e.g. wear pad or tampon)	24 (**38**)	4
Limit fluid intake before rope skipping	12 (**20**)	6
Seeking treatment for UI	0 (**0**)	0

Note - % rounded, 2-sig fig

PRIMARY OUTCOME (Prevalence)

Question	Result
'Yes' to the question: "*Do you leak urine during RS activities*?"	**75%** (67/89) experienced SUI while RS

SECONDARY OUTCOMES

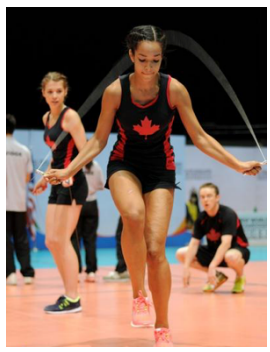
Question	Result
Overall impact of SUI on RS activities *"Overall, how much does leaking urine interfere with your RS activities?"* (not at all = 1; slight = 2-3; moderate = 4-5; large = 6-7; extreme = 8-10)	**21%** (14/67) affected **moderately or greater** **Median score** = 2 [0-2] (**slight impact**)
Impact of SUI on quality of life *ICIQ-SF* (range 0-21, 0 = no impact)	Median score = 4 [3-6] (**slight impact**) [2]
Prevalence & bothersomeness of SUI for each RS event *"How much are you bothered by UI during these events…"* ("not at all-0", "slightly-1", "moderately-2", "greatly-3")	**'Triple Unders'** **86%** (48/56) affected overall **Affected moderately/greatly** **48%** (27/56) during competition **38%** (21/55) during practice **'Double Unders'** **67%** (36/54) affected overall **Affected moderately/greatly** **19%** (10/54) during competition **20%** (11/55) during practice
RS attrition due to SUI *Stopped competing or practicing certain events?* (yes / no)	**'Triple Unders' or 'Double Unders'** **16%** (11/67) stopped practicing **6%** (4/67) stopped competing

SURVEY #2 Results

- **Median duration of RS participation = 9 years** [6-12], range 2-24.

Table 5. Rationale for RS retirement (n=77, 3 male)

Reasons for RS Retirement	n (%)
School became a priority	29 (**38**)
Obtained employment	27 (**35**)
Lack of time	25 (**32**)
Moved away from RS team	24 (**31**)
Participation in other sports	21 (**27**)
Negative team dynamics	15 (**19**)
Injury	15 (**19**)
Peers were no longer participating	13 (**17**)
Not enjoyable any longer	12 (**16**)
Not interested in competing any longer	7 (**9**)
Participation in other activities	6 (**8**)
Lack of transportation	4 (**5**)
Others were putting too much pressure on me	4 (**5**)
I put too much pressure on myself	3 (**4**)
My body type or size was no longer adequate	3 (**4**)
Lack of parental support	3 (**4**)
High cost of participation	3 (**4**)
Medical illness	2 (**3**)
Was no longer challenging	1 (**1**)
Became too challenging	1 (**1**)
Urinary incontinence	1 (**1**)



Discussion

- **Female RS athletes experience a very high rate of SUI** while RS (75%) similar to other high-impact sports (trampoline, 80%), and compared to young women in the general population who exercise (10%).[2,3]
- **RS athletes may feel uncomfortable discussing and/or seeking treatment for SUI, or, consider this symptom 'normal' and harmless**, given that no athlete has sought treatment for SUI
- **RS organizations should provide education about SUI** epidemiology and its management to athletes, coaches and parents in order to reduce stigma, and encourage SUI prevention and treatment where appropriate.
- **Modification of RS competition events may be warranted** (e.g. triple unders) since many athletes are negatively affected, and some have already discontinued participating in these events due to SUI.
- **SUI does not seem to significantly impact RS athletes' retirement** for athletes who have been highly involved.
- **It remains unknown whether SUI discourages participation in earlier stages of RS involvement**, and future research should address this gap.

Limitations

- Small number of participants.
- Limited generalizability given that the sample populations included only 1) current female Canadian RS athletes, and 2) retired RS athletes who were highly involved.

Conclusions

Similar to other high-impact sports, female RS athletes experience a very high rate of UI while participating in RS, which can lead to a decrease in quality of life and sport attrition. This research will help guide SUI awareness, prevention, and management strategies for RS athletes, coaches, parents and organizations.

References

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