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Alexandria Soccer Association

Injury Prevention Program

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- During the 2005-2006 and 2006-2007 school years the National Sports Injury Surveillance Study reported that about 400,000 high school athletes are injured each year.
- Injury rates overall are similar between boys and girls and are higher in competition than practice.
- On average, a high school soccer player sustains an injury every 210 competitions or 730 practices.

(The Epidemiology of United States High School Soccer Injuries, 2005-2007, American Journal of Sports Medicine, Oct. 2008, vol. 36 no. 10).

Most Common Boys' injuries:

- Ankle Sprains (16.5%)
- Thigh and upper leg strains (10.3%)
- Concussions (9.3%)

Most Common Girls' Injuries:

- Ankle Sprains (20.8%)
- Concussions (12%)
- Knee sprains (10.6%)
- Thigh and Upper leg strains (9.6%)

Surgery was required following 5.6% of all injuries.

- Boys required surgery most often for knee injuries and head and facial fractures. Girls required surgery most often for knee injuries.
- COMPARED TO BOYS, GIRLS WERE 13 TIMES MORE LIKELY TO SUSTAIN KNEE INJURIES REQUIRING SURGERY.

The February 2007 issue of the
American Journal Of Sports
Medicine reported that
from 1990-2003 there were 1.3
million soccer injuries among boys
and girls

Injury to the head was less common overall, but the most likely injury between the ages of 15-18

Fractured bones were the third most likely injury, making up for about 25% of soccer-ER visits

Of all reported injuries, 49% occurred in kids 10-14

While the overall injury rates did not seem to be on the rise, the number of young girls injured increased significantly over the course of the research.

- **The American Academy Of Pediatrics published in March of 2000 that between 43% and 60.9% of outdoor youth soccer injuries are incurred via contact.**
- **Therefore roughly 40 and 60% are NON-CONTACT injuries.**

How can we keep young athletes healthy?

Which of these injuries may be preventable?

IMPACT INJURIES

Appropriate coaching and refereeing is essential to moderate overly aggressive play.

Some injuries are unavoidable.

Dirty Play

- *Illegal activity is related to a high proportion of injuries during competition. This suggests that tens of thousands of injuries could be prevented each year by eliminating illegal activity. Parents, coaches, school officials and referees should be compelled to change sports culture and reduce the impulse to participate in illegal activity.*
- (Dawn Comstock, PhD, contributor to American Journal of Sports Medicine, The Epidemiology of US High School Soccer Injuries, 2005-2007).

CONCUSSION

- A 2007 study from Ohio State University and Nationwide Children's Hospital noted that concussions in high school soccer players were only slightly less common than in high school football players.
- The girls suffered concussions 68% more often than boys.
- (By far the most frequently “concussed” group are the female hockey players).

CDC concussion guidelines

www.cdc.gov/ncipc/tbi/Coaches_Tool_Kit.htm

Signs observed from coaching staff:

- Athlete appears dazed/stunned
- Is confused about assignments
- Forgets plays
- Is unsure of game/score
- Moves clumsily
- Answers questions slowly
- Show behavior change
- Can't recall events prior to or after hit

Symptoms reported by athlete:

- Headache
- Nausea
- Balance problems/dizziness
- Sensitive to light or noise
- Feeling sluggish/foggy/groggy
- Concentration or memory problem
- Confusion

Coach's Action Plan

- Remove athlete from play.
- Ensure athlete is evaluated by appropriate professional.
- Inform parents.
- Allow athlete to return to play only with permission from the appropriate health care professional.

- Please remember that additional damage can be caused by exertion soon after the initial trauma.
- Once concussed, an athlete is at greater risk. Recurrent concussions increase the risk of long-term impairment.

Can heading the ball cause a concussion?

- Heading the ball properly will probably not cause a concussion.
- Concussions occurring from this type of contact are typically from a player being hit by the ball at close range.
- It is frequently reported that repeated heading of the soccer ball can cause headaches. It is unknown whether repeated low intensity impacts may make players more vulnerable to concussion later.

