**Arthrosurface Rehabilitation Protocol**

**Phase I – Maximum Protection (Week 0 to 1):**

**0 to 1 week:**

* Ice and modalities as needed to reduce pain and inflammation
* Use crutches for 2 to 4 weeks (WBAT) to help reduce swelling. The patient may discontinue crutches when able to walk without a limp or pain and exhibits excellent quad control.
* Elevate the knee above the heart for the first three to five days
* Initiate patella mobility drills
* Begin full active/passive knee range of motion exercises
* Quadriceps setting focusing on VMO function
* Multi-plane open kinetic chain straight leg raising
* Gait training
* Begin stationary bike as swelling and pain allow

**Phase II – Progressive Stretching and Early Strengthening Phase (Weeks 1 to 4):**

**Weeks 1 to 4:**

* Maintain program from week 0 to 1
* Continue modalities as needed
* Initiate lower extremity stretching
* Begin treadmill and/or elliptical trainer as strength and swelling allow, avoid impact activities
* Begin bilateral closed kinetic chain strengthening progressing to unilateral as tolerated
* Promote normal patellofemoral arthrokinematics
* Implement reintegration exercises emphasizing core stability exercises
* Begin closed kinetic chain multi-plane hip exercises
* Manual lower extremity PNF patterns
* Proprioception drills emphasizing neuromuscular control

**Phase III – Advanced Strengthening and Proprioception Phase (Weeks 4 to 6):**

**Weeks 4 to 6:**

* Modalities as needed
* Continue with phase II exercises as indicated
* Advance time and intensity on cardiovascular program-no running
* Begin functional cord resistance program
* Initiate gym strengthening program 3 times per week, including leg press, squats, lunges, knee extensions (30° to 0° progressing to full range as PF arthtokinematics normalize), hamstring curls, ab/adduction, and calf raises
* Begin pool running program

**Phase IV – Advanced Strengthening Phase (Weeks 6 to 7):**

**Weeks 6 to 7:**

* Implement a full gym-strengthening program
* Begin running program

**Phase V – Return to Sports Phase (Week 8):**

**Week 8:**

* Follow-up examination with the physician
* Continue with aggressive lower extremity strengthening, stretching, and cardiovascular training
* Implement sport specific multi-directional drills
* Initiate plyometric exercises beginning with bilateral progressing to unilateral
* Sports test for return to play