
Protokol Fisioterapi Patellofemoral Pain Syndrome (PFPS)

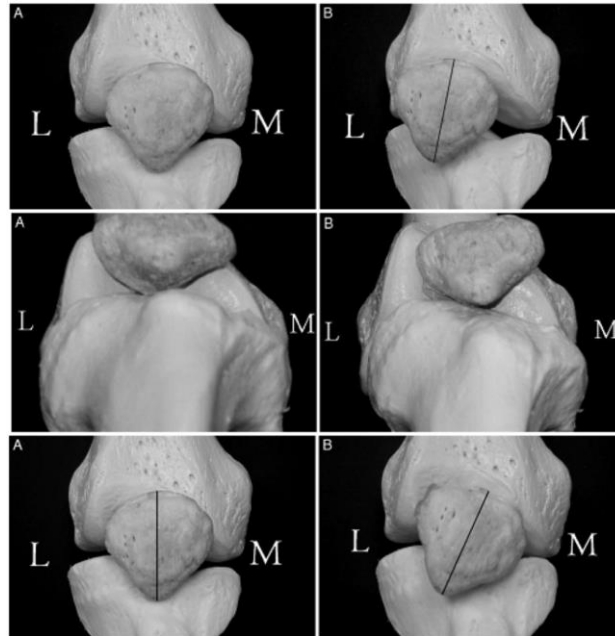
Patellofemoral Pain
Syndrome (PFPS)
Physiotherapy Protocol

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A. Latar Belakang

Definisi : *Patellofemoral pain syndrome* (PFPS) merupakan salah satu permasalahan pada sendi lutut yang sering dialami oleh masyarakat dan atlet, selain dari kesobekan pada ligamen sendi lutut (Lankhorst et al, 2012; Heintjes et al, 2003). PFPS merupakan istilah untuk bermacam-macam patologi atau kelainan anatomi yang mengarah pada nyeri lutut depan (Waryasz et al, 2008; Witvrouw et al, 2005). Permasalahan PFPS ini tepatnya mengalami kelainan pada komponen sendi lutut, yaitu pada sendi *patellofemoral*. PFPS merupakan berbagai problem nyeri lutut di sisi depan seperti *chondromalasia patella*, *jumper's knee*, *intra-articular patella chondropathy*, *patella arthralgia*, *runner's knee* (Witvrouw et al, 2005)



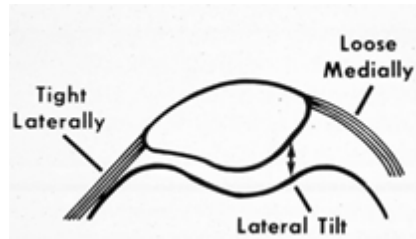
A. Sendi *Patellofemoral* dalam posisi normal. B. (lihat dari atas ke bawah) Patela bergeser ke lateral, patella terangkat ke lateral, dan patella internal rotasi (Aminaka, et al. 2005)

Tujuan : 1. Menemukan penyebab PFPS.
2. Menyusun rencana program rehabilitasi PFPS.
3. Menganalisa anatomi dan biomekanika sendi lutut terkait dalam tujuan hasil akhir program fisioterapi.

B. Klasifikasi Kasus

1. : Patellar Compression Syndromes

a. Excessive Lateral Pressure Syndrome



- i. Lateral soft tissue tightness
- ii. Lateral ligament retinacula tightness
- iii. Patella lateral tilt/shifted
- iv. Decrease medial glide
- v. Discomfort medial side
- vi. Medial retinacular stretched

b. Global Patellar Pressure Syndrome



- i. General & diffuse medial & lateral soft tissue tightness
- ii. Patellar compressed within trochlea
- iii. Due to fracture, knee surgery with arthrofibrosis (after ACL Recon)
- iv. Decrease superior patella mobility → immobilized knee in flexion

c. Patella Instability



- i. Dislocation/subluxation
- ii. Hypermobility lateral
- iii. Rupture medial PF ligament
- iv. More sensitive medial pain

d. Biomechanics dysfunction

- i. Kinetic chain problem (proximal & distal)
 - ii. Ankle & foot mechanics, hip strength, flexibility deficit
-

iii. Muscle imbalance (glteus medius & VMO weakness)

e. Direct Trauma

i. Patellofemoral cartilage/capsule problem

f. Soft Tissue Lesion

i. Suprapatellar plica syndrome



Kondisi ini sangat jarang ditemukan (individual), ditemukan synovial fold pada sisi medial dan superior patella. Struktur seperti ini akan mengakibatkan pressure pada patella pada posisi knee flexi.

