

Eccentron Case Report  
2006 National Meeting  
Orlando, FL  
January 26-29, 2006

Hx: 26 y o active male reported feeling a “pop” in his R knee while jogging when he planted and turned approximately 2 weeks ago. He reported no immediate swelling, loss of movement or pain immediately after. Recently, he stated his R knee “locked” while peddling a bike in spin class. No immediate swelling was noted, but he experienced pain with attempted knee extension and full flexion. His present chief complaint was pain with active or passive extension of his knee most notably during ambulation. His past medical history revealed recurrent knee pain over the past 14 years, which always resolved without medical intervention. He scheduled an appointment with his IM physician who diagnosed him with a lateral meniscal tear and ordered physical therapy.

The patient initially presented with:

- 1) Absent swelling
- 2) ROM 120° Flex, -10° Ext; Pain with attempt at Passive Ext & Flex
- 3) 5/5 knee flex/ext strength in mid range
- 4) Tenderness at ant/lat joint line
- 5) Gait w/ decreased knee extension at heel strike w/ significant pain

Following 3 weeks of unsuccessful conservative therapy, the patient was sent to an orthopaedist. After MRI, he was diagnosed with avascular necrosis of his R medial femoral condyle and underwent osteochondral autograft surgery.

The patient was NWB for 6 weeks. Physical therapy consisted of ROM, manual therapy, NWB strengthening, and pain and swelling reduction. At the end of 6 weeks, WBAT was ordered to progress to FWB in 2 weeks. The patient’s chief complaint at this time was that the knee “felt weak.”

At this time, the patient presented with:

- 1) No pain upon FWB
- 2) ROM -5 °extension, flexion WNL
- 3) Strength 5/5 knee flexion/extension
- 4) Extension lag with SLR (Quad= Fair)
- 5) Limp persisting with gait due to inability to fully extend at heel strike.

When FWB began, a manual program was initially set up on the **ECCENTRON** in conjunction with standard physical therapy. The first session was utilized as practice for the patient to get used the eccentric motion. Please see the data attached for specific target settings and results.

**At 2 weeks (6 sessions)-**

- Peak resistance increased from 76 lbs to 293 lbs on the involved leg. This resulted in an increase of the R leg from 25% to 66% vs. the L leg comparatively.
- Average Force (F) improved from 54% to 94% vs. the left leg.
- Pain decreased to 1-2/10.
- ROM WNL & Independent SLR.
- Gait with improved knee extension at heel strike with min/mod pain reported at this point of the gait cycle.

**At 4 weeks (10 sessions)-**

- Peak resistance increased to 69% of the uninvolved leg at 346 lbs.
- Average F at 92%.
- Antalgic gait persisting due to continued mild pain with knee extension.
- Single leg balance performance 100% (flat surface, eyes open).

**At 6 weeks (13 sessions)-**

- Peak performance at 74% with 417 lbs.
- Average F at 98%.
- No pain reported with ADL's.
- Normal gait with no pain reported at normal ambulation pace.
- Mild pain continues with faster pace.
- Apprehension noted with ↑/↓ stairs.

**At 8 weeks (16 sessions)-**

- Peak performance increased to 439 lbs resistance.
- Average F at 99%.
- No pain or swelling noted after therapeutic exercise.
- No apprehension with stairs. Ambulates ↑ without difficulty; mild trouble with ↓ steps (feels knee "gives away at the end").
- Squat to 90° knee flexion without difficulty.

**At 10 weeks (20 sessions)-**

- Peak resistance increased to 509 lbs.- 81% of uninvolved leg.
- Average F at 100% of uninvolved- both averaging 206 lbs throughout the session.
- No pain with ambulation, or going ↑/↓ stairs.

**At 12 weeks (23 sessions)-**

- Peak resistance increased to 514 lbs resulting in 83% of the uninvolved leg.
- Average F remains at 100%.
- ROM WNL.
- Normal Gait (Standard ambulation and ↑/↓ stairs and hills).
- Knee flex/ext strength 5/5 via MMT.

