DR. DAN JOHNSON
ORTHOPEDIC SPORTS MEDICINE

ORTHOUTAH
Orthopaedic Clinics of Northern Utah

Meniscus Repair Rehabilitation Guidelines

This rehabilitation protocol was developed for patients who have isolated meniscal repairs. Meniscal repairs located in the *peripheral or outer one-third vascular region* are progressed rapidly, with full weight bearing allowed by the 4th postoperative week and running by the 16th to 20th postoperative week (assuming muscle strength and other criteria are met). *Complex repairs* (in which a segment of the tear is located in the avascular region) are progressed more slowly, with full weight bearing delayed until the 7th postoperative week and running delayed until the 6th postoperative month. Additionally, a postoperative brace is used for complex repairs for the first 8 postoperative weeks to provide added protection.

The protocol is divided into 7 phases according to postoperative weeks (for instance, Phase I = Postoperative Weeks 1-2). Each phase has several categories including:

- *General observation* of the patient's condition (weight bearing, pain, hemarthrosis, muscle control)
- *Evaluation* of specific variables with *goals* identified for each
- Treatment and exercise program, according to *frequency* and *durati*
- *Rehabilitation goals* which must be achieved to enter into the next phase

The **overall goals** of the reconstruction and rehabilitation are to:

- Control joint pain, swelling, hemarthrosis (minimal or none)
- Regain normal knee flexion and extension
- Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal quadriceps, hamstring lower extremity muscle strength
- Regain normal proprioception, balance, and coordination for desired activities
- Achieve optimal functional outcome based on orthopaedic and patient goals

The supervised rehabilitation program is supplemented with a *home self-management program* which the patient performs on a daily basis. The therapist must evaluate the patient thoroughly to

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

implement the enclosed protocol and should see the patient in the clinic for therapeutic procedures and modality treatments which are required for rehabilitation. The majority of this protocol can be accomplished at home provided patient cooperation and follow through are present. The approximate number of rehabilitation visits required for each phase are provided. Additional supervision may be required if a complication develops.

Important postoperative signs to monitor include:

- Swelling of the knee joint or soft tissues
- Abnormal pain response
- Abnormal gait pattern with or without assistive device
- Insufficient flexion or extension motions, limited patellar mobility
- Weakness (strength/control) of the lower extremity, especially the quad/hamstrings
- Insufficient lower extremity flexibility
- Tibiofemoral symptoms, indicative of a meniscal tear

Return to Activities Warning

Return to strenuous activities - including impact loading, jogging, deep knee flexion, or pivoting - early postoperatively after meniscal repair carries a definite risk of a repeat meniscus tear. These risks cannot always be scientifically assessed. Patients are warned to return to athletic activities carefully and to avoid any activity in which symptoms of pain, swelling, or a feeling of instability are present.

Physical Therapy Visit Timeline

Phase	Weeks Postoperative	Minimum # Visits	Maximum # Visits
1	1-2	2	3
2	3-4	2	3
3	5-6	1	2
4	7-8	1	2
5	9-12	1	2
6	13-26	2	2
7	27-52	2	2
Total		**11**	**16**

