**Assessment Tool for Patellofemoral Pain Syndrome Name:**

**Examination Components: Date:**

*\*Indicates special tests meant to rule out other possible diagnoses for knee pain*

**Standing assessment (anterior view)**

* Calcaneal eversion
* Tibial varum
* Squinting patellae (sign of excessive femoral antetorsion)
* Genu valgus/varus

Notes:

**Gait**

* Trendelenburg’s sign (weak hip abductors)
* Dynamic pronation
* Abnormal patellar movement

Notes:

**Sitting**

* Observation: Patella alta
* MMT: Hip ER, Knee extension
* \*Palpate for joint line tenderness to rule out meniscus injury

Notes:

**Prone**

* Forefoot varus
* Triceps surae extensibility
* \*Apley’s compression test to rule out meniscus injury

Notes:

**Sidelying**

* Ober’s test (ITB extensibility)
* MMT: Hip ABD

Notes:

**Supine**

* Visually assess static position of the patella (glide, rotation, tilt)
* Assess passive patellofemoral mobility
* Palpate patellar facets
* AROM: Knee extension and flexion
* 90/90 test (hamstrings extensibility)
* Modified Thomas test (rectus femoris extensibility)
* \*Lachman’s test to rule out ACL injury
* \*Posterior drawer test to rule out PCL injury
* \*Valgus/varus stress test to rule out MCL/LCL instability
* \*Mediopatellar plica test to rule out mediopatellar plica syndrome

Notes:

**Evidence-based interventions for possible causes of PFPS:**

**Tight soft tissue structures:**

Begin by warming up on stationary bicycle ergometer with little to no resistance (as tolerated) for 5 minutes or with a heating pad. Proceed to then stretch each tight soft tissue structure:

**Hamstrings** – supine, one leg extended on plinth, other flexed to 90/90 with arms holding on posterior side of thigh, instruct pt to extend knee vigorously and hold for 30sec 3x; can also use a towel around plantar surface of foot and perform SLR, pulling at towel with both hands to stretch

**ITB** – Assisted: sidelying, bottom leg flexed at hip and knee for comfort/stability, top leg slightly flexed at knee and slightly extended at hip, partner places force at pelvis with hand while other hand resists hip abduction at lateral lower leg for 5sec contraction, relax and allow partner to gently push down to stretch while resisting movement at pelvis, repeat 3x

Non-assisted: standing, cross one ankle over other and lean into wall away from back leg

**Quadriceps** – standing or prone, holding onto dorsal aspect of foot bringing heel as close to buttocks as possible keeping hip in neutral flexion/extension, posteriorly rotate pelvis (Piva et al., 2009)

**Triceps** **surae** – standing, both hands against wall, leaning forward with one leg on front of the other, back leg fully extended pushing heel down and front leg flexed at hip and knee, stretching triceps surae of back leg (Piva et al., 2009), hold for 30sec 3x

**Weak musculature:**

Prior to strengthening, begin with a warm-up for 5min on a stationary bicycle ergometer with little to no resistance (as tolerated).

**Quadriceps strengthening:**

NWB –

Supine: Isometric quadriceps setting (Paoloni et al., 2012; Piva et al., 2009), SLR (Whittingham et al., 2004)

Seated: knee extension exercises 90º flexion to full extension on a machine (Herrington & Al-sherhi, 2007; Chiu et al., 2012; Fukuda et al., 2012: 90-45°)

WB –

Seated: leg press exercise from 90º flexion to full extension on a machine (Herrington & Al-Sherhi, 2007; Chiu et al., 2012; Lowry et al., 2008; Fukuda et al., 2012: 0-45°)

Standing: Step-down exercises at 10 and 20cm backward, forward, and sideways – observe quality of movement and proper alignment (Paoloni et al., 2012; Piva et al., 2009; Whittingham et al., 2004; Lowry et al., 2008)

Double leg squats 0-50º (Piva et al., 2009; Lowry et al., 2008: shallow progressing to deep; Fukuda et al., 2012: 0-45º)

Single-leg mini-squat 0-30º (add Airex balance pad to challenge) (Boling et al., 2006)

Lateral step down off 6-in step (stand on Airex balance pad to challenge) (Boling et al., 2006)

**Hip abductor and external rotator strengthening:**

**Hip abductor –**

NWB:

Sidelying: clamshells for hip ABD and ER (Mascal et al., 2003; Earl & Hoch, 2001)

Hip abduction with extended knee and hip slightly extended and 25º ER (Mascal et al., 2003; Fukuda et al., 2012),

WB:

Standing: lateral aspect of leg against wall, hip neutral and knee flexed 90º, perform isometric hip ABD by pushing leg into wall (Mascal et al., 2003; Crossley et al., 2002)

“Monster walks” (Earl & Hoch, 2011; Boling et al., 2006)

Hip ABD against elastic band around ankle (Fukuda et al., 2012; Khayambashi et al., 2012, Lowry et al., 2008)

Walk with wide BOS with theraband around legs proximal to knees for hip ABD and ER

**Hip ER –**

NWB: Seated: hip ER against elastic band around ankle (Fukuda et al., 2012; Khayambashi et al., 2012)

WB: Standing: lateral aspect of leg against wall, hip and knee flexed 90º and pushing leg into wall (Whittingham et al., 2004)

Shallow lunges using an elastic band around the affected leg pulling medially above the knee to encourage ER and ABD (Mascal et al., 2003)

Clock balance and reach – stand on affected leg with knee slightly flexed and reach with opposite heel to 12:00, 1:00, etc. in a full circle (Lowry et al., 2008)

**Patellar malalignments:**

Patellar taping:

McConnell technique to correct glide, rotation, and tilt

Kinesio taping technique

**Foot mechanics:**

Orthotics: purpose is to correct excessive pronation and should include:

Support for the concavity of the medial longitudinal arch

Medial rearfoot post when tibial varum is present

Medial forefoot post when forefoot varus is present (Johnston & Gross, 2004)

\*3 major causes of pronation: tibial varum, forefoot varus, tight triceps surae (Gross, 1995)

Shoe recommendations:

Semicurved- or straight-shaped last

Combination or board last

Firm midsole density

Firm stiffness of the heel counter

No heel flare

Firm stiffness of the rearfoot portion (Johnston & Gross, 2004)