PREVENTION

- Padded goalposts
- Use the appropriate size ball
- Heading should be the play of last resort.
- Players should be taught to control the ball another way whenever possible.

PREVENTION OF NON-CONTACT INJURIES

- Non-contact injuries are perhaps largely preventable and the origin of numerous injury prevention programs.
- Proper strength, coordination, technique while running, decelerating, changing direction jumping and landing are vital to the performance and health of the athlete.

The most common non-contact injuries

- Ankle sprains
- Knee strains and sprains including torn ACL
(anterior cruciate ligament)

Other chronic injuries induced by repetitive strain.

- Achilles tendonitis
- Sever's disease
- Osgood slaughter's syndrome
- Patellar tendonitis (patello-femoral pain syndrome).
- Stress fractures
- Shin splints
- Back and hip pain

- **RATES OF NON CONTACT-INJURY**

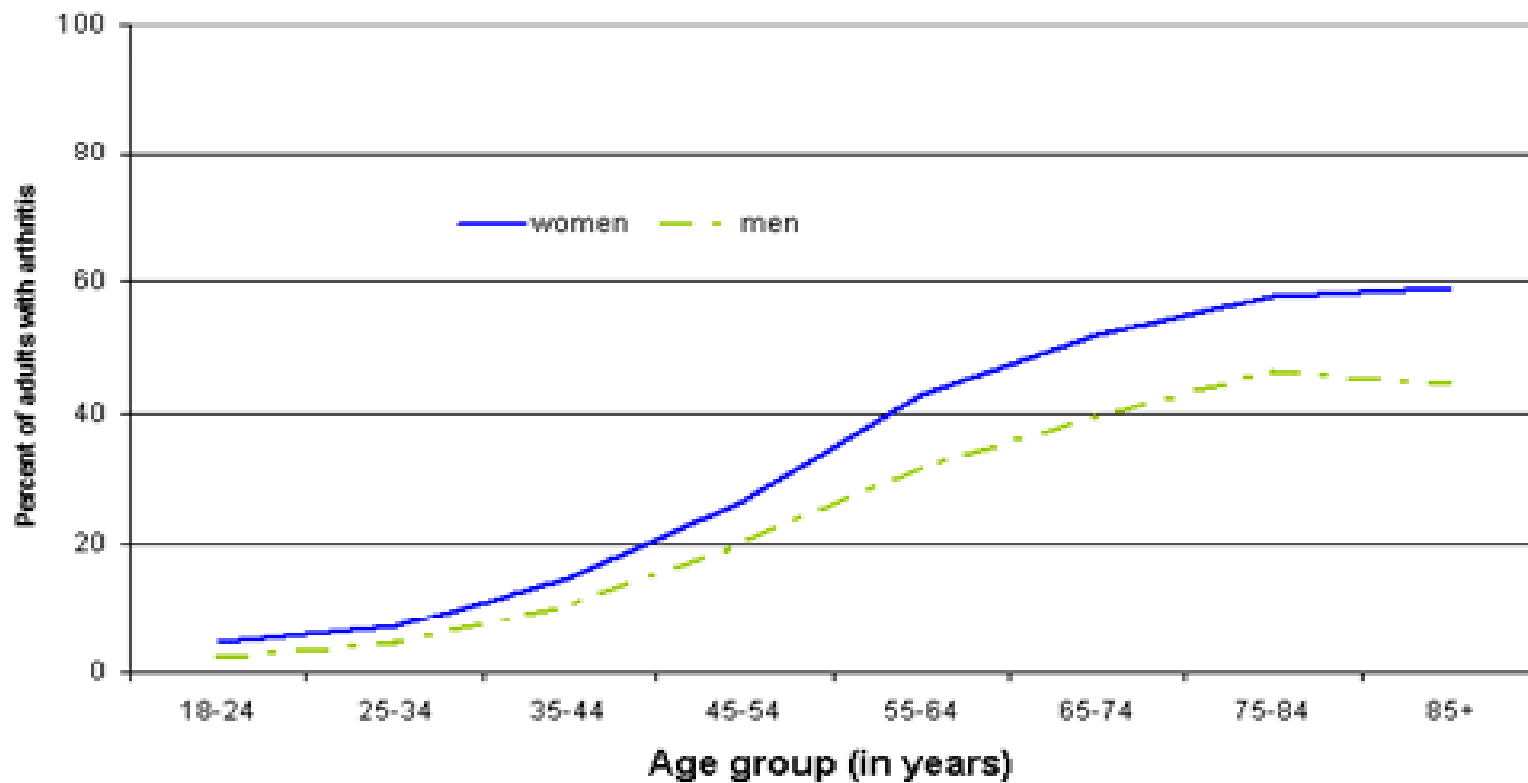
Multiple sources including NCAA Sports Surveillance System and several prominent Universities maintain that girls/young women tear their ACL's at a rate 6-8 times more than boys.