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

DR. DAN JOHNSON
ORTHOPEDIC SPORTS MEDICINE

Rehabilitation Protocol Summary for Meniscus Repairs

		Postoperative Weeks					Postoperative Months			
		1-2	3-4	5-6	7-8	9-12	4	5	6	7-12
Brace: Bledsoe postoperative (complex)		X	X	X						
Range of motion minimum goals:										
0°-90°		X								
0°-120°			X							
0°-135°				X						
Weight bearing:										
Peripheral	Toe touch – ½ BW	X								
	¾ body – full BW		X							
Complex	Toe touch – ¼ BW	X								
	½ to ¾ BW		X	X						
	Full BW				X					
Patella mobilization		X	X	X						
Modalities:										
Electrical muscle stimulation (EMS)		X	X	X						
Pain/edema management (cryotherapy)		X	X	X	X	X	X	X	X	X
Stretching: Hamstring, gastroc-soleus, iliotibial band, quadriceps		X	X	X	X	X	X	X	X	X
Strengthening:										
Quad isometrics, straight leg raises, active knee extension		X	X	X	X	X				
Closed-chain: gait retraining, toe raises, wall sits, mini-squats			P	C	X	X	X	X	X	
Knee flexion hamstring curls (90°)				P	C	X	X	X	X	X
Knee extension quads (90°-30°)				X	X	X	X	X	X	X
Hip abduction-adduction, multi-hip				X	X	X	X	X	X	X
Leg press (70°-10°)				P	P	X	X	X	X	X
Balance/proprioceptive training: Weight-shifting, mini-trampoline, BAPS, BBS, plyometrics			P	C	X	X	X	X	X	X
Conditioning:										
UBC			X	X	X					
Bike (stationary)					X	X	X	X	X	X
Aquatic program						X	X	X	X	X
Swimming (kicking)						X	X	X	X	X
Walking						X	X	X	X	X
Stair climbing machine						X	X	X	X	X
Ski machine						X	X	X	X	X
Running: straight							P	P	C	X
Cutting: lateral carioca, figure 8's								P	P	X
Full sports								P	P	X

X = all repairs, C = complex, avascular repairs, P = peripheral repairs
BAPS = Biomechanical Ankle Platform System (Camp, Jackson, MI), BBS = Biodex Balance System(Shirley, NY), UBC = upper body cycle (Biodex, Shirley, NY).

ORTHOUTAH
Orthopaedic Clinics of Northern Utah

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 1: Week 1-2

General Observation	Toe-touch to 1/4 WB (complex); toe touch to 1/2 WB (peripheral) when: - Pain controlled - Hemarthrosis controlled - Voluntary quadriceps contraction & full extension achieved	
Evaluation	ν Pain ν Hemarthrosis ν Patellar mobility ν ROM minimum ν Quadriceps contraction & patella migration ν Soft tissue contracture	**Goals** Controlled Mild Good 0°-90° Good None
Frequency 3-4 x/day 10 minutes 3 x/day 15 minutes As required	**Range of motion** ROM (passive, 0°-90°) Patella mobilization Ankle pumps (plantar flexion with resistance band) Hamstring, gastroc-soleus stretches **Strengthening** Straight leg raises (flexion) Active quadriceps isometrics Knee extension (active-assisted) **Modalities** Electrical muscle stimulation Cryotherapy	**Duration** 5 reps x 30 secs 3 sets x 10 reps 1 set x 10 reps 3 sets x 10 reps 20 minutes 20 minutes
Goals	ν ROM 0°-90° ν Adequate quadriceps contraction ν Control inflammation, effusion	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 2: Weeks 3-4

General Observation	ν 1/2 weight bearing (complex); full WB (peripheral) when: - Pain controlled - Hemarthrosis controlled - Voluntary quadriceps contraction achieved	
Evaluation	ν Pain ν Effusion ν Patellar mobility ν ROM minimum ν Quadriceps contraction & patella migration ν Soft tissue contracture	**Goals** Controlled Mild Good 0°-120° Good None
Frequency		**Duration**
3-4 x/day 10 minutes	**Range of motion** ROM (passive, 0°-120°) Patella mobilization Ankle pumps (plantar flexion with resistance band) Hamstring, gastroc-soleus stretches	 5 reps x 30 secs
2-3 x/day 20 minutes	**Strengthening** Straight leg raises (flexion, extension, adduction) Isometric training: multi-angle (0°, 60°) Knee extension (active-assisted, 90°-30°) Closed-chain (peripheral) - Toe raises - Wall sits	 3 sets x 10 reps 1 set x 10 reps 3 sets x 10 reps 3 sets x 20 reps to fatigue x 3
2 x/day 10 minutes	Balance training (peripheral) Weight shift side/side and forward/back Cup walking	 5 sets x 10 reps
2 x/day 10 minutes	**Aerobic conditioning** UBC	
As required	**Modalities** Electrical muscle stimulation Cryotherapy	 20 minutes 20 minutes
Goals	ν ROM 0°-120° ν Control inflammation, effusion ν Muscle control ν Early recognition complications (motion, RSD, patellofemoral)	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 3: Weeks 5-6

