Rehabilitation Protocol for ACL Patella Tendon Autograft Reconstruction

This protocol is intended to guide clinicians and patients through the post-operative course of an ACL reconstruction with a patella tendon autograft. 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 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>
</tr>
</thead>
<tbody>
<tr>
<td>• Protect graft</td>
</tr>
<tr>
<td>• Reduce swelling, minimize pain</td>
</tr>
<tr>
<td>• Restore patellar mobility</td>
</tr>
<tr>
<td>• Restore full extension, gradually improve flexion</td>
</tr>
<tr>
<td>• Minimize arthrogenic muscle inhibition, re-establish quad control, regain full active extension</td>
</tr>
<tr>
<td>• Patient education</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>
</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>
</tr>
<tr>
<td>o Do not pivot on your surgical side</td>
</tr>
</tbody>
</table>

Weight Bearing

Walking

- Initially brace locked, crutches
- May start walking without crutches as long as there is no increased pain
- May unlock brace once able to perform straight leg raise without lag
- May discontinue use of brace after 6 wks per MD and once adequate quad control is achieved
- 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

Intervention

Swelling Management

- Ice, compression, elevation (check with MD re: cold therapy)
- Retrograde massage
- Ankle pumps

Range of motion/Mobility

- Patellar mobilizations: superior/inferior and medial/lateral
  - **Patellar mobilizations are heavily emphasized in the early post-operative phase following patella tendon autograft**
- Seated assisted knee flexion extension and heel slides with towel
- Low intensity, long duration extension stretches: prone hang, heel prop
- Standing gastroc stretch and soleus stretch
- Supine active hamstring stretch and supine passive hamstring stretch

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/side leg lift
- 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: prune 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**
- Gym equipment: leg press machine, seated hamstring curl machine and hamstring curl machine, hip abductor and adductor machine, hip extension machine, roman chair, seated calf machine
- 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, 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/propr proprioception**

- Progress single limb balance including perturbation training

**Criteria to Progress**

- No swelling/pain after exercise
- Normal gait
- ROM equal to contra lateral side
- Joint position sense symmetrical (<5 degree margin of error)
- Quadriceps index ≥80%; HHD mean preferred (isokinetic testing if available)

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

**Rehabilitation Goals**

- 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-III interventions*

- Begin sub-max sport specific training in the sagittal plane
- Bilateral PWB plyometrics progressed to FWB plyometrics

**Criteria to Progress**

- No episodes of instability
- Maintain quad strength
- 10 repetitions single leg squat proper form through at least 60 deg knee flexion
- Drop vertical jump with good control
- **KOOS-sports questionnaire** >70%

**Functional Assessment**

- Quadriceps index >80%; HHD mean preferred (isokinetic testing if available)
- Hamstring, glut med, glut max index ≥80%; HHD mean preferred (isokinetic testing for HS if available)
- Single leg hop test ≥75% compared to contra lateral side (earliest 12 wks)

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

**Rehabilitation Goals**

- Safely progress strengthening
- Safely initiate sport specific training program
- Promote proper movement patterns
- Avoid post exercise pain/swelling
- Avoid activities that produce pain at graft donor site

**Additional Intervention**

*Continue with Phase II-IV interventions*

- Interval running program
- Progress to plyometric and agility program (with functional brace if prescribed)

**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

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**Contact**

Please call 617.643.9999 with any questions specific to this protocol

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**References**


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>
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</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>
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<tbody>
<tr>
<td>1</td>
<td>20 min</td>
<td>20 min</td>
<td>20 min</td>
<td>20 min</td>
<td>25 min</td>
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<tr>
<td>2</td>
<td>25 min</td>
<td>25 min</td>
<td>30 min</td>
<td>35 min</td>
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<td>3</td>
<td>30 min</td>
<td>30 min</td>
<td>35 min</td>
<td>35 min</td>
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<tr>
<td>4</td>
<td>35 min</td>
<td>40 min</td>
<td>40 min</td>
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<tr>
<td>5</td>
<td>40 min</td>
<td>45 min</td>
<td>45 min</td>
<td>45 min</td>
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<tr>
<td>6</td>
<td>50 min</td>
<td>50 min</td>
<td>50 min</td>
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<tr>
<td>7</td>
<td>55 min</td>
<td>55 min</td>
<td>55 min</td>
<td>60 min</td>
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<tr>
<td>8</td>
<td>60 min</td>
<td>60 min</td>
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</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 after ACL Reconstruction