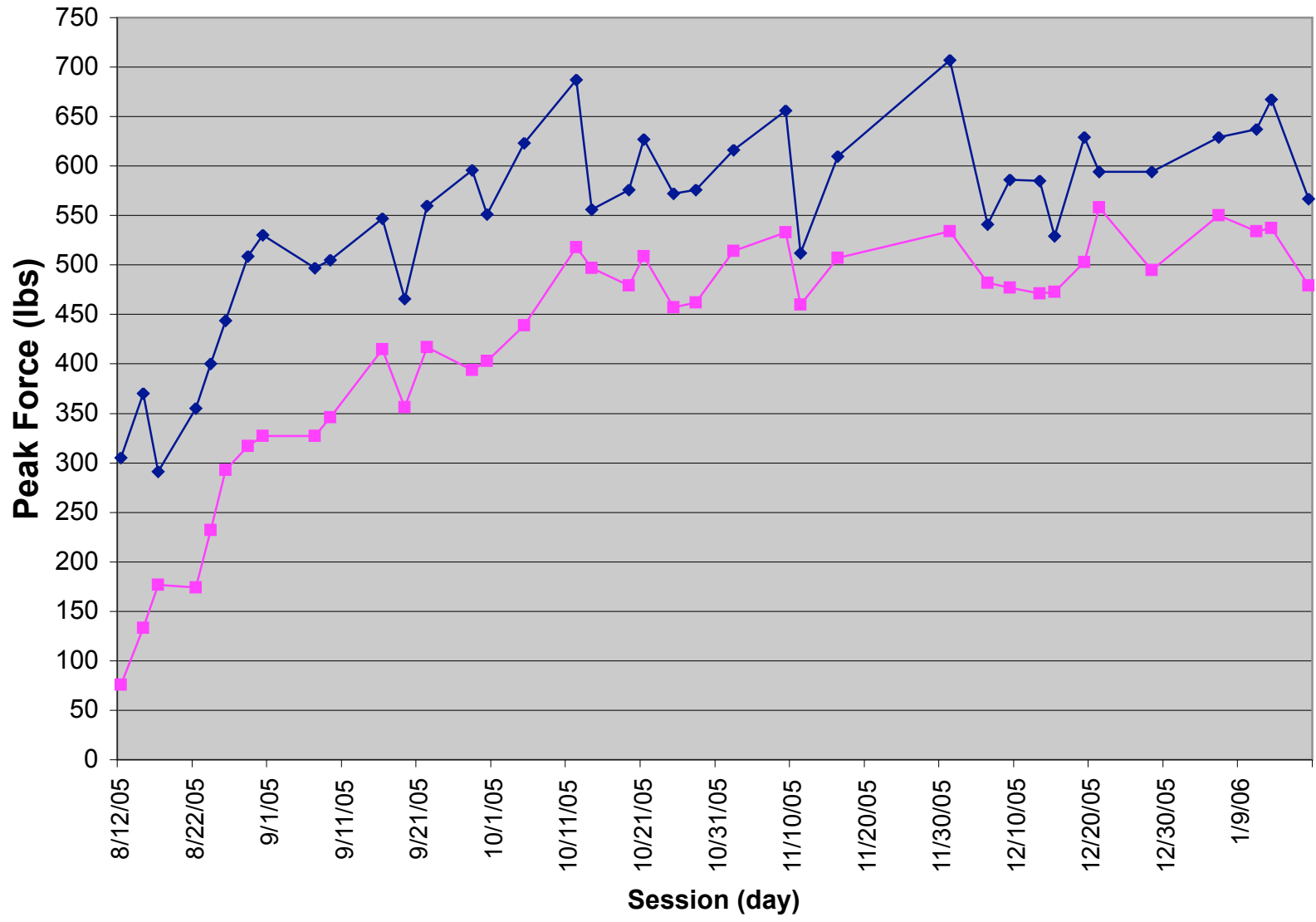
The patient has continued therapy at the request of his orthopaedic surgeon and, to date, has achieved strength up to 94% of his uninvolved leg resulting in a resistance measure of 558 lbs... significantly different from day 1 at 76 lbs. He presently completes all ADL's without difficulty, yet has continued to refrain from higher function activities including running, jumping, etc... at the request of his orthopaedic surgeon given the nature and extent of his injury and surgery.