General Observation	ν 3/4 WB (complex); full WB (peripheral) when: - Pain controlled without narcotics - Hemarthrosis controlled - ROM 0°-135° - Muscle control throughout ROM	
Evaluation	• Pain • Effusion • Patellar mobility • ROM • Muscle control • Inflammatory response	**Goals** Mild/No RSD Minimal Good 0°-135° 3/5 None
Frequency		**Duration**
3 x/day 10 minutes	**Range of motion** ROM (passive, 0°-135°) Patella mobilization Hamstring, gastroc-soleus stretches	 5 reps x 30 secs
2 x/day 20 minutes	**Strengthening** Straight leg raises (ankle weight, not to exceed 10% of body weight) Isometric training: multi-angle (90°, 60°, 30°) Hamstring curls (active, 0°-90°, peripheral) Knee extension (active, 90°-30°) Closed-chain (all repairs) - Heel raise/toe raise - Wall sits Multi-hip machine (flexion, extension, abduction, adduction) Leg press (70°-10°)	 3 sets x 10 reps 2 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps to fatigue x 3 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	**Balance training** Weight shift side/side and forward/back Balance board/2 legged Cup walking	 5 sets x 10 reps
2 x/day 10 minutes	**Aerobic conditioning** (patellofemoral precautions) UBC	
As required	**Modalities** Electrical muscle stimulation Cryotherapy	 20 minutes 20 minutes
Goals	ν ROM 0°-135° ν Control inflammation, effusion ν Muscle control ν Early recognition complications (motion loss, RSD, patellofemoral changes)	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 4: Weeks 7-8

General Observation	Full weight bearing with 1 crutch (complex) when: - Pain controlled without narcotics - Hemarthrosis controlled - ROM 0°-135° - Voluntary quad contraction achieved	
Evaluation	• Pain • Effusion • Patellar mobility • ROM • Muscle control • Inflammatory response	**Goals** Mild/No RSD Minimal Good 0°-135° 4/5 None
Frequency		**Duration**
2 x/day 10 minutes	**Range of motion** ROM (0°-135°) Hamstring, gastroc-soleus stretches	 5 reps x 30 secs
2 x/day 20 minutes	**Strengthening** Straight leg raises (flexion, extension, abduction, adduction) Straight leg raises, rubber tubing Hamstring curls (active, 0°-90°, all repairs) Knee extension (active, 90°-30°) Leg press (70°-10°) Closed-chain - Wall sits - Mini-squats (rubber tubing, 0°-30°) Multi-hip machine (flexion, extension, abduction, adduction)	 3 sets x 10 reps 3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps to fatigue x 3 3 sets x 10 reps
3 x/day 5 minutes	**Balance training** Balance board/2 legged Single leg stance Cup walking	
1-2 x/day 15 minutes	**Aerobic conditioning** UBC Stationary bicycling	
As required	**Modalities** Cryotherapy	 20 minutes
Goals	• Full weight bearing, normal gait • Control inflammation, effusion • Muscle control • ROM 0°-135°	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 5: Weeks 9-12

General Observation	ν Full weight bearing (complex) when: ν ROM 0°-135° - Pain, effusion controlled - Muscle control throughout ROM	
Evaluation		**Goals**
	ν Pain	Minimal/No RSD
	ν Manual muscle test Hamstrings, quadriceps, hip abductors/adductors/flexors/extensors	4/5
	ν Swelling	Minimal
	ν Isometric test (peripheral, % difference quads & hams)	30
	ν Patellar mobility	Good
	ν Crepitus	None/slight
	ν Gait	Symmetrical
Frequency		**Duration**
2 x/day 10 minutes	**Range of motion** Hamstring, gastroc-soleus, quad, ITB stretches	 5 reps x 30 secs
2 x/day 20 minutes	**Strengthening** Straight leg raises Straight leg raises, rubber tubing Hamstring curls (active, 0°-90°) Knee extension (active, 90°-30°) Leg press (70°-10°) Closed-chain - Wall sits - Mini-squats (rubber tubing, 0°-40°) - Lateral step-ups (2-4" block) Multi-hip machine (flexion, extension, abduction, adduction)	 3 sets x 10 reps 3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps to fatigue x 3 3 sets x 10 reps 3 sets x 10 reps
3 x/day 5 minutes	**Balance training** Balance board/2 legged Single leg stance	
1 x/day 15-20 minutes	**Aerobic conditioning** (patellofemoral precautions) Stationary bicycling Water walking Swimming (straight leg kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance)	
As required	**Modalities** Cryotherapy	 20 minutes