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**

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

**PHASE II: LATERAL PROGRESSION**

| Rehabilitation Goals | • Safely recondition the knee  
|                      | • Provide a logical sequence of progressive drills for the Level 1 sport athlete  
| **Agility** *Continue with Phase I interventions* | • Side shuffle  
|                      | • Carioca  
|                      | • Crossover steps  
|                      | • Shuttle run  
|                      | • Zig-zag run  
|                      | • Ladder  
| **Plyometrics** *Continue with Phase I interventions* | • Double leg:  
|                      |   • Lateral jumps over line/cone  
|                      |   • Lateral tuck jumps over cone  
|                      | • Single leg:  
|                      |   • Lateral jumps over line/cone  
|                      |   • Lateral jumps with sport cord  

### Criteria to Progress
- No increase in pain or swelling
- Pain-free during loading activities
- Demonstrates proper movement patterns

## 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

<table>
<thead>
<tr>
<th>Criteria to Progress</th>
<th>Clearance from MD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Assessment</td>
</tr>
<tr>
<td></td>
<td>Quad/HS/glut index ≥90% contra lateral side (isokinetic testing if available)</td>
</tr>
<tr>
<td></td>
<td>Hamstring/Quad ratio ≥70%</td>
</tr>
<tr>
<td></td>
<td>Hop Testing ≥90% contralateral side</td>
</tr>
<tr>
<td></td>
<td>KOOS-sports questionnaire &gt;90%</td>
</tr>
<tr>
<td></td>
<td>International Knee Committee Subjective Knee Evaluation &gt;93</td>
</tr>
<tr>
<td></td>
<td>Psych Readiness to Return to Sport (PRRS)</td>
</tr>
</tbody>
</table>
## ACL Reconstruction-Functional Assessment

<table>
<thead>
<tr>
<th></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>
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<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>
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<td></td>
<td></td>
</tr>
<tr>
<td>Single-leg Hop for Distance</td>
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<tr>
<td>Triple Hop for Distance</td>
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<td></td>
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<tr>
<td>Crossover Hop for Distance</td>
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<tr>
<td>Vertical Jump</td>
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<tr>
<td>Y-Balance Test</td>
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<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:** _______________________________

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**Massachusetts General Hospital Sports Medicine**
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.
2000

IKDC

KNEE FORMS
INTRODUCTION

The entire IKDC form, which includes a demographic form, current health assessment form, subjective knee evaluation form, knee history form, surgical documentation form, and knee examination form, may be used as separate forms. The knee history form and surgical documentation form are provided for convenience. All researchers are required to complete the subjective knee evaluation and knee examination form. Instructions for scoring the subjective knee evaluation form and the knee examination form are provided on the back of the forms.

TABLE OF CONTENTS

1. Demographic Form
2. Current Health Assessment Form
3. Subjective Knee Evaluation Form
4. Knee History Form
5. Surgical Documentation Form
6. Knee Examination Form
IKDC DEMOGRAPHIC FORM

Your Full Name ______________________________________________________

Your Date of Birth  _____________/___________/___________
          Day      Month                Year

Your Social Security Number  ____-___-_____    Your Gender: □ Male    □ Female

Occupation __________________________________________________________

Today’s Date  _____________/___________/___________
          Day      Month                Year

