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The Prevalence of Stress Urinary Incontinence in High School and College-Age Female Athletes in the Midwest: Implications for Education and Prevention

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Research has demonstrated that young female athletes participating in high-impact sports may be at higher risk for urinary incontinence. Using a modified Bristol Female Lower Urinary Tract Symptoms Questionnaire, a group of young adult female athletes was surveyed in Central Illinois to identify the prevalence of stress incontinence and assess education needs. Results indicated that more than 25% of those completing surveys experienced incontinence and that more than 90% had never told anyone about their problem and had no knowledge of preventive measures; 16% reported incontinence negatively impacted their quality of life.

Problem/Purpose
Female athletes who participate in high-impact sports represent a group who may be at higher risk for urinary incontinence (UI) and may also lack knowledge of prevention measures. The purpose of the study was to identify the prevalence of stress incontinence (SUI) in young female athletes and assess the need for preventative UI education.

Methodology
A survey of young adult female athletes in Central Illinois was conducted to identify the prevalence of SUI and to assess the need for preventative UI education.

Sample
550 surveys were sent to female athletes (through their schools) using a modified Bristol Female Lower Urinary Tract Symptoms Questionnaire. Those surveyed were between the ages of 14 and 21, and were from five high schools and two colleges in Central Illinois.

Results
More than 25% who completed the survey had symptoms of SUI and/or urge UI while participating in high-impact sports. More than 15% of responders with incontinence reported a negative effect on their quality of life, impacting their social life or desire to continue participating in sports. Over 90% of those with SUI had never told anyone about their problem. Additionally, over 90% had never heard of pelvic muscle exercises (Kegels), yet the vast majority indicated a desire to learn measures for preventing UI.

Conclusion
The study indicated that female athletes who participate in high-impact sports are at risk for UI. There is an overwhelming lack of knowledge in young female athletes of preventative incontinence care and thus the opportunity for urologic nurses to meet the need for education in these young women.
Olesen, and Lose found that 43% of the 291 elite female athletes surveyed (91.4% nulliparous) experienced urine loss during sports. Finally, a study of female soldiers reported that 30% of those in field duty and physical training experienced UI (Criner, 2001).

**Purpose**

The purpose of this study was to assess the prevalence of UI in young female athletes in Central Illinois and to determine educational needs of the athletes regarding prevention and treatment of UI.

**Methods**

*Sample.* Coaches and athletic directors from 18 Central Illinois high schools and colleges within a 40 mile radius of Jacksonville, IL, were contacted by telephone and questioned about whether their female athletes could participate in the study. Schools willing to participate were from Jacksonville, Virginia, and Beardstown, Arenzville, Chapin, Illinois. Populations of the participating towns ranged from 421 to 19,674 people. At one high school, the principal’s permission was required before surveys could be distributed to the athletes, and the principal ultimately declined to allow students to participate. The athletes participating were ages 14 to 21 with an average age of 17; all were nulliparous. The athletes surveyed were active in basketball, track, softball, volleyball, cheerleading, weightlifting, and pom pom dance.

**Data Collection/Instruments**

The Bristol Female Lower Urinary Tract Symptoms Questionnaire was revised by this author (see Figure 1) to include questions pertaining to sports activities and educational needs (Jackson et al., 1996). The revised tool was not validated. A parental consent form was included for participants under the age of 18 years. Five hundred fifty surveys were personally distributed to coaches and athletic directors at

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Applicable</th>
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<td>Coughing</td>
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<td>Sneezing</td>
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<td>Laughing</td>
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<td>Getting out of bed</td>
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<td>Climbing steps or stairs</td>
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<td>Lifting something heavy</td>
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<td>Exercise</td>
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<td>Weightlifting</td>
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<td>Running</td>
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<td>Walking to the bathroom (with a strong urge)</td>
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<tr>
<td>Hearing running water (with a strong urge)</td>
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</tbody>
</table>

5. In the past week, how often have you leaked urine? (circle one)
   - Not at all
   - A few times
   - About half the time
   - Most of the time
   - Always

6. In the past year, how often do you wet or leak urine? (circle one)
   - Not at all
   - Daily
   - 2-4 times/week
   - Weekly
   - 2-4 times/month
   - Monthly

**Figure 1. Female Athlete Survey**

<table>
<thead>
<tr>
<th>Urinary Incontinence Survey</th>
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<tbody>
<tr>
<td>Date of Birth_______________ If you are under 18 years of age, please enclose parental consent with this questionnaire.</td>
</tr>
<tr>
<td>School _______________________</td>
</tr>
<tr>
<td>Type of athletic/cheerleading/weight training activities you have participated in during the past year. ____________________________________________</td>
</tr>
<tr>
<td>How many hours do you participate in the above activity(ies) each week?</td>
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</table>

Please answer the following questions according to your symptoms in the past year:

1. Have you ever heard of Kegel exercises to strengthen the pelvic floor to prevent urine leakage? (circle one)
   - Yes
   - No

2. Have you ever experienced unanticipated urinary leakage during participation in the above activities? (circle one)
   - Never
   - Just once
   - Rarely
   - Sometimes
   - Frequently
   - Every practice session

3. During which of the activities listed above do you experience urinary leakage? (If your answer to #2 was Never, skip to #4).

