



PÉCSI TUDOMÁNYEGYETEM
ÁLTALÁNOS ORVOSTUDOMÁNYI KAR

Typical Sports Injuries , Risk Factors , and Prevention Opportunities

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Sports Medicine Aspects of Female Physiological Characteristics

- Hormonal influences
- Increased ligament laxity leading to greater injury susceptibility
- Greater muscle flexibility (muscle extensibility)
- Differences in physical performance capacity (approximately 10–12% lower)
- Endurance
- Strength (reaches its maximum around 15–16 years of age)
- Speed
- Coordination

Common Injuries and Health Concerns in Female Athletes



- Anterior Cruciate Ligament (ACL) injuries
- Relative Energy Deficiency in Sport (RED-S), formerly known as the Female Athlete Triad
- Patellofemoral Pain Syndrome (PFPS)
- Stress fractures, osteopenia, and osteoporosis
- Pelvic Floor Dysfunction (PFD), including urinary incontinence (36%)
- Iron deficiency, with or without anemia

ACL



- Threefold higher risk compared with males
- Valgus-aligned, extended lower extremity
- Pre-ovulatory phase of the menstrual cycle
- Genetic predisposition: COL5A1 gene CC genotype
- Intrinsic risk factors: joint laxity, hormonal influences, and anatomical factors (limb alignment, ligament characteristics)
- Extrinsic risk factors: training status, experience, strength, muscle balance (hamstring-to-quadriceps ratio), and landing techniques (flexed vs. extended knee; valgus vs. varus knee position)



ACL

Sports associated with a high risk of ACL injury:

- Basketball
- Football (soccer)
- Gymnastics
- Skiing

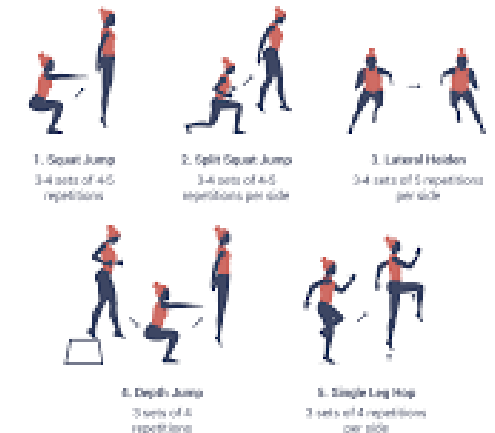
Prevention:

- Maximal strength training
- Proprioceptive training
- Plyometric exercises (jump-landing technique, muscle balance)
- Dynamic stretching



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Patellofemoral pain

Multifactorial etiology:

- Pelvic and lower limb malalignment
- Poor neuromuscular control
- Lack of flexibility or hypermobility
- Abnormal patellar position or morphology
- Trauma, chronic overuse, and improper training techniques
- Frequently becomes a chronic condition

Prevention/therapy:

- Identification of underlying deficits
- Correction of deficits through conservative or surgical treatment
- Strengthening exercises
- Stretching
- Knee stabilization

PFD (pelvic floor dysfunction)

- Urinary incontinence
 - Prevalence among female athletes: 36%
 - Threefold higher risk compared with non-athletic women
- Sexual dysfunction
- Pelvic organ prolapse and pelvic pain
- Fecal (rectal) incontinence
- Commonly observed in athletics (track and field), gymnastics, and dance
- Associated with Relative Energy Deficiency in Sport (RED-S)



Therapy:

- Surgical treatment, or
- Conservative management through strengthening exercises

Osteoporosis, osteopenia



- Peak bone mass is generally attained by the age of 25 years.
- Secondary amenorrhea is a significant risk factor for stress fractures, particularly in endurance athletes.
- Primary prevention focuses on maximizing bone mineral density through appropriate exercise and nutrition during skeletal development.
- Secondary prevention involves early identification and correction of risk factors, optimization of training and nutritional strategies, and treatment of clinical consequences.



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Thank you for your attention !