The following is a list of common health problems. Please indicate “Yes” or “No” in the first column, and then skip to the next item. If you do have the problem, please indicate in the second column if you receive medications or some other type of treatment for the problem. In the last column, indicate if the problem limits any of your activities.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Do you have the problem?</th>
<th>Do you receive treatment for it?</th>
<th>Does it limit your activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
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<td></td>
</tr>
<tr>
<td>High blood pressure</td>
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<tr>
<td>Asthma or pulmonary disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ulcer or stomach disease</td>
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<td></td>
<td></td>
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<tr>
<td>Bowel disease</td>
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<td></td>
<td></td>
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<tr>
<td>Kidney disease</td>
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<tr>
<td>Liver disease</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Anemia or other blood disease</td>
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<tr>
<td>Overweight</td>
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<tr>
<td>Cancer</td>
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<tr>
<td>Depression</td>
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<tr>
<td>Osteoarthritis, degenerative arthritis</td>
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<td></td>
<td></td>
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<tr>
<td>Rheumatoid arthritis</td>
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<td></td>
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<tr>
<td>Back pain</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lyme disease</td>
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<td></td>
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<tr>
<td>Other medical problem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcoholism</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Do you smoke cigarettes?
   - [ ] Yes
   - [ ] No, I quit in the last six months.
   - [ ] No, I quit more than six months ago.
   - [ ] No, I have never smoked.

2. Your height ________  [ ] centimeters  [ ] inches

3. Your weight ________  [ ] kilograms  [ ] pounds

4. Your race (indicate all that apply)
   - [ ] White
   - [ ] Black or African-American
   - [ ] Hispanic
   - [ ] Asian or Pacific Islander
   - [ ] Native American Indian
   - [ ] Other

5. How much school have you completed?
   - [ ] Less than high school
   - [ ] Graduated from high school
   - [ ] Some college
   - [ ] Graduated from college
   - [ ] Postgraduate school or degree

6. Activity level
   - [ ] Are you a high competitive sports person?
   - [ ] Are you well-trained and frequently sporting?
   - [ ] Sporting sometimes
   - [ ] Non-sporting
IKDC CURRENT HEALTH ASSESSMENT FORM *

Your Full Name ______________________________________________________

Your Date of Birth _________/___________/___________

Day      Month                Year

Today’s Date _____________/___________/___________

Day      Month                Year

1. In general, would you say your health is: ☐Excellent ☐Very Good ☐Good ☐Fair ☐Poor

2. Compared to one year ago, how would you rate your health in general now?

☐Much better now than 1 year ago   ☐Somewhat better now than 1 year ago   ☐About the same as 1 year ago

☐Somewhat worse now than 1 year ago   ☐Much worse now than 1 year ago

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes, Limited A Lot</th>
<th>Yes, Limited A Little</th>
<th>No, Not Limited At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf</td>
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<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c. Lifting or carrying groceries</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d. Climbing several flights of stairs</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e. Climbing one flight of stairs</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>f. Bending, kneeling or stooping</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>g. Walking more than a mile</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>h. Walking several blocks</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>i. Walking one block</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>j. Bathing or dressing yourself</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

YES NO

a. Cut down on the amount of time you spent on work or other activities ☐ ☐

b. Accomplished less than you would like ☐ ☐

c. Were limited in the kind of work or other activities ☐ ☐

d. Had difficulty performing the work or other activities (for example, it took extra effort) ☐ ☐

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

YES NO

a. Cut down on the amount of time you spent on work or other activities ☐ ☐

b. Accomplished less than you would like ☐ ☐

c. Didn’t do work or other activities as carefully as usual ☐ ☐
6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

☐ Not At All     ☐ Slightly     ☐ Moderately     ☐ Quite a Bit     ☐ Extremely

7. How much bodily pain have you had during the past 4 weeks?

☐ None     ☐ Very Mild     ☐ Mild     ☐ Moderate     ☐ Severe     ☐ Very Severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

☐ Not at All     ☐ A Little Bit     ☐ Moderately     ☐ Quite a Bit     ☐ Extremely

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>A good bit of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Did you feel full of pep?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Have you been very nervous?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Have you felt calm and peaceful?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Did you have a lot of energy?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Have you felt down-hearted and blue?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Did you feel worn out?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Have you been a happy person</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Did you feel tired?</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

☐ All of the time     ☐ Most of the time     ☐ Some of the time     ☐ A little of the time     ☐ None of the time

