



SPORTS / EXERCISE / FITNESS

## Exercise-Induced Urine Leakage in Female Athletes

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Many elite female athletes experience exercise-induced increases in intra-abdominal pressure, creating stress-induced urine leakage while participating in their selected sport. Many athletes do not mention this condition, as they consider it normal; others get embarrassed; and other athletes actually stop exercising due to the inconvenience and frustration. The integration of Western medical protocols and Oriental medicine will provide greater choices and better results through the treatment, management and prevention of this common condition.

### Western Physiological Perspective

Exercise-induced urine leakage results from pressure on the bladder that exceeds the maximum urethral capacity with the absence of bladder (detrusor) muscle activity. The physical activity involved uses the Valsalva maneuver (holding the breath during the strenuous part of the exercise), thus increasing the intra-abdominal pressure. This leads to an increase in intravesical pressure exceeding the maximal limit of urethral pressure. The muscles of the pelvic floor lack support, creating excessive urethral mobility. The muscular support structures include ligaments, fascia and levator ani muscles that provide compression (urethra) and stability for the pelvic organs. Due to activities like jumping, long-jumping, high-impact aerobics, volleyball, basketball, weightlifting, and gymnastics, the increased intra-abdominal capacity and excessive force upon the pelvic floor causes a breakdown, creating stress leakage during activity.

Treatment options include wearing a pad while training and competing, Kegel exercises, and pelvic floor muscle exercises. These exercises can be done anytime, but the most beneficial time is while urinating by stopping the stream of urine. Other, more advanced exercises include using tampon-shaped devices of different weights that are inserted and held in place by perivaginal musculature, providing sensory feedback during activities. The level of difficulty can be increased (via vaginal

weights) using isometric contractions, biofeedback, and/or electrical stimulation. These exercises strengthen specific muscles (levator ani) in order to improve external urethral muscles and pelvic organ support. Biofeedback provides observable responses to muscular contractions. Lastly, electrical stimulation via surface electromyography-measured vaginal contractions tends to enhance the results.

### Eastern Philosophical Perspective

The primary *zang/fu* organ theory involves deficiency of the kidney, spleen and lung as the pre-existing condition(s) that can create exercise-induced urinary leakage. The kidney controls urination, which directly balances the kidney yang and kidney yin. The kidney yang supports urination by providing *qi* to the urinary bladder to transform and control urine. The spleen supports the *qi* in general, but also raises the *qi*; thus, if the *qi* begins to sink, the spleen would be unable to control the *qi* and, therefore, cause leakage. The lung *qi* communicates downward with the urinary bladder and the lung by generally governing the *qi* and providing *qi* to the urinary bladder to control the urine. If the lung *qi* becomes deficient, it is unable to control the urinary bladder, and leakage results. In athletes, these pre-existing deficiencies are a result of constitution, nutritional habits, and excessive mental, emotional and physical drives, all of which create internal *zang/fu* organs. Exercise depleting the already-deficient *zang/fu* organs further aggravates these conditions.

Treatment principles include the following:

**Kidney Yin Deficiency: Treatment Principle and Key Points.** The treatment principle is to tonify the kidney and nourish/tonify the yin. Key points include: UB 23/28 (tonifies kidney *qi* and strengthens urinary bladder function). One must also remember to tonify the yin within the yang in order to control the fluids. K 3/SP 6/R 4 is used to nourish/tonify the kidney yin. The baseline formula is *jin suo gu jing wan* (golden lock consolidating the essence pill) in addition to *liu wei di huang wan* (six ingredient rehmannia pill).

**Kidney Yang Deficiency: Treatment Principle and Key Points.** The treatment principle is to warm and tonify the kidney. Key points include: moxa K 7/UB 23/D 4/R 4 to focus on the kidney yang. To strengthen/tonify the urinary bladder, UB 28/32/53. General points to tonify *qi* include UB 28/32/53, and to raise *qi*, SP 6/ST 36/R 6/D 20. The baseline formula is *jin gui shen qi wan* (golden chest kidney *qi* pill) in combination with *suo quan wan* (contracting the spring pill).

**Spleen Qi Deficiency: Treatment Principle and Key Points.** The treatment principle is to tonify and raise spleen *qi*. Key points include ST 36/UB 20/R 12 (tonifies spleen *qi*). For kidney yang, include UB 23. To strengthen the urinary bladder, UB 28/53. To tonify *qi* in general, include R 6/ST 36/SP 6. The baseline formula is *bu zhong yi qi wan* (tonifying the center and benefiting *qi* pill).

**Lung Qi Deficiency: Treatment Principle and Key Points.** The treatment principle is to tonify and warm lung *qi*. Key points include D 12 /UB 13 and LG 7 (tonifies lung *qi*, affects the water passages). To tonify *qi*, R 6/ST 36/SP 6. To raise *qi* in order to contain the urine, include D 20. To strengthen the urinary bladder functions, UB 28/53. The baseline formula is *bu zhong yi qi*.

Remember - all of these points and baseline formulas are geared toward general deficiencies. It must be acknowledged that there are many other acupuncture point combinations and modifications, depending upon the depth of one's Oriental medicine educational background, which would determine other supporting points and formula modifications that could also contribute to individual diagnostic presentations.

## Conclusion

The inclusion of the Chinese medicine perspective within the sports medicine arena enables the sports medicine profession to evolve and progress by acknowledging acupuncturists as part of the multidisciplinary team. Acupuncturists are in a unique position to identify exercise-induced urinary leakage among female athletes of all ages and provide them with active, integrated treatments (either through referral and/or integrated multi-knowledge based specialties) in order to create a well-rounded treatment program that can allow them to reduce, and even eliminate, exercise-induced urinary leakage. This allows the female athlete to continue healthy sports participation and achieve optimal sports performance. By knowing how to ask the right questions during patient inquiry, casual conversations on the field during practice or at an event, or through observation, this information enables the acupuncturist to identify and diagnose, using methodologies from both medical perspectives, in order to improve the quality of the athlete's training, provide medical care/prevention, enhance performance and competitive results, and, ultimately, maintain a healthy and balanced quality of life.

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