Rehabilitation Protocol for ACL Reconstruction

This protocol is intended to guide clinicians and patients through the post-operative course of an ACL reconstruction. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. If you have questions, contact the referring physician.

Considerations for allograft and hamstring autograft
Early weight bearing and early rehabilitation intervention vary for allograft and hamstring autograft. Please reference specific instructions below. Expectations are the early return to sport phase will be delayed.

Considerations with concomitant injuries
Be sure to follow the more conservative protocol with regards to range of motion, weight bearing, and rehab progression when there are concomitant injuries (i.e. meniscus repair).

Post-operative considerations
If you develop a fever, intense calf pain, excessive drainage from the incision, uncontrolled pain or any other symptoms you have concerns about you should call your doctor.

PHASE I: IMMEDIATE POST-OP (0-2 WEEKS AFTER SURGERY)

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th>Walking</th>
<th>Swelling Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Protect graft</td>
<td>• Initially brace locked, crutches</td>
<td>• Ice, compression, elevation (check with MD re: cold therapy)</td>
</tr>
<tr>
<td>• Reduce swelling, minimize pain</td>
<td>• May start walking without crutches as long as there is no increased pain</td>
<td>• Retrograde massage</td>
</tr>
<tr>
<td>• Restore patellar mobility</td>
<td>• Allograft and hamstring autograft continue partial weight bearing with crutches for 6 weeks unless otherwise instructed by MD</td>
<td>• Ankle pumps</td>
</tr>
<tr>
<td>• Restore full extension, gradually improve flexion</td>
<td>• May unlock brace once able to perform straight leg raise without lag</td>
<td></td>
</tr>
<tr>
<td>• Minimize arthrogenic muscle inhibition, re-establish quad control, regain full active extension</td>
<td>• May discontinue use of brace after 6 wks per MD and once adequate quad control is achieved</td>
<td>• Seated assisted knee flexion extension and heel slides with towel</td>
</tr>
<tr>
<td>• Patient education</td>
<td>• When climbing stairs, make sure you are leading with the non-surgical side when going up the stairs, make sure you are leading with the crutches and surgical side when going down the stairs</td>
<td>• Low intensity, long duration extension stretches: prone hang, heel prop</td>
</tr>
<tr>
<td>o Keep your knee straight and elevated when sitting or laying down. Do not rest with a towel placed under the knee</td>
<td></td>
<td>• Standing gastroc stretch and soleus stretch</td>
</tr>
<tr>
<td>o Do not actively kick your knee out straight; support your surgical side when performing transfers (i.e. sitting to laying down)</td>
<td></td>
<td>• Supine active hamstring stretch and supine passive hamstring stretch</td>
</tr>
<tr>
<td>o Do not pivot on your surgical side</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Strengthening**
- **Calf raises**
- **Quad sets**
- NMES high intensity (2500 Hz, 75 bursts) supine knee extended 10 sec/50 sec, 10 contractions, 2x/wk during sessions—use of clinical stimulator during session, consider home units distributed immediate post op
- **Straight leg raise**
  - **Do not perform straight leg raise if you have a knee extension lag**
- **Hip abduction**
- Multi-angle isometrics 90 and 60 deg knee extension

**Criteria to Progress**
- Knee extension ROM 0 deg
- Quad contraction with superior patella glide and full active extension
- Able to perform straight leg raise without lag

### PHASE II: INTERMEDIATE POST-OP (3-5 WEEKS AFTER SURGERY)

#### Rehabilitation Goals
- Continue to protect graft
- Maintain full extension, restore full flexion (contra lateral side)
- Normalize gait

#### Additional Intervention
*Continue with Phase I interventions*

**Range of motion/Mobility**
- **Stationary bicycle**
- Gentle stretching all muscle groups: **prone quad stretch**, **standing quad stretch**, **kneeling hip flexor stretch**

**Strengthening**
- **Prone hamstring curls**
- **Step ups** and **step ups with march**
- **Partial squat exercise**
- **Ball squats, wall slides, mini squats** from 0-60 deg
- Lumbopelvic strengthening: **bridge & unilateral bridge**, **sidelying hip external rotation-clamshell**, **bridges on physioball**, **bridge on physioball with roll-in**, **bridge on physioball alternating**, **hip hike**