11. How TRUE or FALSE is each of the following statements for you?

<table>
<thead>
<tr>
<th>Definitely True</th>
<th>Mostly True</th>
<th>Don't Know</th>
<th>Mostly False</th>
<th>Definitely False</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I seem to get sick a little easier than other people</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. I am as healthy as anybody I know</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. I expect my health to get worse</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. My health is excellent</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*This form includes questions from the SF-36™ Health Survey. Reproduced with the permission of the Medical Outcomes Trust, Copyright © 1992.*
2000 IKDC SUBJECTIVE KNEE EVALUATION FORM

Your Full Name______________________________________________________

Today's Date: ______/_______/______ Date of Injury: ______/________/_____

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?
   - 4 [ ] Very strenuous activities like jumping or pivoting as in basketball or soccer
   - 3 [ ] Strenuous activities like heavy physical work, skiing or tennis
   - 2 [ ] Moderate activities like moderate physical work, running or jogging
   - 1 [ ] Light activities like walking, housework or yard work
   - 0 [ ] 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?
   - 0 [ ] Never
   - 1 [ ]
   - 2 [ ]
   - 3 [ ]
   - 4 [ ]
   - 5 [ ]
   - 6 [ ]
   - 7 [ ]
   - 8 [ ]
   - 9 [ ]
   - 10 [ ] Constant

3. If you have pain, how severe is it?
   - 0 [ ] No pain
   - 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?
   - 4 [ ] Not at all
   - 3 [ ] Mildly
   - 2 [ ] Moderately
   - 1 [ ] Very
   - 0 [ ] Extremely

5. What is the highest level of activity you can perform without significant swelling in your knee?
   - 4 [ ] Very strenuous activities like jumping or pivoting as in basketball or soccer
   - 3 [ ] Strenuous activities like heavy physical work, skiing or tennis
   - 2 [ ] Moderate activities like moderate physical work, running or jogging
   - 1 [ ] Light activities like walking, housework, or yard work
   - 0 [ ] 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?
   - 4 [ ] Very strenuous activities like jumping or pivoting as in basketball or soccer
   - 3 [ ] Strenuous activities like heavy physical work, skiing or tennis
   - 2 [ ] Moderate activities like moderate physical work, running or jogging
   - 1 [ ] Light activities like walking, housework, or yard work
   - 0 [ ] 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>
</tr>
<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>
</tr>
<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>
</tr>
</tbody>
</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></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No limitation in daily activities</td>
</tr>
</tbody>
</table>

CURRENT FUNCTION OF YOUR KNEE:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No limitation in daily activities</td>
</tr>
</tbody>
</table>
Several methods of scoring the IKDC Subjective Knee Evaluation Form were investigated. The results indicated that summing the scores for each item performed as well as more sophisticated scoring methods.

The responses to each item are scored using an ordinal method such that a score of 0 is given to responses that represent the lowest level of function or highest level of symptoms. For example, item 1, which is related to the highest level of activity without significant pain is scored by assigning a score of 0 to the response “Unable to perform any of the above activities due to knee pain” and a score of 4 to the response “Very strenuous activities like jumping or pivoting as in basketball or soccer”. For item 2, which is related to the frequency of pain over the past 4 weeks, the responses are reverse-scored such that “Constant” is assigned a score of 0 and “Never” is assigned a score of 10. Similarly, for item 3, the responses are reversed-scored such that “Worst pain imaginable” is assigned a score of 0 and “No pain” is assigned a score of 10. Note: previous versions of the form had a minimum item score of 1 (for example, ranging from 1 to 11). In the most recent version, all items now have a minimum score of 0 (for example, 0 to 10). To score these prior versions, you would need to transform each item to the scaling for the current version.

The IKDC Subjective Knee Evaluation Form is scored by summing the scores for the individual items and then transforming the score to a scale that ranges from 0 to 100. Note: The response to item 10a “Function Prior to Knee Injury” is not included in the overall score. To score the current form of the IKDC, simply add the score for each item (the small number by each item checked) and divide by the maximum possible score which is 87:

\[
\text{IKDC Score} = \left( \frac{\text{Sum of Items}}{\text{Maximum Possible Score}} \right) \times 100
\]

Thus, for the current version, if the sum of scores for the 18 items is 45 and the patient responded to all the items, the IKDC Score would be calculated as follows:

\[
\text{IKDC Score} = \left( \frac{45}{87} \right) \times 100
\]

\[
\text{IKDC Score} = 51.7
\]

The transformed score is interpreted as a measure of function such that higher scores represent higher levels of function and lower levels of symptoms. A score of 100 is interpreted to mean no limitation with activities of daily living or sports activities and the absence of symptoms.

