

Sports Medicine Section

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The Sports Medicine section of this manual is designed to accomplish two goals:

- help players stay healthy by incorporating injury prevention into training regimens
- improve coaches' confidence in dealing with common injuries encountered in Ultimate

This section contains information on the following topics:

- I. Warm-up and stretching
- II. ACL tear prevention
- III. Layout safety
- IV. Dehydration
- V. First Aid Kit assembly
- VI. Flowchart guides to managing common Ultimate injuries:
 - Ankle sprains
 - Muscle pulls
 - Knee injuries
 - Shoulder injuries
 - Concussions

For more information on these and other Sports Medicine topics for Ultimate Frisbee visit www.injurytimeout.org. Play hard, play safe.

For further general sports medicine reading for coaches check out *Sport First Aid* by Melinda J. Flegel. The book was produced by the American Sport Education Program (ASEP) and complies with National Association for Sport and Physical Education (NASPE) coaching standards.

I. Warm-up and Stretching

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Warming up before exercise is important because it prepares you mentally and physically for the game. In the past there was a strong focus on stretching, but over the last twenty years there have been mixed reviews and research regarding the benefits of statically stretching muscles.

Below are the definitions of terms used in this section:

Warm-up – the sequence of activities you do prior to full speed game play, scrimmage or practice including stretching, plyometrics and/or drills.

Static stretching – traditional stretching exercises that put tension on muscles in a lengthened position and are held statically.

Dynamic stretching – movements that take joints and muscles through the full range of motion and are not held but performed in a controlled manner, gradually progressing in speed and intensity until optimal force can be generated without injury.

Plyometrics – exercises that focus on improving balance and muscles strength.

The focus of warming up should be to gradually increase your heart rate and circulation to deliver oxygen to muscles, to increase core body temperature, and to prepare your joints and muscles for participation in your sport.

Traditionally, static stretching has been an integral part of warm-up routines. However, recent studies and reviews in sports medicine research suggest that static stretching before exercise does not prevent injury and does not improve performance. It is unclear at this time whether static stretching decreases performance. If your players enjoy static stretching and would like to continue using it in their warm-up, it most likely will not hurt their performance unless they are stretching excessively (more than a minute per muscle).

Dynamic stretching is the most important part of warming up. It prepares your joints and muscles for the movements required in your sport while increasing heart rate, circulation, and core body temperature. In Ultimate, dynamic stretching means preparing your body for just about everything including lunging, bending, reaching, jumping, landing, running, twisting, pivoting, and shuffling.

The following is an optimal warm-up for Ultimate:

- Jog/run until sweating
- Dynamic stretching (5-10 minutes)
- Plyos - not on a tournament day (5-10 minutes)
- Drills that simulate the game, increasing in intensity (5-10 minutes)

(See the topic II for a detailed description of a recommended warm-up routine)

When to Use Static Stretching

After a workout is the ideal time to use static stretching. Your players can increase their flexibility and help their muscles relax. Stretching also increases awareness of injuries to muscles and joints. Unfortunately, no conclusive evidence exists indicating that stretching decreases post-exercise soreness.

Notes for Static Stretching

- Static stretching is best done after exercise or on your off-days after a brief warm-up.
- Stretching should be done without need to maintain balance. Hold onto a chair or bench or sit on the floor.
- Ease into the stretch slowly and with control. Do not bounce.
- Breathe deeply and exhale to relax into the stretch.
- Hold each stretch for 30 seconds. Relax 10 seconds. Repeat 1-3 times per muscle.

Example Set

Muscle	Stretch
Hamstrings	stand with foot on low sturdy object, knee straight, stick chest out and lean forward

Hip Flexors	kneel in exaggerated lunge, tuck pelvis, and press hips forward
Gluteal/Piriformis	lie on your back, pull knee and ankle toward opposite shoulder
Quadriceps	lie on your side, grab leg above ankle, tighten abs and bend knee bringing heel to buttock
Calves	lunge forward, feet pointed straight ahead, back knee straight, and shift weight into back heel while lunging forward.
Side Bends	cross arms over chest and bend to the side as far as possible
Twists	sit on floor, bend one knee up and rotate trunk in same direction using shoulder to twist further
Shoulders	find a friend, put a hand on their shoulder with arm straight and turn your trunk away from your arm
Neck	roll your head in a circle

For more information, including how to test flexibility, go to www.injurytimeout.org.

