

2010 OYSA AGM Soccer Injury Prevention Lecture

By Timothy Brinker, PT, OCS, FAAOMPT

Lower Extremity Injury Prevention Coaches/Club Options:

1. Identify athletes which display movement patterns which pre-dispose them to sustaining an ACL injury
 - Referred to a trained physical therapist or athletic trainer which has extensive training in ACL injury prevention
 - Provide with PEP or WIPP program for independent training to athlete
 - Refer to a Sportsmetrics Provider for jump mechanics video analysis and risk assessed
 - www.sportsmetrics.net
2. During warm-ups set aside a time for **exclusive and focused attention on form and patterns**
 - Prevention of valgus (knock-kneed)
 - cutting, hopping, heading, running
 - Stay low and on toes
 - Encourage play with flexed posture on balls of feet
 - Jump mechanics training
 - Hopping two legs and single leg over low cones or lines with emphasis of hip, knee and toe alignment
 - Soft flexed knee landing, no valgus
 - "Bounding Run"
 - Hamstring strengthening
 - Single leg bridging, Russian hamstring
3. Implement formal warm-up for ACL and knee injury prevention
 - PEP (Performance Enhancement, Injury Prevention)
 - www.aclprevent.com
 - Download PEP Handout (in packet as well)
 - www.therapeuticassociates.com/hillsboro
 - WIPP (warm up for injury prevention)
 - www.sportsmetrics.net - download free WIPP program
 - FIFA 11+
 - www.fifa.com - search for 11+
4. Formal Sportsmetrics program
 - Evidence based 6 weeks training program by certified clinician
 - www.sportsmetrics.net

Concussion Materials

www.therapeuticassociates.com/hillsboro (in packet)

www.cdc.gov/ConcussionInYouthSports

For assistance or guidance with implementing injury prevention programs please contact:

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Program Introduction

The following materials have been compiled with the help of the Santa Monica ACL Prevention Project. We gratefully acknowledge their research and contributions to this program.

The Santa Monica ACL Prevention Project developed the PEP program in 2000 in order to implement a strategic training program to decrease the number of ACL injuries incurred by female soccer players. Since the implementation of Title IX legislation in 1972 allowing equal opportunity for women to participate in sports, there has been an exponential increase in the number of female participation in competitive sports. However, the total number of injuries has also increased. Studies have shown that a female soccer player's risk of sustaining an ACL injury is two to eight times greater than her male counterpart. Subsequent studies have shown that adding neuromuscular and proprioceptive exercises to the training regimen can reduce the number of ACL injuries by two to four folds.

What is the PEP Program?

The PEP (Prevent injury, Enhance Performance) Program is highly specific 20 minute training session that replaces the traditional warm-up. It was developed by a team of physicians, physical therapists, athletic trainers and coaches, and has funding support from the Amateur Athletic Foundation of Los Angeles (AAF). The program's main focus is educating players on strategies to avoid injury and includes specific exercises targeting problems as identified in previous research studies. The goals of the program are to:

1. Avoid high risk and vulnerable positions
2. Increase strength
3. Utilize plyometric exercises
4. Increase proprioception and joint awareness through agilities
5. Increase flexibility

Most program exercises and drills are already part of a team's standard training. However, it will require attention to the technique and performance on the part of players, coaches and trainers. Optimally the program should be performed at least 2-3 times per week during the season.

How does the research portion of the PEP Program work?

According to other similar studies, this program has consistently decreased the total number of ACL injuries. In the first two years of the program, over 2,000 athletes participated. In the first year of the study (2000 season), there was an 88% overall reduction in ACL injury compared to the 14 to 18 year old female athletes playing in the same leagues who did not utilize the program. In the second year of the study (2001 season), there was an overall 74 % reduction in ACL injury. In addition, this program was utilized in a randomized controlled trial in NCAA Division I Women's soccer teams in the fall 2002 season. During this study, we saw a 41% reduction in all game ACL injuries and a 100% decrease in all practice ACL injuries.

It is imperative to stress proper technique throughout the entire program. It is up to the individual athlete, coach and athletic trainer to properly implement this program in order to maximize all of the benefits that the program has to offer. The program primarily focuses on retraining certain motor (neuromuscular and proprioceptive) programs that have been noted to be deficient in some capacity.

What if I have questions?

To maximize effectiveness, it is important to have a good understanding of all the exercises. Technique is crucial. If there are any questions or concerns, please feel free to contact **Timothy Brinker, PT, OCS, FAAOMPT, Director TAI Hillsboro Physical Therapy.**

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PEP Warm-up:

All jumps are to be performed with focus on soft landing on balls of feet, slight bend in knees, tight core, proper arm mechanics, eyes up with good body control. Ensure the knees land in line with the foot and hips, avoiding a valgus angle (knee falling inward).

1. Lateral Cone Hops

Athletes will stand with a cone to the right and on command, the athletes will hop right and land with the cone on the athletes' left. Athletes will repeat and hop to the left. This is one repetition.

- Complete 10 repetitions in both directions

2. Forward/Backward Cone Hops

Athletes will stand with a cone in front and on command, the athletes will hop forward over the cone and land with the cone behind the athletes. Athletes will repeat and hop backwards. This is one repetition.

- Complete 10 repetitions in both directions

3. Single Leg Cone Hops

Athletes will stand with a cone in front and on command; the athletes will hop forward over the cone and land with the cone behind the athletes. Athletes will repeat and hop backwards. This is one repetition.