The IKDC Subjective Knee Form score can be calculated when there are responses to at least 90% of the items (i.e. when responses have been provided for at least 16 items). In the original scoring instructions for the IKDC Subjective Knee Form, missing values are replaced by the average score of the items that have been answered. However, this method could slightly over- or under-estimate the score depending on the maximum value of the missing item(s) (2, 5 or 11 points). Therefore, in the revised scoring procedure for the current version of a form with up to two missing values, the IKDC Subjective Knee Form Score is calculated as (sum of the completed items) / (maximum possible sum of the completed items) * 100. This method of scoring the IKDC Subjective Knee Form is more accurate than the original scoring method.

A scoring spreadsheet is also available at: www.sportsmed.org/research/index.asp This spreadsheet uses the current form scores and the revised scoring method for calculating scores with missing values.
Patient Name _________________________________________  Birthdate _____/_____/______

Date of Injury _____/_____/_____  Date of Initial Exam _____/_____/_____  Today’s Date _____/_____/_____  

Involved Knee:  □ Right  □ Left

Contralateral:  □ Normal  □ Nearly Normal  □ Abnormal  □ Severely abnormal

Onset of Symptoms:  (date) _____/_____/______

Chief Complaint: __________________________________________________________________________________________

Activity at Injury:  □ ADL  □ Sports  □ Traffic  □ Work

Mechanism of Injury:

□ Non-traumatic gradual onset  □ Traumatic non-contact onset
□ Non-traumatic sudden onset  □ Traumatic contact onset

Previous Surgery:

Type of Surgery:  (check all that apply)

Meniscal Surgery

□ Medial meniscectomy  □ Lateral meniscectomy
□ Medial meniscal repair  □ Lateral meniscal repair
□ Medial meniscal transplant  □ Lateral meniscal transplant

Ligament Surgery

□ ACL Repair  □ Intraarticular ACL reconstruction  □ Extraarticular ACL reconstruction
□ PCL Repair  □ Intraarticular PCL reconstruction  □ Posterolateral corner reconstruction
□ Medial collateral ligament repair/reconstruction
□ Lateral collateral ligament repair/reconstruction

Type of Graft

Patella tendon graft  □ Ipsilateral  □ Contralateral
□ Single hamstring graft
□ 2 Bundle hamstring graft
□ 4 Bundle hamstring graft
□ Quadriceps tendon graft
□ Allograft
□ Other
Extensor Mechanism Surgery

- [ ] Patella tendon repair  
- [ ] Quadriceps tendon repair

Patellofemoral Surgery

- [ ] Extensor Mechanism Realignment

  Soft Tissue Realignment

  - [ ] Medial imbrication  
  - [ ] Lateral release

  Bone Realignment

  Movement of the tibial tubercle
  
  - [ ] Proximal  
  - [ ] Distal  
  - [ ] Medial  
  - [ ] Lateral  
  - [ ] Anterior

- [ ] Trochleoplasty

- [ ] Patellectomy

Osteoarthritis Surgery

- [ ] Osteotomy

  Articular Surface Surgery
  - [ ] Shaving  
  - [ ] Abrasion  
  - [ ] Drilling  
  - [ ] Microfracture

  Cell therapy  
  - [ ] Osteochondral autograft transfer/mosaic-plasty  
  - [ ] Other

Total number of previous surgeries

Imaging Studies:

- [ ] Structural  
- [ ] MRI  
- [ ] CT  
- [ ] Arthrogram

- [ ] Metabolic (Bone Scan)

Findings:

Ligament

Meniscus

Articular Cartilage

Bone
2000 IKDC SURGICAL DOCUMENTATION FORM

Patient’s Name: ______________________________________  Date of Index Procedure: ______/______/______

Postoperative Diagnosis:

1._________________________________________________________________
2._________________________________________________________________
3._________________________________________________________________

Status After Procedure:

ARTICULAR CARTILAGE STATUS:

Document the size and location of articular cartilage defects on these figures according to the ICRS mapping system. 
Record size, location and grade of articular cartilage lesions.