**Balance/proprioception**
- Single leg standing balance (knee slightly flexed) static progressed to dynamic and level progressed to unsteady surface
- **Lateral step-overs**
- Joint position re-training

#### Criteria to Progress
- No swelling (Modified Stroke Test)
- Flexion ROM within 10 deg contra lateral side
- Extension ROM equal to contra lateral side

### PHASE III: LATE POST-OP (6-8 WEEKS AFTER SURGERY)

#### Rehabilitation Goals
- Continue to protect graft site
- Maintain full ROM
- Safely progress strengthening
- Promote proper movement patterns
- Avoid post exercise pain/swelling
- Avoid activities that produce pain at graft donor site

#### Additional Intervention
*Continue with Phase I-II Interventions*

**Range of motion/Mobility**
- Rotational tibial mobilizations if limited ROM

**Cardio**
- Elliptical, stair climber, flutter kick swimming, pool jogging

**Strengthening**
  - **Hamstring autograft can begin resisted hamstring strengthening at 12 weeks**
- Progress intensity (strength) and duration (endurance) of exercises
**The following exercises to focus on proper control with emphasis on good proximal stability**
- **Squat to chair**
- **Lateral lunges**
- **Romanian deadlift**

- Single leg progression: *partial weight bearing single leg press*, slide board lunges: retro and lateral, step ups and step ups with march, lateral step-ups, step downs, single leg squats, single leg wall slides
- **Knee Exercises** for additional exercises and descriptions

**Balance/proprioncept**
- Progress single limb balance including perturbation training

<table>
<thead>
<tr>
<th>Criteria to Progress</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No swelling/pain after exercise</td>
<td></td>
</tr>
<tr>
<td>Normal gait</td>
<td></td>
</tr>
<tr>
<td>ROM equal to contra lateral side</td>
<td></td>
</tr>
<tr>
<td>Joint position sense symmetrical (&lt;5 degree margin of error)</td>
<td></td>
</tr>
<tr>
<td>Quadriceps index ≥80%; HHD mean preferred (isokinetic testing if available)</td>
<td></td>
</tr>
</tbody>
</table>

**PHASE IV: TRANSITIONAL (9-12 WEEKS AFTER SURGERY)**

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain full ROM</td>
<td></td>
</tr>
<tr>
<td>Safely progress strengthening</td>
<td></td>
</tr>
<tr>
<td>Promote proper movement patterns</td>
<td></td>
</tr>
<tr>
<td>Avoid post exercise pain/swelling</td>
<td></td>
</tr>
<tr>
<td>Avoid activities that produce pain at graft donor site</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Intervention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Continue with Phase I-III interventions</em></td>
<td></td>
</tr>
<tr>
<td>Begin sub-max sport specific training in the sagittal plane</td>
<td></td>
</tr>
<tr>
<td>Bilateral PWB plyometrics progressed to FWB plyometrics</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria to Progress</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No episodes of instability</td>
<td></td>
</tr>
<tr>
<td>Maintain quad strength</td>
<td></td>
</tr>
<tr>
<td>10 repetitions single leg squat proper form through at least 60 deg knee flexion</td>
<td></td>
</tr>
<tr>
<td>Drop vertical jump with good control</td>
<td></td>
</tr>
<tr>
<td>KOOS-sports questionnaire &gt;70%</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Assessment</strong></td>
<td></td>
</tr>
<tr>
<td>o Quadriceps index &gt;80%; HHD mean preferred (isokinetic testing if available)</td>
<td></td>
</tr>
<tr>
<td>o Hamstring, glut med, glut max index ≥80%; HHD mean preferred (isokinetic testing for HS if available)</td>
<td></td>
</tr>
<tr>
<td>o Single leg hop test ≥75% compared to contra lateral side (earliest 12 wks)</td>
<td></td>
</tr>
</tbody>
</table>