The consequences:

- Invasive surgery and painful rehab, up to a year playing time lost.
- ***OSTEOARTHRITIS! Arthritis from early-life injury is a major limitation that prevents adults from exercising.***

Osteoarthritis from early life injury is a major limitation that prevents older adults from exercising

Arthritis affects more women than men in every age group.



Sex-specific prevalence of doctor-diagnosed arthritis by 10 year age groups, National Health Interview Survey, 2003-2005

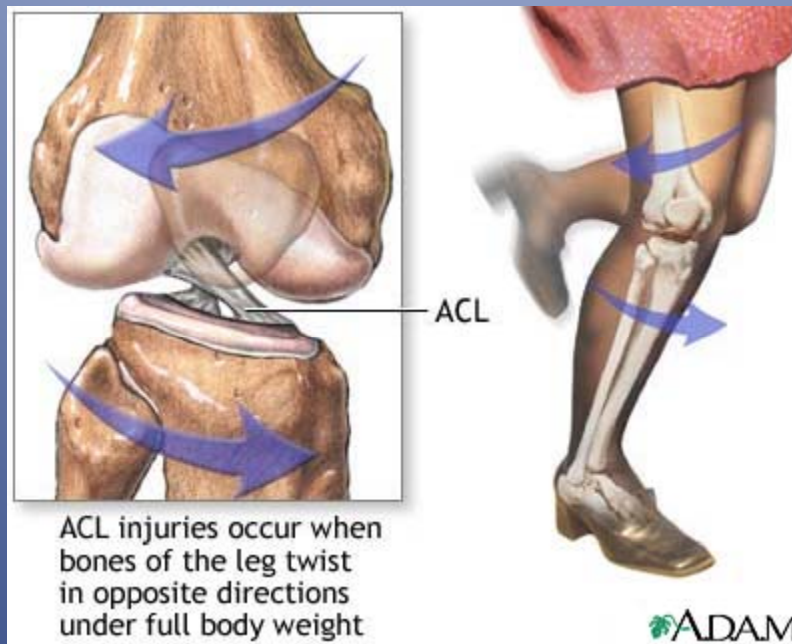
- A large percentage of individuals who have incurred an ACL tear WILL develop osteoarthritis within 5-10 years.
- *“Based on the available evidence it appears that programs addressing the prevention and care of sports injuries will pay dividends in terms of preventing early onset of osteoarthritis.”* Marshall SW, Golightly YM. Sports Injury And Arthritis. NC Med J. 2007;68(6):430-433

MECHANISM OF INJURY:

USUALLY A NON-CONTACT IMPACT WITH TORQUE

landing off balance with a straight leg (less than 20 degree of flexion), frequently occurs cutting, pivoting, or during a quick deceleration.

The ACL



ACL injuries occur when bones of the leg twist in opposite directions under full body weight

WHY GIRLS?