**Femur**

<table>
<thead>
<tr>
<th>Side</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condyle</td>
<td>Medial</td>
<td>Lateral</td>
</tr>
<tr>
<td>Sagittal plane</td>
<td>Trochlear</td>
<td>Anterior</td>
</tr>
<tr>
<td>Frontal plane</td>
<td>Lateral</td>
<td>Central</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cartilage lesion (Grade) (*)</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect size pre-debridement</td>
<td>mm</td>
</tr>
<tr>
<td>Defect size post-debridement</td>
<td>mm</td>
</tr>
</tbody>
</table>

**Tibia**

<table>
<thead>
<tr>
<th>Side</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plateau</td>
<td>Medial</td>
<td>Lateral</td>
</tr>
<tr>
<td>Sagittal Plane</td>
<td>Anterior</td>
<td>Middle</td>
</tr>
<tr>
<td>Frontal Plane</td>
<td>Lateral</td>
<td>Central</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cartilage lesion (Grade) (*)</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect size pre-debridement</td>
<td>mm</td>
</tr>
<tr>
<td>Defect size post-debridement</td>
<td>mm</td>
</tr>
</tbody>
</table>

**Patella**

<table>
<thead>
<tr>
<th>Side</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sagittal plane</td>
<td>Distal</td>
<td>Middle</td>
</tr>
<tr>
<td>Frontal plane</td>
<td>Lateral</td>
<td>Central</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cartilage lesion (Grade) (*)</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect size pre-debridement</td>
<td>mm</td>
</tr>
<tr>
<td>Defect size post-debridement</td>
<td>mm</td>
</tr>
</tbody>
</table>

**Diagnosis:**
- □ Traumatic cartilage lesion
- □ OD
- □ OA
- □ AVN
- □ Others

**Biopsy/Osteochondral Plugs:**
- Location: Number of Plugs:
  - Diameter of Plugs: mm

**Treatment:**
- □ Shaving
- □ Abrasion
- □ Drilling
- □ Microfracture
- □ Osteochondral autograft transfer/mosaic-plasty
- □ Cell therapy
- □ Other

**Notes:**
MENISCUS STATUS:

Procedure:
- medial meniscectomy
- lateral meniscectomy
- medial meniscal repair
- lateral meniscus repair
- medial meniscal transplant
- lateral meniscal transplant
- medial abrade & trephine
- lateral abrade & trephine

Right Knee

Document tears of the menisci or meniscectomy on these figures

Left Knee

Medial:
- Normal
- 1/3 Removed
- 2/3 Removed
- 3/3 Removed

Circumferential Hoop Fibers:
- Intact
- Disrupted

Remaining Meniscal Tissue:
- Normal
- Degenerative changes
- Stable tear
- Unstable tear
- Tear left in situ

Lateral:
- Normal
- 1/3 Removed
- 2/3 Removed
- 3/3 Removed

Circumferential Hoop Fibers:
- Intact
- Disrupted

Remaining Meniscal Tissue:
- Normal
- Degenerative changes
- Stable tear
- Unstable tear
- Tear left in situ
LIGAMENT STATUS:

Procedure:
- [ ] ACL repair
- [ ] Intraarticular ACL reconstruction
- [ ] Extraarticular ACL reconstruction
- [ ] PCL repair
- [ ] Intraarticular PCL reconstruction
- [ ] Posterolateral corner repair/reconstruction
- [ ] Medial collateral ligament repair/reconstruction
- [ ] Lateral collateral ligament repair/reconstruction

Graft:
- [ ] Autologous patella tendon
- [ ] Hamstring tendons
- [ ] Quadriceps tendon
- [ ] Other

Previous Graft Harvest:
- [ ] Autologous patella tendon
- [ ] Hamstring tendons
- [ ] Quadriceps tendon

Document drill hole placement for ligament reconstruction on these figures.
IKDC KNEE EXAMINATION FORM

**Patient Name:** ____________________________________________  
**Gender:** [ ] Male  [ ] Female  
**Age:** ________________  
**Date of Birth:** __/__/______  
**Date of Examination:** __/__/______