**PHASE V: EARLY RETURN TO SPORT (3-5 MONTHS AFTER SURGERY)**

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Safely progress strengthening</td>
<td></td>
</tr>
<tr>
<td>Safely initiate sport specific training program</td>
<td></td>
</tr>
<tr>
<td>Promote proper movement patterns</td>
<td></td>
</tr>
<tr>
<td>Avoid post exercise pain/swelling</td>
<td></td>
</tr>
<tr>
<td>Avoid activities that produce pain at graft donor site</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Intervention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Continue with Phase II-IV interventions</em></td>
<td></td>
</tr>
<tr>
<td>Interval running program</td>
<td></td>
</tr>
<tr>
<td>o <strong>Return to Running Program</strong></td>
<td></td>
</tr>
<tr>
<td>Progress to plyometric and agility program (with functional brace if prescribed)</td>
<td></td>
</tr>
<tr>
<td>o <strong>Agility and Plyometric Program</strong></td>
<td></td>
</tr>
</tbody>
</table>
Criteria to Progress

- Clearance from MD and ALL milestone criteria below have been met
- Completion jog/run program without pain/swelling

Functional Assessment
  - Quad/HS/glut index ≥90%; HHD mean preferred (isokinetic testing if available)
  - Hamstring/Quad ratio ≥70%; HHD mean preferred (isokinetic testing if available)
  - Hop Testing ≥90% compared to contra lateral side

- KOOS-sports questionnaire >90%
- International Knee Committee Subjective Knee Evaluation >93
- Psych Readiness to Return to Sport (PRRS)

PHASE VI: UNRESTRICTED RETURN TO SPORT (6+ MONTHS AFTER SURGERY)

Rehabilitation Goals

- Continue strengthening and proprioceptive exercises
- Symmetrical performance with sport specific drills
- Safely progress to full sport

Additional Intervention

*Continue with Phase II-V interventions

- Multi-plane sport specific plyometrics program
- Multi-plane sport specific agility program
- Include hard cutting and pivoting depending on the individuals’ goals (~7 mo)
- Non-contact practice→ Full practice→ Full play

Criteria to Progress

- Last stage, no additional criteria

Revised January 2018

Contact

Please call 617.643.9999 with any questions specific to this protocol

References


# Functional Assessment

**Patient Name:** ___________________________  **MRN:** ___________

**Date of Surgery:** _______________  **Surgeon:** ___________________________

**Graft Type (circle):**
- Autograft
- Hamstring
- BPTB
- Quad
- Allograft
- Achilles
- BPTB
- Other

**Concomitant Injuries/Procedures:** ___________________________

<table>
<thead>
<tr>
<th>Metric</th>
<th>Operative Limb</th>
<th>Non-operative Limb</th>
<th>Limb Symmetry Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of motion (X-0-X)</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Pain (0-10)</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Knee Effusion</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Hamstring Strength (average/3 trials)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quadriceps Strength (average/3 trials)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hamstring : Quadriceps Ratio (as above)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hop Testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-leg Hop for Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triple Hop for Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crossover Hop for Distance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical Jump</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y-Balance Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated 1 RM (single leg press)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psych. Readiness to Return to Sport (PRRS)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ready to jog?**  YES  NO

**Ready to return to sport?**  YES  NO
Recommendations: ________________________________________________________________

Examiner: ________________________________________________________________

**Range of motion** is recorded in X-0-X format: for example, if a patient has 6 degrees of hyperextension and 135 degrees of flexion, ROM would read: 6-0-135. If the patient does not achieve hyperextension, and is lacking full extension by 5 degrees, the ROM would simply read: 5-135.

**Pain** is recorded as an average value over the past 2 weeks, from 0-10. 0 is absolutely no pain, and 10 is the worst pain ever experienced.

**Knee Effusion** is tested using the Modified Stroke Test. An upstroke is applied to medial side of knee, followed by downstroke on lateral side. The therapist observes for movement of fluid with each stroke.