ii. ITB Friction

iii. Fat Pad Syndrome



iv. Medial Patellofemoral Ligament Injury

g. Overuse syndrome



1. Patela tendinitis, quadriceps superior tendonitis

2. Commonly at inferior pole of the patella, mid-tendon/tibial tuberosity

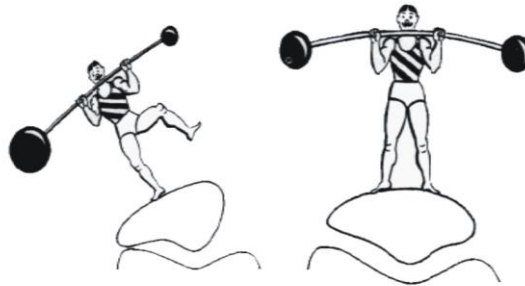
C. Etiologi

Sumber	Etiologi PFPS
Lankhorst et al, 2013	<ul style="list-style-type: none">• Besarnya Q-angle• Besarnya sudut sulcus & Patella Tilt• Lemahnya otot Abduktor sendi panggul• Terbatasnya gerak eksternal rotasi sendi panggul
Bolgia & Boling, 2011	<ul style="list-style-type: none">• Quadriceps lemah,• Kerja otot quadriceps tidak seimbang,• Ketegang jaringan lunak sendi lutut,• Meningkatnya Q-angle,• Otot sendi panggul lemah,• Perubahan posisi/bentuk kaki
Jensen, 2008	<ul style="list-style-type: none">• Substance-P meningkat,• Posisi sendi lutut abnormal,• Reflex Simpathetic Dystrophy (RSD),• Menurunnya kekuatan quadriceps
MacLean, 2004	<ul style="list-style-type: none">• Lemah VMO,• <i>Maltracking</i> patella,• <i>Joint Stress</i>
Juhn, 1999	<ul style="list-style-type: none">• Overuse & overload,• Problem biomekanika & penurunan fungsi otot (pes planus, pes cavus, q-angle, quadriceps lemah, tight ITB & hamstring).

D. Patofisiologi

Neuromuscular (Lateral tracking)

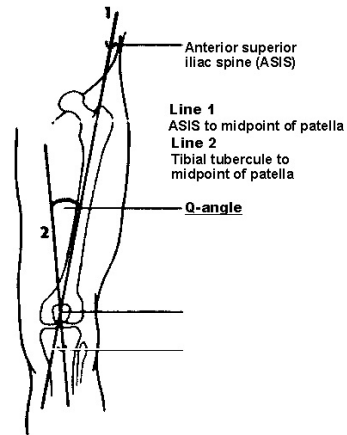
1. Muscle Imbalance (VL/ITB > VMO) (Van Tiggelen et.al, 2009; Pecina dan Bojanic, 2004)
2. Atrofi VMO (Bolgia et al. 2008)
3. Weak Gluteus Medius
4. MPFL tear



Ilustrasi Patela tilt ke lateral akibat tidak stabilnya sisi medial (Pecina dan Bojanic, 2004)

Biomekanik

1. Q-angle >15° : menyebabkan kerusakan facet



Gambaran dari pengukuran *Q-angle* (Jaiyesimi et.al, 2009)

E. Pemeriksaan

Spesifik : 1. Patellar Apprehension test

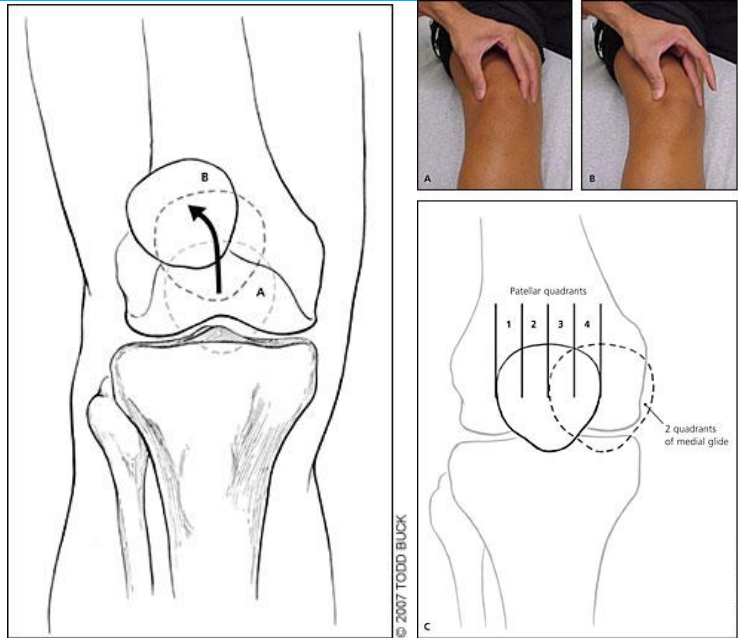
Caranya dengan memposisikan pasien tidur terlentang dengan sendi lutut ditekuk 30 derajat. Dalam posisi tersebut pemeriksa menarik patella ke lateral dan secara perlahan pemeriksa meluruskan kaki pasien hingga ekstensi penuh (Nijs-jo et al, 2006).



