



## Indiana University Health

*IU Health Physicians Orthopedics & Sports Medicine*

### **LATE STAGE ACL RETURN TO SPORT**

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**Phase I:** Initial Recovery (0-6 weeks)

**Phase II:** Strength and Neuromuscular Control (6 weeks – 4 months)

**Phase III:** Running: (4 months – 5 months)

Criteria to Begin this Phase

- Full ROM
- <= 1+ knee effusion
- No abnormal gait patterns during fast treadmill walking for 15 min



- 30 step and holds without loss of balance or excessive motion outside of the sagittal plane
- 80% symmetry on leg press test
- 10 consecutive single leg squats to 45 degrees without loss of balance, lateral trunk lean, pelvic tilt, femoral IR or knee valgus
- No side to side deficits greater than 4 cm in Y balance test

#### Interventions

- Walk to run progression on treadmill, rubberized track or other accommodative surface
- Advance balance and strength training from Phase II

### **Phase IV:** Jumping, Landing, Light Agility (5 months-7 months)

#### Criteria to Begin this Phase

- Audibly rhythmic foot strike patterns with treadmill jogging at least 6 mph
- Able to run 2 miles continuously without increased pain, swelling, warmth or gait deviations
- 10 consecutive single leg squats >45 degrees knee flexion angle holding extra weight with at least 75% symmetry to that of uninvolved leg
- Y balance test with no side to side deficits greater than 4 cm and composite score  $\geq 94\%$

#### Interventions

- Skipping, side shuffle, carioca, light agility ladder drills, straight plane change of direction movements front to back and side to side without hard cutting; start at 50% speed
- Two legged jumping drills- jump squats, jump rope, broad jumps, box jumps, vertical, lateral and rotational jumps
- Advance to bounding and drills to encourage a safe, one leg landing such as two leg takeoff to one leg landing both horizontally and vertically
- Advance towards straight plane sprinting provided there is adequate room to slow down gradually- e.g. jogging the curves and sprinting the straight stretches on a track

### **Phase V:** Hopping and Cutting (6-9 months)

#### Criteria to Begin this Phase

- Score of 0 on iLESS testing (controls valgus, knee flexion angle and lands softly)
- Able to perform light agility drills without valgus moment or feelings of instability
- 90% symmetry on leg press test- max reps at body weight



## Interventions

- S curve running, figure 8s, progressing to 45 degree and 90 degree angle cutting
- Progress to unanticipated cutting or jumping / hopping drills – ball reaction drills, auditory or visual cues
- Advance speed and distance with sprinting
- Advance to improve distance and height during both single and multiple hopping tasks- forward, laterally, rotational; always insist on soft landing with adequate knee flexion and control of valgus moment

## **Phase VI** : Return to Sport / Injury Prevention (8-9 months +)

### Criteria to Begin this Phase-

- 90% or greater symmetry in a battery of hop tests  
-single hop, triple hop, crossover hop, vertical hop
- Functional Agility Testing  
-Modified Agility T- test : 90% symmetry, and males under 10.4 sec or less, females 10.8 sec or less  
  
-Lower Extremity Functional Run: Males 18-22 sec, Females 20-24 sec  
  
-10 yard Pro-Agility Run: Males 4.5-5.5sec, Females 5.5-6.5 sec (make sure to do in reverse direction as well to assess planting on both involved and uninvolved foot)

### Interventions:

- Continue to work on sport and position specific drills to build speed and confidence
- Athlete should demonstrate confidence and eagerness to return to play. Consider issuing a patient reported outcome measure such as ACL-RSI or TSK-11 to assess fear of movement and reinjury.
- Patient should be proficient in performance of an injury prevention program such as the PEP Program or FIFA 11+ to be used as a warm up prior to practice or competition
- Communicate with coaches/ athletic trainer to facilitate a smooth transition back to practice and eventually competition in a step by step manner (conditioning with team, unopposed drills, opposed drills, contact, scrimmage, progressive game minutes)