- 0: no wave produced with downward stroke
- Trace: small wave of fluid on medial side of knee
- 1+: large bulge of fluid on medial side of knee with downstroke
- 2+: Effusion returns to medial side of knee without downstroke
- 3+: inability to move effusion from medial side of knee

**Quadriceps strength** is measured using a handheld dynamometer. The patient is secured in 60 degrees of knee flexion and the HHD is placed between the patient’s tibia and the resistance arm, 1 inch proximal to the midline between the malleoli. The patient is instructed to apply a maximal isometric effort force the HHD and the average of 3 trials is recorded for each limb.

**Hamstring strength** is measured using a handheld dynamometer. The patient is secured in 60 degrees of knee flexion and the HHD is placed between the patient’s lower leg and the resistance arm, 1 inch proximal to the midline between the malleoli. The patient is instructed to apply a maximal isometric force against the HHD and the average of 3 trials is recorded for each limb.

**Hamstring:quadriceps ratio** is calculated for each limb based on the average of 3 trials for flexion and extension, respectively. The average isometric hamstring strength is divided by the average quadriceps strength.

**Hop testing** is performed per standardized testing guidelines. The average of 3 trials is recorded to the nearest centimeter for each limb.
Return to Running Program

This program is designed as a guide for clinicians and patients through a progressive return-to-run program. Patients should demonstrate > 80% on the Functional Assessment prior to initiating this program (after a knee ligament or meniscus repair). Specific recommendations should be based on the needs of the individual and should consider clinical decision making. If you have questions, contact the referring physician.

**PHASE I: WARM UP WALK 15 MINUTES, COOL DOWN WALK 10 MINUTES**

<table>
<thead>
<tr>
<th>Day</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>W5/J1x5</td>
<td>W5/J1x5</td>
<td>W4/J2x5</td>
<td>W4/J2x5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 2</td>
<td>W3/J3x5</td>
<td>W3/J3x5</td>
<td>W2/J4x5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 3</td>
<td>W2/J4x5</td>
<td>W1/J5x5</td>
<td>W1/J5x5</td>
<td>Return to Run</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: W=walk, J=jog

**Only progress if there is no pain or swelling during or after the run**

**PHASE II: WARM UP WALK 15 MINUTES, COOL DOWN WALK 10 MINUTES**

<table>
<thead>
<tr>
<th>Week</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20 min</td>
<td>20 min</td>
<td></td>
<td>20 min</td>
<td></td>
<td>25 min</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>25 min</td>
<td>25 min</td>
<td></td>
<td>30 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>30 min</td>
<td>30 min</td>
<td></td>
<td>35 min</td>
<td>35 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>35 min</td>
<td>40 min</td>
<td></td>
<td></td>
<td>40 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>40 min</td>
<td>45 min</td>
<td></td>
<td>45 min</td>
<td>45 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>50 min</td>
<td>50 min</td>
<td></td>
<td>50 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>55 min</td>
<td>55 min</td>
<td></td>
<td>55 min</td>
<td></td>
<td>60 min</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>60 min</td>
<td>60 min</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Recommendations
- Runs should occur on softer surfaces during Phase I
- Non-impact activity on off days
- Goal is to increase mileage and then increase pace; avoid increasing two variables at once
- 10% rule: no more than 10% increase in mileage per week
 Agility and Plyometric Program

This program is designed as a guide for clinicians and patients through a progressive series of agility and plyometric exercises to promote successful return to sport and reduce injury risk. Patients should demonstrate > 80% on the Functional Assessment prior to initiating this program. Specific intervention should be based on the needs of the individual and should consider clinical decision making. If you have questions, contact the referring physician.