References:

Gilchrist J, Mandelbaum BR, Melancon H et al. A Randomized Controlled Trial to Prevent Noncontact Anterior Cruciate Ligament Injury in Female Collegiate Soccer Players. *Am J Sports Med.* 2008;36;1476-83. www.aclprevent.com/pepprogram.htm

Rubini EC, Costa ALL, Gomes PSC. The Effects of Stretching on Strength Performance. *Sports Med* 2007;37(3):213-224

Ryan ED, Beck TW, Herda TJ, Hull HR, Hartman MJ, Stout JR, Cramer JT. Do Practical Durations of Stretching Alter Muscle Strength? A Dose-Response Study. *Med Sci Sports Exerc.* 2008 Aug;40(8):1529-37.

II. ACL Tear Prevention with the PEP Program

Adapted for Ultimate Frisbee by Jamie Nuwer MD

See video at www.injurytimeout.org

Introduction

The Santa Monica ACL Tear Prevention Program (PEP Program) showed a 70% reduction in ACL injuries in a 1500 female soccer players. This program has been modified for Ultimate by Dr. Jamie Nuwer MD. The PEP Program should take at most 20 minutes including warm-up jog, dynamic stretching and plyometrics.

Gradual increase

- Begin the exercises at 1/3 the amount listed

- After 2 weeks increase the regimen to 2/3 the amount listed
- After 2 more weeks do the full workout for the rest of the season

Set up field before warm-up

- 10 yards marker for dynamic stretching
- Set up cones for diagonal runs: 3 cones in a line 5 yards apart. 5 yards wide and offset 2.5 yards another 3 cones in a line 5 yards apart

DYNAMIC STRETCHING -- 3-5 minute warm-up jog first

F=forward, B=backward, R=right, L=left

Exercise	Form tips	Muscle groups stretched
Heel to toe raise	Rise up on toe	Calves
20 toe taps each leg	Keep leg directly underneath body	Shins
High knees (F, B)	Drive knees up	Hamstrings
Butt kicks (F, B)	Heel to butt	Quads
Slides (R, L)	Butt low	Groin and Hips
Lunge Twists	Pull knee up to chest, lunge, twist to both sides, reach back far enough to feel a stretch in your hip flexor (make sure you lean to the same side as your front leg)	Butt, lower back, abs, hip flexor, upper back, lats

If you are at a tournament and not doing plyos, add these:

Exercise	Form tips	Muscle groups stretched
Grapevine (F, B)	Fast feet	Full body
High jumps (F, B)	3 step and explode, land on 2 feet with correct form	Full body

PLYOMETRICS (Balancing, Jumping and Running) -- to be skipped on tournament day

Balancing

F=forward, B=backward, R=right, L=left

Exercise	Form tips	Muscle groups worked
2 x 20 Lunges (10 F, 10 B)	Align knee with ankle (no wobbling or caving), must be able to see your toes in front (never less than 90 degree angle at the knee joint)	Quads (F), Hamstrings (B)
2 x 10 Kickbacks each leg	Stationary leg is slightly bent with good hips-knee-ankle alignment (no wobbling or caving), Kick straight back as high as you can, use your arms to balance	Hamstrings
2 x 30 Calf raises each leg	Slowly rise up with good hips-knee-ankle alignment	Calves

Jumping

F=forward, B=backward, R=right, L=left

Exercise	Form tips	Muscle groups worked
20 hops (L, R)	Focus on landing (not speed or height)	Legs and core
20 hops (F, B)	Focus on landing (not speed or height)	Legs and core
20 single leg hops (F, B)	Focus on landing and alignment (not speed or height) – extra careful not to snap knee back to straight	Legs and core
20 scissor jumps	Focus on landing and alignment: align knee with ankle (no wobbling or caving), must be able to see your toes in front (never less than 90 degree angle at the knee joint)	Legs and core

Running

Exercise	Form tips	Skill worked
Shuttle runs for 60 sec (F, B) 2.5 yards at the cones already set up	Fast feet, short steps, tap lines with one leg and push off with other leg	Agility – forward to backward
Diagonals – 3 times through each, work on form, NOT speed	Sprint facing cone and at last step turn sideways to prepare for the turn, accelerate hard off the turn, tap lines with one leg and push off with other leg, maintain good hip-knee-ankle alignment (no caving or wobbling)	Agility - diagonal
Bounding 40 yards x 2	Drive knee up. Focus on landing and alignment.	Sprinting form – “pistons”

A final word on ACL tear prevention:

Remind your players to land lightly on the balls of both feet and bend their knees deeply when landing a jump. Also tell them that if they get hit in the air it is safer to fall over than to attempt to land on their feet. This will prevent many types of injuries.

You can help your players understand their own knee alignment by video-taping them during these exercises. It may help motivate them to improve their running, jumping, and landing mechanics.

Don't forget to encourage your athletes to go to the gym to find and fix quad-hamstring imbalances and leg versus leg imbalances. The hamstring should lift 75% of what the quad can lift. Lift each leg separately to make sure each they are equal.