**Generalized Laxity:**  
[ ] tight  [ ] normal  [ ] lax  

**Alignment:**  
[ ] obvious varus  [ ] normal  [ ] obvious valgus  

**Patella Position:**  
[ ] obvious baja  [ ] normal  [ ] obvious alta  

**Patella Subluxation/Dislocation:**  
[ ] centered  [ ] subluxable  [ ] dislocated  

**Range of Motion (Ext/ Flex):**  
Index Side: passive______/______/_____  active_____/_____/_____
Opposite Side: passive______/______/_____  active_____/_____/_____

<table>
<thead>
<tr>
<th>SEVEN GROUPS</th>
<th>FOUR GRADES</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
<td>Nearly</td>
<td>Abnormal</td>
<td>Severely</td>
<td>Abnormal</td>
</tr>
</tbody>
</table>

1. **Effusion**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe

2. **Passive Motion Deficit**
   **Lack of extension**
   [ ] < 3°  [ ] 3 to 5°  [ ] 6 to 10°  [ ] > 10°
   **Lack of flexion**
   [ ] 0 to 5°  [ ] 6 to 15°  [ ] 16 to 25°  [ ] > 25°

3. **Ligament Examination**
   **Lachman (25° flex) (134N)**
   [ ] 1 to 2mm  [ ] 2 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Lachman (25° flex) manual max**
   [ ] 1mm  [ ] 2 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Anterior endpoint:**
   [ ] firm  [ ] soft
   **Total AP Translation (25° flex)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Total AP Translation (70° flex)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Posterior Drawer Test (70° flex)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Med Joint Opening (20° flex/varus rot)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Lat Joint Opening (20° flex/varus rot)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **External Rotation Test (30° flex prone)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **External Rotation Test (90° flex prone)**
   [ ] 0 to 2mm  [ ] 3 to 5mm  [ ] 6 to 10mm  [ ] > 10mm
   **Pivot Shift**
   [ ] equal  [ ] + glide  [ ] ++ (clunk)  [ ] +++ (gross)
   **Reverse Pivot Shift**
   [ ] equal  [ ] + glide  [ ] ++ (clunk)  [ ] +++ (gross)

4. **Compartment Findings**
   **Crepitus Ant. Compartment**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Crepitus Med. Compartment**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Crepitus Lat. Compartment**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe

5. **Harvest Site Pathology**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe

6. **X-ray Findings**
   **Med. Joint Space**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Lat. Joint Space**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Patellofemoral**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Ant. Joint Space (sagittal)**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe
   **Post. Joint Space (sagittal)**
   [ ] None  [ ] Mild  [ ] Moderate  [ ] Severe

7. **Functional Test**
   **One Leg Hop (% of opposite side)**
   [ ] 90%  [ ] 9 to 76%  [ ] 75 to 50%  [ ] < 50%

**Final Evaluation**

---

*Group grade: The lowest grade within a group determines the group grade
**Final evaluation: the worst group grade determines the final evaluation for acute and subacute patients. For chronic patients compare preoperative and postoperative evaluations. In a final evaluation only the first 3 groups are evaluated but all groups must be documented. △ Difference in involved knee compared to normal or what is assumed to be normal.

INSTRUCTIONS FOR THE 2000 IKDC KNEE EXAMINATION FORM

The Knee Examination Form contains items that fall into one of seven measurement domains. However, only the first three of these domains are graded. The seven domains assessed by the Knee Examination Form are:

1. **Effusion**
   An effusion is assessed by ballotting the knee. A fluid wave (less than 25 cc) is graded mild, easily ballottable fluid – moderate (25-60 cc), and a tense knee secondary to effusion (greater than 60 cc) is rated severe.

2. **Passive Motion Deficit**
   Passive range of motion is measured with a gonimeter and recorded on the form for the index side and opposite or normal side. Record values for zero point/hyperextension/flexion (e.g. 10 degrees of hyperextension, 150 degrees of flexion = 10/0/150; 10 degrees of flexion to 150 degrees of flexion = 0/10/150). Extension is compared to that of the normal knee.

