

# Competitive exercise-induced urinary incontinence in adolescent female: aware and prepare!

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**Pelvic floor stress from physical exercise can contribute to urinary incontinence. This entity, though well described in adult female athletes, has not been described in adolescent female athletes. Significant stress urinary incontinence can be a major cause of social embarrassment and withdrawal from an active lifestyle. Lack of awareness amongst physicians and physical trainers can lead to unnecessary investigations and unchecked provocative exercises, thereby further weakening the pelvic floor muscles of growing girls in the long run. Adequate awareness of the condition, and preparedness with symptom management strategies, are the key tools for successful pelvic floor rehabilitation of these children. *Ann Pediatr Surg* 14:108–109 © 2018 Annals of Pediatric Surgery.**

## Introduction

Regular exercise in adolescence is perceived important for inculcating a healthy lifestyle during adulthood. Despite this common belief, only limited data exist on the hormonal and metabolic responses to exercise in children and adolescents. Moreover, the effects of regular physical activity on pelvic floor muscles (PFM) of growing girls are not well known [1].

Older age, menopause, and pregnancy are well-established risk factors for the development of stress urinary incontinence (SUI). Young, recreationally active women involved in high-impact activities like jumping and running have a prevalence of SUI varying from 14.3 to 41.5% [2]. However, the effect of repetitive high abdominal pressure exercises in the adolescent population is unknown.

We report an unusual case of exercise-induced urinary incontinence in an adolescent female. Creating awareness for this ill-recognized entity among adolescent girls can help them to adopt symptom-modification strategies, thus ensuring better preparedness toward adopting a healthy lifestyle.

## Case report

A 16-year-old, otherwise healthy and physically active girl complained of involuntary leakage of urine while running cross-country races. There was significant soakage, with no perceived urge mid-run. She ensured hydration before the race, under the supervision of a physical trainer. The urinary incontinence was of recent onset, related to the level of physical activity and overall pushing of herself, not necessarily the distance. It typically occurred when she exhausted herself by running 5 km in competitive-meet situations. She remained dry while running for shorter distances and in practice sessions. There was no history of fever, dysuria, constipation, chronic cough, perineal trauma, or surgery. She was continent for urine and stools during normal, day-to-day physical activity. There was no leakage during other activities increasing intra-abdominal

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pressure (IAP) like coughing, laughing, or sneezing. Her normal fluid intake was 1.5–2 l during the day, with oral rehydration sports beverage added during race days. She moved her bowels daily, consistent with Bristol Stool Scale type 5. She had a normal voiding pattern, micturating six to eight times a day.

On physical examination, she was lean built, with height and weight of 171 cm and 60.2 kg, respectively. Her BMI was 20.56 kg/m<sup>2</sup>. There was no gross systemic abnormality detected. Abdominal palpation was normal, with no palpable masses or stool and no tenderness. External genitalia had normal female appearance, with no excessive urethral mobility or urine leak on Valsalva exertion. A repeat cough test result on a full bladder was normal. Spine and back examination result was normal. She had undergone a full cardiac evaluation with normal electrocardiogram and Holter examinations. A normal urodynamic evaluation ruled out any detrusor over-activity or detrusor sphincter dyssynergia.

She improved after undergoing 6 months of physical rehabilitation involving pelvic floor Kegel exercises, attentive emptying of her bladder before running, and modifying her running style to decrease the effect on her PFM. She continues to run long distances, with occasional episodes of urinary incontinence.

## Discussion

It has been well established that physical activity can be provocative in the development of SUI. High-impact activities in elite athletes have a 28–80% association with SUI [3]. Even in the absence of known risk factors like vaginal delivery, obesity, diabetes, lower back pain, and weight lifting, women who attend group-exercise classes or gymnasiums have higher prevalence of urinary incontinence. Da Roza *et al.* [1] in their study of 399 young nulliparous females concluded that women who train for competitive purposes demonstrated a 2.53 times greater relative risk of developing incontinence

compared with inactive females. Organized exercise undertaken without the intent to compete seems to be safe for maintaining urinary continence [1].

The exact pathophysiology for this phenomenon has not been well studied. Moreover, the prevalence and long-term effect of such physical activity-related urinary leak in adolescent girls have not been analyzed in literature. Many daily trunk movements exert a craniocaudal inertial force on abdominal contents. This force is in turn transmitted to the supporting PFM [4]. Impact from ground reaction forces may have similar consequences. Frequent, intense increase in IAP over time may theoretically have harmful consequences on its supporting function. In the setting of a continuous overload overstretching the PFM, SUI may occur when IAP exceeds urethral closure pressure. A delayed reflex response between mechanical stimulus and PFM contraction may cause similar consequences. It may be that the anxiety of competition, coupled with the stress of physical exercise, can precipitate urinary incontinence.

Symptom-management policies while exercising, like voiding before starting activity or decreasing fluid intake may potentially mask incontinence symptoms. This might prevent urinary incontinence from being a barrier to exercise, but continuing provocative exercises can further weaken the PFM and worsen SUI in the long run [2]. This might provoke healthcare professionals into performing invasive testing. A more prudent approach is to modify the type of exercise to lower the impact on PFM. This, in conjunction with specific PFM

strengthening exercises, improves the control over inadvertent urine leak [5]. Our patient showed improvement by adopting similar strategies. However, it may be interesting to study the patterns of urinary continence in such young girls into adulthood and parity.

## Conclusion

Awareness of PFM dysfunction in adolescent girls involved in active physical routines should be encouraged to prevent SUI from becoming a barrier to exercise. Healthcare professionals must work in close association with school physical trainers to raise the educational levels for this often underreported condition.

## Conflicts of interest

There are no conflicts of interest.

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