**PHASE I: ANTERIOR PROGRESSION**

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th>Agility</th>
<th>Plyometrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Safely recondition the knee</td>
<td>• Forward run</td>
<td>• Shuttle press: Double leg → alternating leg → single leg jumps</td>
</tr>
<tr>
<td>• Provide a logical sequence of progressive drills for pre-sports conditioning</td>
<td>• Backward run</td>
<td>• Double leg:</td>
</tr>
<tr>
<td></td>
<td>• Forward lean in to a run</td>
<td>• Jumps on to a box → jump off of a box → jumps on/off box</td>
</tr>
<tr>
<td></td>
<td>• Forward run with 3-step deceleration</td>
<td>• Forward jumps, forward jump to broad jump</td>
</tr>
<tr>
<td></td>
<td>• Figure 8 run</td>
<td>• Tuck jumps</td>
</tr>
<tr>
<td></td>
<td>• Circle run</td>
<td>• Backward/forward hops over line/cone</td>
</tr>
<tr>
<td></td>
<td>• Ladder</td>
<td>• Progressive single leg jump tasks</td>
</tr>
<tr>
<td>Criteria to Progress</td>
<td>No increase in pain or swelling</td>
<td>• Bounding run</td>
</tr>
<tr>
<td></td>
<td>Pain-free during loading activities</td>
<td>• Scissor jumps</td>
</tr>
<tr>
<td></td>
<td>Demonstrates proper movement patterns</td>
<td>• Backward/forward hops over line/cone</td>
</tr>
</tbody>
</table>

**PHASE II: LATERAL PROGRESSION**

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th>Agility</th>
<th>Plyometrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Safely recondition the knee</td>
<td>• Side shuffle</td>
<td>• Double leg:</td>
</tr>
<tr>
<td>• Provide a logical sequence of progressive drills for the Level 1 sport athlete</td>
<td>• Carioca</td>
<td>• Lateral jumps over line/cone</td>
</tr>
<tr>
<td></td>
<td>• Crossover steps</td>
<td>• Lateral tuck jumps over cone</td>
</tr>
<tr>
<td></td>
<td>• Shuttle run</td>
<td>• Single leg (these exercises are challenging and should be considered for more advanced athletes):</td>
</tr>
<tr>
<td></td>
<td>• Zig-zag run</td>
<td>• Lateral jumps over line/cone</td>
</tr>
<tr>
<td></td>
<td>• Ladder</td>
<td>• Lateral jumps with sport cord</td>
</tr>
<tr>
<td>Criteria to Progress</td>
<td>No increase in pain or swelling</td>
<td>• Progressive single leg jump tasks</td>
</tr>
<tr>
<td></td>
<td>Pain-free during loading activities</td>
<td>• Bounding run</td>
</tr>
<tr>
<td></td>
<td>Demonstrates proper movement patterns</td>
<td>• Scissor jumps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Backward/forward hops over line/cone</td>
</tr>
</tbody>
</table>
### PHASE III: MULTI-PLANAR PROGRESSION

<table>
<thead>
<tr>
<th>Rehabilitation Goals</th>
<th>• Challenge the Level 1 sport athlete in preparation for final clearance for return to sport</th>
</tr>
</thead>
</table>
| **Agility** *Continue with Phase I-II interventions* | • Box drill  
• Star drill  
• Side shuffle with hurdles |
| **Plyometrics** *Continue with Phase I-II interventions* | • Box jumps with quick change of direction  
• 90 and 180 degree jumps |
| **Criteria to Progress** | • Clearance from MD  
• **Functional Assessment**  
  o Quad/HS/glut index ≥90% contra lateral side (isokinetic testing if available)  
  o Hamstring/Quad ratio ≥70%  
  o Hop Testing ≥90% contralateral side  
• KOOS-sports questionnaire >90%  
• International Knee Committee Subjective Knee Evaluation >93  
• Psych Readiness to Return to Sport (PRRS) |
KOOS KNEE SURVEY

Today’s date: ______/_______/_______ Date of birth: ______/_______/_______

Name: _______________________________________________________

INSTRUCTIONS: This survey asks for your view about your knee. This information will help us keep track of how you feel about your knee and how well you are able to perform your usual activities. Answer every question by ticking the appropriate box, only one box for each question. If you are unsure about how to answer a question, please give the best answer you can.

Symptoms
These questions should be answered thinking of your knee symptoms during the last week.