(We're not entirely sure)

- Greater Q angle—the angle formed at the knee as the result of wider hips.
- More frequently flat footed leading to more knee stress, (theorized)
- Less muscular than boys, possibly more likely to exhibit quad dominance
- Differences in Technique:
 - Girls tend to run, jump, land and cut with a more upright posture.

THE PROBLEM OF OVERTRAINING

Multiple negative effects of playing the same sport year-round.

- Increase number of “exposures”
- Repetitive strain and chronic injuries
- “Burnout”
- Tournaments: multiple games in a day or weekend leads to fatigue which will predispose the athlete to injury.

PREVENTION PROGRAMS

Success rate: 2 year follow-up study published in the American Journal of Sports Medicine showed that girls participating in the program had a 74%-88% reduction in ACL injuries when compared to the non-trained control group

Effectiveness of a Neuromuscular and Proprioceptive Training Program in Preventing Anterior Cruciate Ligament Injuries in Female Athletes

2-Year Follow-up

[BR. Mandelbaum](#), MD*, [Holly J. Silvers](#), MPT*,[†], [Diane S. Watanabe](#), MA, ATC*, [John F. Knarr](#), PT, ATC*, [Stephen D. Thomas](#), MPT*, [Letha Y. Griffin](#), MD[‡], [Donald T. Kirkendall](#), PhD[§], and [William Garrett, Jr](#), MD, PhD^{||}

[±]

Results: During the 2000 season, there was an 88% decrease in anterior cruciate ligament injury in the enrolled subjects compared to the control group. In year 2, during the 2001 season, there was a 74% reduction in anterior cruciate ligament tears in the intervention group compared to the age- and skill-matched controls.

Conclusion: Using a neuromuscular training program may have a direct benefit in decreasing the number of anterior cruciate ligament injuries in female soccer players.

American Journal of Sports Medicine, vol 33, no. 7, 2005

A Randomized Controlled Trial to Prevent Noncontact Anterior Cruciate Ligament Injury in Female Collegiate Soccer Players

[Julie Gilchrist](#), MD†,* , [Bert R. Mandelbaum](#), MD‡, [Heidi Melancon](#), MPH§, [George W. Ryan](#), PhD||, [Holly J. Silvers](#), MPT‡, [Letha Y. Griffin](#), MD, PhD¶, [Diane S. Watanabe](#), MA, ATC‡, [Randall W. Dick](#), MS#, and [Jiri Dvorak](#), MD**

Conclusion: This program, which focuses on neuromuscular control, appears to reduce the risk of anterior cruciate ligament injuries in collegiate female soccer players, especially those with a history of anterior cruciate ligament injury.

The American Journal of Sports Medicine, vol. 36, no. 8, 2008

IMPLEMENTATION IN ALEXANDRIA

- Instruct Coaching staff
- *Emphasize technique EARLY*
- *Consistent reminders about running form, landing and shifting weight on the balls of their feet with knees bent—NEVER LOCKED, decelerating with several steps and again, never straight legged*
- Implement the full program gradually, modify and shorten at U9-U13, full implementation by U14.

THE PROGRAM: Neuromuscular training for enhanced performance and injury prevention

- Avoid High Risk & vulnerable positions
- Increase strength
- Increase proprioception & joint awareness through plyometrics and agility training.
- Increase flexibility

- **Warm-up**
- **Stretching**
- **Strengthening**
- **Plyometrics**

(Probably the most important component of the program. Plyometrics are “jumping” exercises designed to produce fast, powerful movements and improve nervous system function and balance. These are exercises in which a muscle is loaded and then contracted in rapid sequence to create improved strength, elasticity and response time).

- **Core training**
- **Agility drills**

Also...

Identification by coaches of vulnerable athletes.

THE PEP (prevent injury, enhance performance) PROGRAM

- Developed for distribution by the *Santa Monica Orthopaedic And Research Foundation* in order to implement a strategic training program to decrease the number of injuries incurred by female soccer players.