III. Layout Safety

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Layouts are a common way to get injured. You can minimize this risk by teaching proper layout technique and decision-making early in the season.

Upper body

Start by teaching proper upper body and arm technique. The key is to land with most body weight on the chest and abdomen rather than the arms. The arm catching or D-ing the disc

should be extended to prevent landing with a lot of body weight on the wrist, arm, or elbow. The other arm can be extended or bent in such a way that the athlete will not land with a lot of weight on it. To allow the disc to slide easily on the ground make sure players flip their wrist so that the disc is upside down. This prevents jamming injuries.

A simple drill is to get in pairs. One player throws from standing. The other player kneels. The thrower tosses the disc to one side. The receiver leans from the knees to catch the disc with arm extended and disc upside down and lands on their chest/abdomen.

Lower body

There is a tendency to drop one knee as if jumping. To minimize knee injuries players should fully extend their legs and land on their hips and abdomen. If a player cannot master this technique, knee pads can help prevent knee injuries from repetitive banging on the ground.

Find a soft patch of grass, mud, snow, or sand. Have the player hold a disc and sprint to full speed and dive forward. The player should focus on fully extending arms and legs. They should land on their chest and hips.

Decision-making

Players should be taught to avoid any layout that may cause injury to another player. Injuries are far more frequent on defensive bids. When making a defensive bid, players should avoid laying out into an opponent's back or leg (laying out "through" the receiver). This is often a foul or "dangerous play." If a come-from-behind layout is attempted, the defender should focus on diving to the side of the receiver to hit the disc and not the player. Lateral "poach" layouts are dangerous because you cannot see the intended receiver/defender. In this situation players risk getting trampled or may seriously injure the knee, leg, or ankle of another player.

To teach this, create two lines running directly at a thrower 30-40 yards away. The offensive player sprints forward and the defensive player tries to make a play on the disc from behind. If the throw is directly in front of the receiver or to the defensive player's side then a layout bid is appropriate. If the throw is to the side opposite the defensive player a layout across the offensive player is dangerous and should not be attempted.

IV. Dehydration

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Dehydration makes you more susceptible to heat exhaustion and heat stroke. Signs of heat illness include

- excessive sweating
- increased heart rate
- cramps
- dizziness
- fatigue

- decline in mental performance

Focus on hydration 48 hours prior to the first game by increasing water intake and decreasing caffeinated, alcoholic, and carbonated beverages. A good goal for water intake is either 4 liters a day or enough water to make your urine clear. Don't go overboard since there is a small risk of low salt from over-hydration.

Being aware of urine color is an easy way for your players to monitor their hydration status during a tournament. Dark and strong smelling urine is suggestive of dehydration. Also if a player goes all day without urination, it is likely they are not getting enough fluid. Your players can also self-monitor weight before the first game and after the last game on each tournament day. A weight loss greater than or equal to 2% of body weight is a sign of significant dehydration.

V. The Ultimate First Aid Kit

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Wound supplies

Hydrogen peroxide (it stings less than other cleaners)
Antibacterial ointment
Band-aids ("sport" ones bend and stay on)
2x2 gauze pads (for cleaning wounds)
4x4 non-stick gauze pads (can be cut to any size)
Cloth tape
Duct tape
Scissors (blunt ended, the ones trainers use)
Gloves (latex-free, always use gloves when dealing with blood)

Blister supplies

Mole skin
Scissors (blunt ended, the ones trainers use)
Gloves (latex-free, always use gloves when dealing with blood)

Insect sting supplies

Tweezers
Hydrocortizone cream

RICE (Rest, Ice, Compress, Elevate) supplies

Ace wraps
Instant ice
Plastic bags for ice

Concussion supplies

SCAT card (www.athletictherapy.org/docs/SCATconcussionCard.pdf)
Pen

Emergency supplies

Directions to the nearest hospital (for any location at which you practice or play)

Emergency contact info for each player

Informed consent to first-aid treatment forms for each player (more on this below)

Prescription medication for players with asthma or severe allergy requiring EpiPen use

Emergency blanket (these are plastic, for hypothermia)

Rescue breathing mask for CPR (someone on the team should be certified in CPR)

Liability

Medications should not be given by a coach to a player. A coach may be held liable should something happen to an athlete that they gave medication to (even muscle rubs). If you intend to give any medications to a player, especially a minor, it is a good idea to include them specifically on your informed consent form (sample form in the Appendix section).

VI. Managing Common Ultimate Injuries

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Now that you've done all you can to prevent injuries and stocked your first aid kit you're ready to tackle some common injuries. The next few pages are flow-charts meant to help you through dealing with five common injuries in Ultimate. For more information on these topics and other Sports Medicine topics for Ultimate Frisbee visit www.injurytimeout.org. Play hard, play safe.