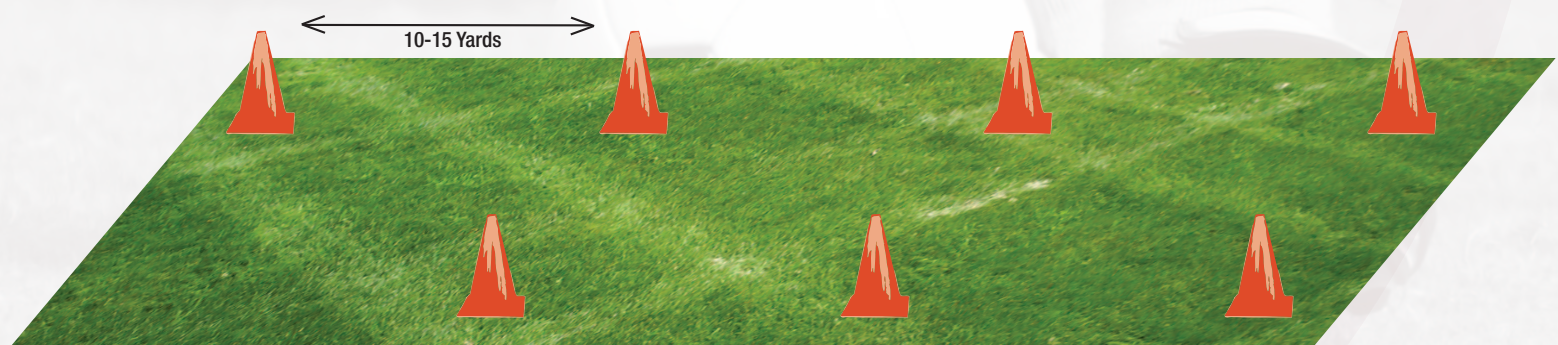
- Complete 10 repetitions on each leg in the forward/backward direction
- Complete 10 repetitions on each leg in the lateral side/side direction

4. Diagonal Runs

On command, athletes will begin to run to the first cone. The athlete will pivot off the outside foot and run to the second cone, pivoting off the outside foot. Continue to the progressive cones repeating the cutting motions to each respective cone.

- Repeat 3 times.

(Cone set-up for diagonal and explosion runs)





5. Explosion Runs

On command, athletes will run to the third cone. From the third cone, athletes quickly change direction and back pedal at a diagonal to the second cone. From second cone, athletes will explode forward to the fourth cone, diagonal back pedal to the third cone and continue the pattern through the cones.

- Repeat 3 times

6. Scissor Jumps

On command, athletes will lunge forward with his or her right leg. The athlete will then jump off the leg while propelling the left leg forward. The athlete should land in a lunge with the left foot forward. This is one repetition.

- Complete 10 repetitions on each side

7. Vertical Jumps

Athletes will stand with feet shoulder width apart with a slight bend in the knees. On command, the athletes will jump as high as possible and land with a soft landing.

- Complete 10 jumps

8. Single Leg Calf Raises

Athletes will stand on his or her right leg with hands on hips. On command, athletes will rise up on their toes and **slowly** return the heel to the ground.

- Complete 20 raises on each leg

9. Bounding

On command, athletes will bound to reference cone and back to starting cone. Maintain tight core, knee up/toes up, body control with proper arm mechanics.

- Repeat for 2 repetitions

CONDITIONS WE TREAT

- Acute Orthopedic Injuries
- Neck & Back Pain
- Work Related Injuries
- Sports Related Injuries
- Post-operative Conditions
- Repetitive Stress Injuries
- Motor Vehicle Accidents

SERVICES WE PROVIDE

- Orthopedic Manual Therapy
- Soft Tissue Mobilization
- Exercise Prescription
- Joint Mobilization/ROM
- Home Program Instruction
- Posture & Body Mechanics
- Strength and Conditioning
- Modalities (ultrasound, electrical stimulation) Iontophoresis, etc.
- Sports Rehabilitation

*Injury Prevention
and Rehabilitation*

Concussion Return to Activity Plan

Ideally, the Return to Activity Plan is coordinated between your physician and your school's Certified Athletic Trainer. We work closely with parents, coaches, and teachers insuring that each student safely returns to their previous activity.

Post Concussion Symptoms

In order to begin the Return to Activity Plan you must have no post concussion symptoms and be cleared by your physician. Post concussion symptoms include:

Seven Steps to a Safe Return

- Headache
- Difficulty Concentrating
- Easily Confused
- Slowed Thought Processes
- Difficulty With Memory
- Nausea
- Lack of Energy, Tiredness
- Dizziness, Poor Balance, Light-Headed
- Blurred Vision
- Sensitive to Light and Sounds
- Poor Sleep
- Mood Changes: Irritable, Anxious, or Tearful

You should spend 1 to 2 days at each step before advancing to the next.

Step 1: Complete Cognitive Rest: This may include staying home from school or limiting school hours (and studying) for several days. Activities requiring concentration and attention may worsen symptoms and delay recovery.

Step 2: Return To School Full-Time

Step 3: Light Exercise: This step cannot begin until you are cleared by your physician for further activity. At this point you may begin walking or riding an exercise bike. No weight-lifting.

Step 4: Running in The Gym or on The Field: No helmet or other equipment.

Step 5: Non-Contact Training Drills in Full Equipment: Weight-training can begin.

Step 6: Full Contact Practice or Training

Step 7: Play in a Game: Must be cleared by your physician before returning to play.

If post concussion symptoms occur at any step, you must stop the activity and contact us.

Depending upon the specific type and severity of the symptoms, you may be told to rest for 24 hours and then resume activity at a level one step below where you were at when your symptoms occurred.

Form developed by:
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