S1. Do you have swelling in your knee?
   Never □ Rarely □ Sometimes □ Often □ Always □

S2. Do you feel grinding, hear clicking or any other type of noise when your knee moves?
   Never □ Rarely □ Sometimes □ Often □ Always □

S3. Does your knee catch or hang up when moving?
   Never □ Rarely □ Sometimes □ Often □ Always □

S4. Can you straighten your knee fully?
   Always □ Often □ Sometimes □ Rarely □ Never □

S5. Can you bend your knee fully?
   Always □ Often □ Sometimes □ Rarely □ Never □

Stiffness
The following questions concern the amount of joint stiffness you have experienced during the last week in your knee. Stiffness is a sensation of restriction or slowness in the ease with which you move your knee joint.

S6. How severe is your knee joint stiffness after first wakening in the morning?
   None □ Mild □ Moderate □ Severe □ Extreme □

S7. How severe is your knee stiffness after sitting, lying or resting later in the day?
   None □ Mild □ Moderate □ Severe □ Extreme □
Knee injury and Osteoarthritis Outcome Score (KOOS), English version LK1.0

**Pain**
P1. How often do you experience knee pain?


What amount of knee pain have you experienced the **last week** during the following activities?

P2. Twisting/pivoting on your knee

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P3. Straightening knee fully

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P4. Bending knee fully

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P5. Walking on flat surface

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P6. Going up or down stairs

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P7. At night while in bed

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P8. Sitting or lying

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

P9. Standing upright

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

**Function, daily living**
The following questions concern your physical function. By this we mean your ability to move around and to look after yourself. For each of the following activities please indicate the degree of difficulty you have experienced in the **last week** due to your knee.

A1. Descending stairs

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme

A2. Ascending stairs

[ ] None  [ ] Mild  [ ] Moderate  [ ] Severe  [ ] Extreme
Knee injury and Osteoarthritis Outcome Score (KOOS), English version LK1.0

For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your knee.

A3. Rising from sitting
   None  Mild  Moderate  Severe  Extreme

A4. Standing
   None  Mild  Moderate  Severe  Extreme

A5. Bending to floor/pick up an object
   None  Mild  Moderate  Severe  Extreme

A6. Walking on flat surface
   None  Mild  Moderate  Severe  Extreme

A7. Getting in/out of car
   None  Mild  Moderate  Severe  Extreme

A8. Going shopping
   None  Mild  Moderate  Severe  Extreme

A9. Putting on socks/stockings
   None  Mild  Moderate  Severe  Extreme

A10. Rising from bed
    None  Mild  Moderate  Severe  Extreme

A11. Taking off socks/stockings
    None  Mild  Moderate  Severe  Extreme

A12. Lying in bed (turning over, maintaining knee position)
    None  Mild  Moderate  Severe  Extreme

A13. Getting in/out of bath
    None  Mild  Moderate  Severe  Extreme

A14. Sitting
    None  Mild  Moderate  Severe  Extreme

A15. Getting on/off toilet
    None  Mild  Moderate  Severe  Extreme
For each of the following activities please indicate the degree of difficulty you have experienced in the last week due to your knee.

A16. Heavy domestic duties (moving heavy boxes, scrubbing floors, etc)

None     Mild     Moderate     Severe     Extreme

A17. Light domestic duties (cooking, dusting, etc)

None     Mild     Moderate     Severe     Extreme

Function, sports and recreational activities
The following questions concern your physical function when being active on a higher level. The questions should be answered thinking of what degree of difficulty you have experienced during the last week due to your knee.

SP1. Squatting

None     Mild     Moderate     Severe     Extreme

SP2. Running

None     Mild     Moderate     Severe     Extreme

SP3. Jumping

None     Mild     Moderate     Severe     Extreme

SP4. Twisting/pivoting on your injured knee

None     Mild     Moderate     Severe     Extreme

SP5. Kneeling

None     Mild     Moderate     Severe     Extreme

Quality of Life

Q1. How often are you aware of your knee problem?

Never     Monthly     Weekly     Daily     Constantly

Q2. Have you modified your life style to avoid potentially damaging activities to your knee?

Not at all     Mildly     Moderately     Severely     Totally

Q3. How much are you troubled with lack of confidence in your knee?

Not at all     Mildly     Moderately     Severely     Extremely

Q4. In general, how much difficulty do you have with your knee?