3. **Ligament Examination**
   The Lachman test, total AP translation at 70 degrees, and medial and lateral joint opening may be assessed with manual, instrumented or stress x-ray examination. Only one should be graded, preferably a “measured displacement”. A force of 134 N (30 lbs) and the maximum manual are recorded in instrumented examination of both knees. Only the measured displacement at the standard force of 134 N is used for grading. The numerical values for the side to side difference are rounded off, and the appropriate box is marked.

   The end point is assessed in the Lachman test. The end point affects the grading when the index knee has 3-5 mm more anterior laxity than the normal knee. In this case, a soft end point results in an abnormal grade rather than a nearly normal grade.

   The 70-degree posterior sag is estimated by comparing the profile of the injured knee to the normal knee and palpating the medial femoral tibial stepoff. It may be confirmed by noting that contraction of the quadriceps pulls the tibia anteriorly.

   The external rotation tests are performed with the patient prone and the knee flexed 30° and 70°. Equal external rotational torque is applied to both feet and the degree of external rotation is recorded.

   The pivot shift and reverse pivot shift are performed with the patient supine, with the hip in 10-20 degrees of abduction and the tibia in neutral rotation using either the Losee, Noyes, or Jakob techniques. The greatest subluxation, compared to the normal knee, should be recorded.

4. **Compartment Findings**
   Patellofemoral crepitance is elicited by extension against slight resistance. Medial and lateral compartment crepitance is elicited by extending the knee from a flexed position with a varus stress and then a valgus stress (i.e., McMurray test). Grading is based on intensity and pain.

5. **Harvest Site Pathology**
   Note tenderness, irritation or numbness at the autograft harvest site.

6. **X-ray Findings**
   A bilateral, double leg PA weightbearing roentgenogram at 35-45 degrees of flexion (tunnel view) is used to evaluate narrowing of the medial and lateral joint spaces. The Merchant view at 45 degrees is used to document patellofemoral narrowing. A mild grade indicates minimal changes (i.e., small osteophytes, slight sclerosis or flattening of the femoral condyle) and narrowing of the joint space which is just detectable. A moderate grade may have those changes and joint space narrowing (e.g., a joint space of 2-4 mm side or up to 50% joint space narrowing). Severe changes include a joint space of less than 2 mm or greater than 50% joint space narrowing.

7. **Functional Test**
   The patient is asked to perform a one leg hop for distance on the index and normal side. Three trials for each leg are recorded and averaged. A ratio of the index to normal knee is calculated.
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 □
### Pain

P1. How often do you experience knee pain?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tribune</td>
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What amount of knee pain have you experienced the **last week** during the following activities?

P2. Twisting/pivoting on your knee

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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P3. Straightening knee fully

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<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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P4. Bending knee fully

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<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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P5. Walking on flat surface

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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<td>Tribune</td>
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P6. Going up or down stairs

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<th></th>
<th>None</th>
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<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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P7. At night while in bed

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<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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<tbody>
<tr>
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P8. Sitting or lying

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<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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P9. Standing upright

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<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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### 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

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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<tbody>
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A2. Ascending stairs

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<thead>
<tr>
<th></th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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</thead>
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</table>
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)

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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A17. Light domestic duties (cooking, dusting, etc)

<table>
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<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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**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

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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SP2. Running

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<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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SP3. Jumping

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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SP4. Twisting/pivoting on your injured knee

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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SP5. Kneeling

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<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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**Quality of Life**

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

<table>
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<tr>
<th>Never</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily</th>
<th>Constantly</th>
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Q2. Have you modified your life style to avoid potentially damaging activities to your knee?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Mildly</th>
<th>Moderately</th>
<th>Severely</th>
<th>Totally</th>
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Q3. How much are you troubled with lack of confidence in your knee?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Mildly</th>
<th>Moderately</th>
<th>Severely</th>
<th>Extremely</th>
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</table>

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

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
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Thank you very much for completing all the questions in this questionnaire.
Psychological Readiness to Return to Sport

Patient Name: ________________________________   MRN: ________________________________

Surgery: __________________________          Date of Surgery: ____________    Surgeon: ________________

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: ________________________________