4. Do you ever wet or leak urine when...? (check appropriate box for each activity)
reported symptoms of SUI during sports activities. The SUI was reported as occurring with sports (14%), exercises (11.6%), coughing (11.6%), walking to the bathroom with a strong urge (11.6%), running (9.3%), sneezing (6.9%), jumping (6.9%), hearing running water with urge (4.7%), and weightlifting (2.3%). Of the female athletes who reported SUI, 26% also had urge UI symptoms.

Twenty-five percent of the respondents leaked urine two to four times a month, and 8% leaked two to four times weekly. Urine loss amount was reported as “damp or drops,” or “wet or small amounts.” Sixteen percent reported a negative effect on their social life, sports, and exercise. Eight percent reported avoiding hobbies, social activities, sports, and exercises because of their SUI. Ninety-one percent of the athletes had never heard of pelvic muscle exercises, or Kegel exercises. Eighty-three percent of the athletes with SUI, and 74% of those without symptoms, reported that they would try pelvic muscle exercises if they knew how to perform them properly. Ninety-two percent of the athletes with SUI symptoms had never told anyone about their problem, and none had sought any professional treatment. A summary of the main study findings is included in Table 1.

Limitations
Institutional review board (IRB) approval was not sought for the study because there was no established IRB for the institution. The revised survey tool was not validated for this small descriptive study; prior to future use, the tool should be validated. Due to the small number of surveys actually distributed to the athletes (31%) and the smaller number of surveys returned (15.6%), the study results are not generalizable.

Discussion
Since 91% of the respondents had never heard of pelvic muscle exercises, this is clearly
Table 1.
Main Findings

- 28% of respondents reported SUI* symptoms during sports activities.
- 26% of the athletes with SUI also reported urge UI** symptoms.
- UI frequency varied from 2-4 times weekly to 2-4 times monthly.
- 16% with UI reported a negative effect on their social life, sports, or exercise, while 8% reported avoiding those activities because of UI.
- 91% of the female athletes had never heard of pelvic muscle exercises or Kegels.
- 83% with UI and 74% without UI said they would try Kegels if they knew how to perform them properly.
- 92% with UI had never told anyone about their symptoms.

* Stress urinary incontinence
** Urinary incontinence

Table 2.
Multi-Disciplinary Female Fitness Educational Program: A Way to Incorporate Pelvic Floor Health into Female Athlete Interests

- Female Fitness and the Pelvic Floor
- Stress Urinary Incontinence Female Athlete Triad: Disordered Eating, Amenorrhea, Osteoporosis
- Athletic Training
- Sports Injuries
- Dietary Needs

For the program to appeal to young women, t-shirts were given to the participants, lunch was sponsored, concert tickets were raffled, music CDs were donated and raffled, and a sports supply store gave the attendees a discount card.

an area where the continence specialist can increase awareness and educate young women in preventative care for UI. As noted previously, one principal refused distribution of the UI surveys to female athletes in anticipation of angry phone calls from parents — evidence of the stigma attached to UI in young females.

After the study was completed, Passavant Hospital in Jacksonville, IL, sponsored an educational program for area female athletes in conjunction with National Girls and Women in Sports Day. This allowed the continence specialists at the hospital to collaborate with physical therapists, athletic trainers, dieticians, orthopedic specialists, and physicians to provide a 1-day multidisciplinary program to meet various needs of the athletes. This delivery format allowed young women to learn about diet, sports injuries, and athletic training, while also providing information about incontinence in a non-threatening setting. Attendees received instruction about how to perform Kegel exercises properly and prevent SUI (see Table 2). Handouts designed to appeal to young female athletes were distributed with information about Kegel exercises and treatment of UI.

**Nursing Implications**

The continence specialist can increase awareness of UI by teaming with area school health teachers, hospitals, women’s groups, health clubs, and speaker’s bureaus to provide classes about prevention and treatment of UI in young women. Area health fairs are also a good place to set up a booth with information about performing pelvic muscle exercises and seeking treatment for UI. Physicians offices, health clubs, and athletic departments can be provided with brochures about UI treatment and prevention. When doing physical examinations for students involved in athletics, it is important for health care providers to ask females if they leak urine, and provide information about treatment. When designing educational programs for young women, UI can be added into a program with larger appeal to their age group, such as athletic training in their particular sport, or a “Girl Talk” class addressing development issues, sexual activity and reproduction, healthy eating, and pelvic health.

**Conclusion**

This small survey indicated that a significant number of female athletes who participate in high-impact sports in the Midwest are at risk for UI. It further pointed to the fact that female athletes overwhelmingly lack knowledge of preventive care for UI. A stigma surfaced in this study regarding distributing a survey about UI. The results lend further credibility to the body of evidence about UI in female athletes and point the continence specialist to the need for prevention programs and better education. Hopefully, as the public is educated about UI, the stigma of the problem will decrease in young and old alike. Most importantly, urologic nurses have an opportunity to decrease the stigma of incontinence and increase awareness of prevention measures.

**References**


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