### Evidence-Based Biomechanical Markers Provided by KneeKG

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<th>Osteoarthritis</th>
<th>Patellofemoral Syndrome</th>
<th>ACL injury</th>
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| • Dynamic flexion contracture  
  - Increases joint TF & PF loads  
  - Increases tension & loads on quads  
  - Reduces endurance  
  - Varus/valgus thrust  
  - Increases odds ratio of OA progression by 3-4x  
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  - Sign of instability  
  - Varus thrust  
  - Potential posterolateral instability |

### Testimonials from orthopaedic surgeons

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- Dr. Thomas M. DeBerardino, MD, New England Musculoskeletal Institute at UCONN Health, CT

**“Being able to assess the condition of the knee in normal motion is the best use for the KneeKG™. We can’t get this information from an MRI, CT scan, or X-ray.”**
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**Knee Osteoarthritis**

- 43 y/o man (BMI: 30.1; height: 5’7”; weight: 196 lbs)
- Marathoner and half-marathon runner
- Chief complaint: pain over anteromedial aspect of left knee
- Symptoms first appeared while running, now affects daily activities (e.g., up/down stairs)
- Symptoms progressed to a point of causing physical limitations

**CLINICAL EVALUATION:**
- Full ROM, joint effusion, flair test (+)
- Pain on medial joint line palpation
- Crepitation on patella mobilization
- J sign and apprehension test (+)
- Meniscal test negative (McMurray & Thessaly)
- Tight quads, psoas, ITB & hamstrings. Weak core
- WB X-ray shows grade 1 KL with sub-chondral sclerosis & osteophytes of medial and PF compartments

**KNEEKG TEST REPORTED:**
1. Flexion contracture at heel strike > Increases PF & TF loads
2. Varus static alignment (3°) which increases to 6° dynamically > Increases load on medial compartment
3. Offset towards internal tibial rotation > Shifts load-bearing regions and increases risk of OA progression

**FINAL RESULTS:**
1. Flexion contracture during gait > IMPROVED (from 17° to 8°)
2. Varus alignment > IMPROVED (from 3° to 0.5°)
3. Dynamic varus alignment > IMPROVED (from 6° to 2.5°) at heel strike and from 3.5° to 1° during stance

**KIOS**
- Pain: 83 > 100
- Symptoms: 64 > 93
- Function, daily act.: 87 > 99
- Function sport & rec.: 45 > 50
- Quality of life: 38 > 56

> I returned to a high level of physical activity without impact and I have no more pain during daily living activities. An occasional knee discomfort following pivoting and running. My life is going back to normal, finally!  

> — Paul

**TREATMENT PRESCRIBED BASED ON FINDINGS**
- Gait adaptation/strengthening with biofeedback to correct dynamic varus alignment
- Core and trunk strengthening exercises + closed chain proprioception exercises
- Strengthening of quadriceps with focus in last degrees of extension + hip abductions
- Stretching of the iliotibial band, quads, psoas and hamstrings
- Teaching of patellar taping

**KneeKG test performed by PA, PT, OT, technician**
20-25 minutes for 1 knee
35-40 minutes for bilateral exam

**PRE-TREATMENT**

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- Strengthening of quadriceps with focus in last degrees of extension + hip abductions
- Stretching of the iliotibial band, quads, psoas and hamstrings
- Physical therapy session to teach patellar taping technique
- Core and trunk strengthening exercises + closed chain proprioception exercises (eyes closed)
- Training of balance with focus in last degrees of extension + hip abductions
- Physical therapy session to teach patellar taping technique

**A post-treatment/follow-up KneeKG test allows to document therapy efficacy and adjust the treatment plan accordingly**

**YOURS LOGO HERE**

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A NEW KNEE CARE PARADIGM

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3 EASY STEPS for the RIGHT INFORMATION and the RIGHT CARE.

Case Study: Knee Osteoarthritis

514-907-6296 • Quebec, CANADA • Florida, USA • kneekg.com