<b>Eccentron Data: A. Lowe</b>			<b>Pin # 8608</b>					
<b>Date</b>	<b>Time (min)</b>	<b>Target (lbs)</b>	<b>Ave Force (lbs) Left</b>	<b>Ave force (lbs) Right *</b>	<b>Peak (lbs) Left</b>	<b>Peak (lbs) Right *</b>	<b>% of Peak Rt. Vs. Left</b>	<b>% of Ave. Rt. Vs. Left</b>
8/12/05	5	30	64.4	<b>34.8</b>	305	<b>76</b>	25%	54%
8/15/05	8	50	66.7	<b>47.9</b>	370	<b>133</b>	36%	72%
8/17/05	11	60	73.3	<b>63.3</b>	291	<b>177</b>	61%	86%
8/22/05	14	70	80.4	<b>71.9</b>	355	<b>174</b>	49%	89%
8/24/05	8	150	109.2	<b>94.5</b>	400	<b>232</b>	58%	87%
8/26/05	8'	150	119	<b>112</b>	444	<b>293</b>	66%	94%
8/29/05	8'	150	142	<b>126</b>	509	<b>317</b>	62%	89%
8/31/05	10'	160	126	<b>114</b>	530	<b>327</b>	62%	90%
9/7/05	10'	170	131	<b>127</b>	497	<b>327</b>	66%	97%
9/9/05	10'	170	147	<b>133</b>	505	<b>346</b>	69%	90%
9/16/05	10'	170	170	<b>161</b>	547	<b>415</b>	76%	95%
9/19/05	10'	200	159	<b>152</b>	466	<b>356</b>	76%	96%
9/22/05	12'	200	158	<b>155</b>	560	<b>417</b>	74%	98%
9/28/05	12'	200	175	<b>171</b>	596	<b>394</b>	66%	98%
9/30/05	12'	200	177	<b>176</b>	551	<b>403</b>	73%	99%
10/5/05	12'	200	180	<b>178</b>	623	<b>439</b>	70%	99%
10/12/05	12'	200	194	<b>191</b>	687	<b>518</b>	75%	98%
10/14/05	12'	200	199	<b>203</b>	556	<b>497</b>	89%	102%

<b>Date</b>	<b>Time (min)</b>	<b>Target (lbs)</b>	<b>Ave Force (lbs) Left</b>	<b>Ave force (lbs) Right *</b>	<b>Peak (lbs) Left</b>	<b>Peak (lbs) Right *</b>	<b>% of Peak Rt. Vs. Left</b>	<b>% of Ave. Rt. Vs. Left</b>
10/19/05	12'	220	219	<b>218</b>	576	<b>479</b>	83%	100%
10/21/05	12'	240	220	<b>212</b>	627	<b>509</b>	81%	96%
10/25/05	12'	240	215	<b>214</b>	572	<b>457</b>	80%	100%
10/28/05	12'	240	224	<b>224</b>	576	<b>462</b>	80%	100%
11/2/05	12'	240	215	<b>217</b>	616	<b>514</b>	83%	101%
11/9/05	12'	240	229	<b>228</b>	656	<b>533</b>	81%	100%
11/11/05	12'	240	231	<b>234</b>	512	<b>460</b>	90%	101%
11/16/05	12'	240	244	<b>244</b>	610	<b>507</b>	83%	100%
12/1/05	12'	240	253	<b>255</b>	<b>707</b>	<b>534</b>	76%	101%
12/6/05	12'	240	251	<b>253</b>	541	<b>482</b>	89%	101%
12/9/05	12'	250	<b>301</b>	<b>299</b>	586	<b>477</b>	81%	99%
12/13/05	12'	280	293	<b>293</b>	585	<b>471</b>	81%	100%
12/15/05	12'	290	293	<b>290</b>	529	<b>473</b>	89%	99%
12/19/05	12'	290	306	<b>305</b>	629	<b>503</b>	80%	100%
12/21/05	14'	270	261	<b>265</b>	594	<b>558</b>	94%	102%
12/28/05	14'	260	272	<b>273</b>	594	<b>495</b>	83%	100%
1/6/06	14'	270	295	<b>295</b>	629	<b>550</b>	87%	100%
1/11/06	14'	290	306	<b>305</b>	637	<b>534</b>	84%	100%
1/13/06	14'	300	309	<b>312</b>	667	<b>537</b>	81%	101%
1/18/06	14'	300	312	<b>304</b>	567	<b>479</b>	84%	97%

# Peak Force

Left Right



# Average Force