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

Goals	ν Increase strength and endurance ν ROM 0°-135°	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 6: Weeks 13-26

General Observation	ν No effusion, painless ROM, joint stability ν Performs ACL, can walk 20 minutes without pain ν ROM 0°-135°	
Evaluation		**Goals**
	ν Pain	Minimal/No RSD
	ν Isometric test (6 mos. complex, % difference quads & hams)	10-15 (P), 30 (C)
	ν Swelling	Minimal
	ν Patellar mobility	Good
	ν Crepitus	None/slight
	ν Gait	Symmetrical
Frequency		**Duration**
2 x/day 10 minutes	**Range of motion** Hamstring, gastroc-soleus, quad, ITB stretches	 5 reps x 30 secs
2 x/day 20 minutes	**Strengthening** Straight leg raises, rubber tubing (high speed) Hamstring curls with resistance (0°-90°) Knee extension with resistance (90°-30°) Leg press (70°-10°) Multi-hip machine (flexion, extension, abduction, adduction) Closed-chain: Mini-squats (rubber tubing, 0°-40°)	 3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps
1-3 x/day 5 minutes	**Balance training** Balance board/2 legged Single leg stance	
3 x/week 20 minutes	**Aerobic conditioning** (patellofemoral precautions) Stationary bicycling Water walking Swimming (kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance)	
3 x/week 15-20 minutes	**Running program** (16-20 wks peripheral, straight, 30% deficit isometric test) Jog Walk Backward run	 1/4 mile 1/8 mile 20 yards
3 x/week	**Cutting program** – lateral, carioca, figure 8's	20 yards

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

3 x/week	**Functional training** Plyometric training: box hops, level, double-leg Sport specific drills (10-15% deficit isokinetic test)	 15 secs, 4-6 sets
As required	**Modalities** Cryotherapy	20 minutes
Goals	ν Increase strength and endurance	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

PHASE 7: Weeks 27-52

General Observation	ν No effusion, painless ROM, joint stability ν Performs ADL, can walk 20 minutes without pain	
Evaluation		**Goals**
	ν Isokinetic test (isometric + torque 300°/sec, % diff quads & hams)	10-15
	ν Swelling	None
	ν Patellar mobility	Good
	ν Crepitus	None/slight
	ν Single-leg function tests (9 mos: hop distance, timed hop, % inv/uninv)	85
Frequency		**Duration**
2 x/day 10 minutes	**Range of motion** Hamstring, gastroc-soleus, quad, ITB stretches	 5 reps x 30 secs
1 x/day 20-30 minutes	**Strengthening** Straight leg raises, rubber tubing (high speed) Hamstring curls with resistance (0°-90°) Knee extension with resistance (90°-30°) Leg press (70°-10°) Multi-hip machine (flexion, extension, abduction, adduction) Closed-chain: Mini-squats (rubber tubing, 0°-40°)	 3 sets x 30 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 10 reps 3 sets x 20 reps
1-3 x/day 5 minutes	**Balance training** Balance board/2 legged Single leg stance	
3 x/week 20-30 minutes	**Aerobic conditioning** (patellofemoral precautions) Stationary bicycling Water walking Swimming (kicking) Walking Stair machine (low resistance, low stroke) Ski machine (short stride, level, low resistance)	
3 x/week 15-20 minutes	**Running program** (straight, 30% deficit isokinetic test) Jog Walk Backward run	 1/4 mile 1/8 mile 20 yards
3 x/week	**Cutting program** (20 wks peripheral, 20% deficit isokinetic test) Lateral, carioca, figure 8's	 20 yards
3 x/week	**Functional training** (20 wks peripheral) Plyometric training: box hops, level, double-leg Sport specific drills (10-15% deficit isokinetic test)	 15 secs, 4-6 sets

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151

As required	**Modalities** Cryotherapy	20 minutes
Goals	ν Increase function ν Maintain strength, endurance ν Return to previous activity level	

www.danjohnsondo.com
990 Medical Drive, Suite G-4, Brigham City, Utah 84302
435-734-2151