None     Mild     Moderate     Severe     Extreme

*Thank you very much for completing all the questions in this questionnaire.*
2000 IKDC SUBJECTIVE KNEE EVALUATION FORM

Your Full Name__________________________

Today's Date: Day/ Month/ Year
Date of Injury: Day/ Month/ Year

SYMPTOMS*:
*Grade symptoms at the highest activity level at which you think you could function without significant symptoms, even if you are not actually performing activities at this level.

1. What is the highest level of activity that you can perform without significant knee pain?
   - ☐ Very strenuous activities like jumping or pivoting as in basketball or soccer
   - ☐ Strenuous activities like heavy physical work, skiing or tennis
   - ☐ Moderate activities like moderate physical work, running or jogging
   - ☐ Light activities like walking, housework or yard work
   - ☐ Unable to perform any of the above activities due to knee pain

2. During the past 4 weeks, or since your injury, how often have you had pain?

   Never
   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Constant

   ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

3. If you have pain, how severe is it?

   No pain
   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Worst pain imaginable

   ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

4. During the past 4 weeks, or since your injury, how stiff or swollen was your knee?

   ☐ Not at all
   ☐ Mildly
   ☐ Moderately
   ☐ Very
   ☐ Extremely

5. What is the highest level of activity you can perform without significant swelling in your knee?

   ☐ Very strenuous activities like jumping or pivoting as in basketball or soccer
   ☐ Strenuous activities like heavy physical work, skiing or tennis
   ☐ Moderate activities like moderate physical work, running or jogging
   ☐ Light activities like walking, housework or yard work
   ☐ Unable to perform any of the above activities due to knee swelling

6. During the past 4 weeks, or since your injury, did your knee lock or catch?

   ☐ Yes    ☐ No

7. What is the highest level of activity you can perform without significant giving way in your knee?

   ☐ Very strenuous activities like jumping or pivoting as in basketball or soccer
   ☐ Strenuous activities like heavy physical work, skiing or tennis
   ☐ Moderate activities like moderate physical work, running or jogging
   ☐ Light activities like walking, housework or yard work
   ☐ Unable to perform any of the above activities due to giving way of the knee
SPORTS ACTIVITIES:

8. What is the highest level of activity you can participate in on a regular basis?

- Very strenuous activities like jumping or pivoting as in basketball or soccer
- Strenuous activities like heavy physical work, skiing or tennis
- Moderate activities like moderate physical work, running or jogging
- Light activities like walking, housework or yard work
- Unable to perform any of the above activities due to knee

9. How does your knee affect your ability to:

<table>
<thead>
<tr>
<th></th>
<th>Not difficult at all</th>
<th>Minimally difficult</th>
<th>Moderately Difficult</th>
<th>Extremely difficult</th>
<th>Unable to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Go up stairs</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>b. Go down stairs</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>c. Kneel on the front of your knee</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
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<tr>
<td>d. Squat</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>e. Sit with your knee bent</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>f. Rise from a chair</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
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<tr>
<td>g. Run straight ahead</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>h. Jump and land on your involved leg</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>i. Stop and start quickly</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
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</table>

FUNCTION:

10. How would you rate the function of your knee on a scale of 0 to 10 with 10 being normal, excellent function and 0 being the inability to perform any of your usual daily activities which may include sports?

FUNCTION PRIOR TO YOUR KNEE INJURY:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
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<th>3</th>
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</table>

No limitation in daily activities

CURRENT FUNCTION OF YOUR KNEE:

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No limitation in daily activities
Psychological Readiness to Return to Sport

Patient Name: ________________________________      MRN: __________

Date of Surgery: _____________________________   Surgeon: ________________________________

Surgery: _________________________________

Please rate your confidence to return to your sport on a scale from 0 – 100
Example: 0 = No confidence at all
         50 = Moderate confidence
         100 = Complete confidence

1. My overall confidence to play is _____
2. My confidence to play without pain is _____
3. My confidence to give 100% effort is _____
4. My confidence to not concentrate on the injury is _____
5. My confidence in the injured body part to handle demands of the situation is _____
6. My confidence in my skill level/ability is _____
   Total: _____
   Score: _____

Examiner: _________________________________