MCL Grade II Sprain 1+ Instability (Stable) Rehabilitation Program
(No laxity at 0 deg valgus testing, 1-5mm laxity at 30 deg valgus with firm end feel

The Gundersen Health System Sports Medicine MCL Grade II Sprain 1+ Instability (Stable) Rehabilitation Program is an evidence-based and soft tissue healing dependent program which allows patients to progress to vocational and sports-related activities as quickly and safely as possible. Individual variations will occur depending on patient tolerance and response to treatment. Patients usually return to full activities in 3-4 wks. Please contact us at 1-800-362-9567 ext. 58600 if you have questions or concerns.

Phase I: 0-2 weeks	**Phase II: 2-4 weeks**	**Phase III: 4 weeks+**
ROM: 10-135	**ROM:** wk 2: 10-135 Wk 3: 0-135	**ROM:** Full with no limitations
WB: WBAT	**WB:** Full with no limitations	**WB:** Full with no limitations
Brace: Double upright brace with 10 deg ext stop for all WB activities	**Brace:** Progress to double upright brace with 10 deg ext stop for athletics/vocational activities only at 3-4 weeks	**Brace:** Double upright brace for athletics/vocational activities until 8 weeks
Modalities: Cryotherapy Pulsed US IFC for pain/effusion NMES quadriceps	**Modalities:** Cryotherapy Pulsed US IFC for pain/effusion NMES quadriceps	**Modalities:** Cryotherapy
RX: Recommendations: Avoid terminal extension for all exercises to allow healing of MCL (see ROM stated above) Bike with resistance Elliptical Runner Cross friction massage Flexibility exercises PROM / AAROM / AROM per tolerance per ROM stated above Biofeedback QS, SLR, CKC knee extension per ROM M<I Quads/Hams 10, 30, 50, 70, 90 deg Hamstrings isotonics per ROM Quadriceps isotonics per ROM Total leg strengthening Hip 4 way SLR (proximal pad placement for Hip Adduction) Heel raises CKC exercises- leg press, step-ups, FW lunges, squat Balance / Proprioception Perturbation training CV conditioning Core stability training Upper body exercises	**RX:** Recommendations: Bike with resistance Elliptical Runner / Stairmaster Cross friction massage Flexibility exercise PROM / AAROM / AROM Biofeedback SLR, CKC knee extension Hamstring isotonics Quadriceps isotonics Isokinetic quadriceps/hamstrings Hip 4 way SLR (proximal pad placement for Hip Adduction) Heel raises CKC exercises – leg press, step-ups, FW and lateral lunges, squats Total leg strengthening Functional strengthening Lateral movements – sideshuffles, euroglide Balance / Proprioception Perturbation training 3 wks Return to running if 75% strength 4 wks Plyometrics / Agility and Sport-specific exercises CV conditioning Core stability training	**RX:** Recommendations: Bike with resistance Elliptical Runner / Stairmaster Running program if 75% strength Flexibility exercises Isotonic quadriceps/hamstrings Isokinetic quadriceps/hamstrings Hip strengthening Heel raises CKC exercises Total leg strengthening Functional strengthening Balance / Proprioception Perturbation training Plyometrics / Agility and Sport-specific exercises if 75% strength CV conditioning Core stability training **Testing** 3-4 wks Linea / Biodex Test FXN Test when appropriate **Return to Work/Sport** No pain or effusion Full ROM Isokinetic Strength- 90% Functional Tests – 90% MD approval

MCL Sprain References

Abdel-Rahman EM, Hefzy MS. Three-dimensional dynamic behaviour of the human knee joint under impact loading. Medical Engineering & Physics, 1998;20:276-290.

Davies GJ, Heiderscheit B, Clark M. Open kinetic chain assessment and rehabilitation. Athletic Training: Sports health care perspectives, 1995; 1(4): 347-370

Gardiner JC, Weiss JA, Rosenberg TD. Strain in the human medial collateral ligament during valgus loading of the knee. Clin Orthop, Oct 2001; 1(391):266-274

Hull ML, Berns GS, Patterson HA. Strain in the medial collateral ligament of the human knee under single and combined loads. J Biomechanics, 1996; 29(2):199-206

Indelicato PA. Nonoperative management of complete tears of the medial collateral ligament. Orthop Rev, 1989; 18(9): 947-952

Jones RE, Henley MB, Francis P. Nonoperative management of isolated grade III collateral ligament injury in high school football players. Clin Orthop; 1986; 213: 137-140

Meislin, RJ. Managing collateral ligament tears of the knee. The Physician and Sportsmedicine, 1996; 24(3): 67-71

Ohno, K, Pomaybo AS, Schmidt CC, Levine RE, Ohland KJ, Woo SL. Healing of the medial collateral ligament after combined medial collateral ligament and anterior cruciate ligament injury and reconstruction of the anterior cruciate ligament: Comparison of repair and nonrepair of medial collateral ligament tears in rabbits. J Orthop Res, 1995; 13: 442-449

Petersen W, Laprell H. Combined injuries of the medial collateral ligament and the anterior cruciate ligament. Early ACL reconstruction vs late ACL reconstruction. Arch Orthop Trauma Surg, 1999; 119(5-6), 258-262

Reider B. Medial collateral ligament injuries in athletes. Sport Med, 1996; 21(2): 147-156

Shelbourne DK, Patel DV. Instructional course lectures, the American Academy of Orthopaedic Surgeons. Management of combined injuries of the anterior cruciate and medial collateral ligaments. J of Bone Joint Surgery, 1995; 77(5): 800-806

Wilk KE, Clancy WG, Andrews JR, Fox GM. Assessment and treatment of medial capsular injuries, in Knee Ligament Rehabilitation, Ellenbecker 2000, 89-105

Woo SL, Debski RE, Withrow JD, Janaushek MA. Biomechanics of knee ligaments. Am J Sports Med, 1999; 27(4): 533-543.

Woo SL, Debski RE, Zeminski J, Abramowitch SD, Chan Saw SS, Fenwick JA. Injury and repair of ligaments and tendons. Annu Rev Biomed Eng, 2000 2:83-118.