



# ADVANCED ORTHOPAEDIC SPECIALISTS



Dr. Chris Arnold  
Dr. David Yakin  
Dr. Terry Sites  
Dr. Mark Powell  
Dr. Kenton Hagan

## AUTOLOGOUS CHONDROCYTE IMPLANTATION WITH HIGH TIBIAL OSTEOTOMY REHABILITATION PROTOCOL

	WEIGHT BEARING	BRACE	ROM	THERAPEUTIC EXERCISE
<b>PHASE I</b> 0 - 12 weeks	<p><b>0-2 Weeks:</b> non-weight bearing</p> <p><b>2-4 Weeks:</b> toe-touch weight bearing</p> <p><b>4-8 Weeks:</b> progress 1/4 body weight per week to use of one crutch</p> <p><b>8-12 Weeks:</b> progress to full weight bearing</p>	<p><b>0-2 Weeks:</b> Locked in full extension (remove for CPM/exercise). Sleep in brace.</p> <p><b>2-4 Weeks:</b> Gradually open brace 20° at a time as quad control is gained. Discontinue use of brace when quads can control SLR without an extension lag.</p>	<p><b>0-4 Weeks:</b> CPM: Use in 2 hour increments for 6 - 8 hours per day. Begin at 0-30° 1 cycle/minute. Progress 0-90° of flexion week 1. Week 2: 0-105° Week 3: 0-115° Week 4: 0-125°+</p>	<p><b>1-4 Weeks:</b> Quad sets, hamstring isometrics - complete exercises in brace if quad control is inadequate. Avoid prone straight leg raises.</p> <p><b>2-6 Weeks:</b> Begin progressive closed chain exercises.*</p> <p><b>6-10 weeks:</b> Progress bilateral closed chain strengthening, begin opened chain knee strengthening</p> <p><b>10-12 Weeks:</b> Progress closed chain exercises using resistance less than patient's body weight, progress to unilateral closed chain exercises, begin balance activities.</p>
<b>Phase II</b> 12 weeks - 6 months	Full with a normalized gait pattern	Discontinue post-op brace  May use unloaded brace	Full active range of motion	Advance bilateral and unilateral closed chain exercises with emphasis on concentric/eccentric control, continue with biking, stairmaster, and treadmill. Progress balance activities.
<b>Phase III</b> 6 months - 9 months	Full with a normalized gait pattern	May use unloaded brace or none	Full and pain-free	Advance strength training, initiate light plyometrics and jogging. Start with 2 minute walk/2 minute jog. Emphasize sport specific training.
<b>Phase IV</b> 9 months - 18 months	Full with a normalized gait pattern	May use unloaded brace or none	Full and pain-free	Continue strength training, emphasize single leg loading, begin a progressive running/agility program, high impact activities (basketball, tennis, etc.) may begin at 16 months if pain-free.

\*Respect chondrocyte graft site with closed chain activities:

If anterior - avoid loading in full extension

If posterior - avoid loading in flexion >45°

\*\*If pain or swelling occurs with any activities, they must be modified to decrease symptoms.