Patellar Apprehension Test (Nijs-jo et al, 2006)

2. Lateral Patella Tracking (J-Sign).

Saat Extensi lutut, terlihat pergeseran tulang patela ke lateral



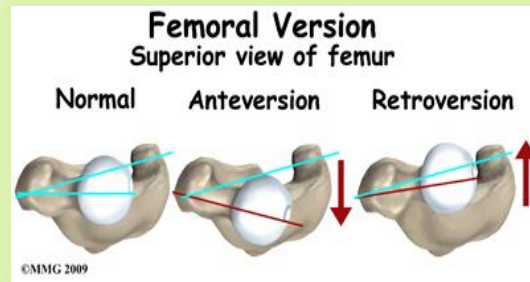
Objektif : 1. Q-angle

Mengukur *q-angle* dengan menggunakan *goniometer* adalah dengan memposisikan pasien tidur terlentang dan menarik garis dengan titik poros di titik tengah tulang patela. Kemudian menarik garis *superior iliac anterior spine (SIAS)* ke patela dan tuberositas tibia ke patella. Agar hasilnya akurat posisi tulang patella di posisikan ke tengah dari *trochlea* dengan menekuk sendi lutut 30 derajat (Madani et al, 2010).



Pengukuran *Q-angle* (Madani et al, 2010)

Analisis : 1. Hip Mekanik ; Assimetric hip rotation



2. Flat Foot

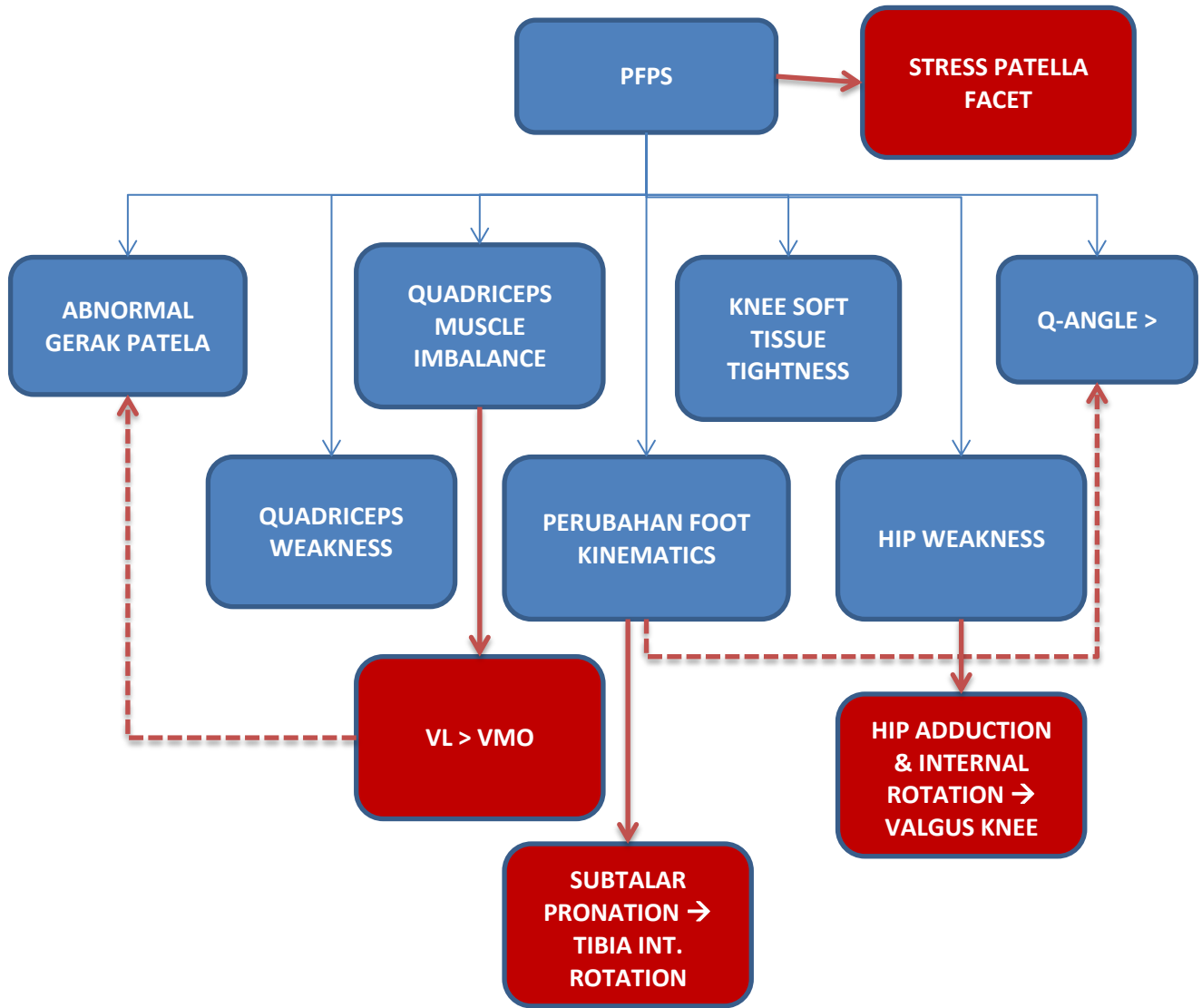
Berpengaruh pada closed kinetic chain sendi lutut terjadi over screw fenomena yang berpengaruh pada rotasi internal tibia

3. Tight Quadriceps

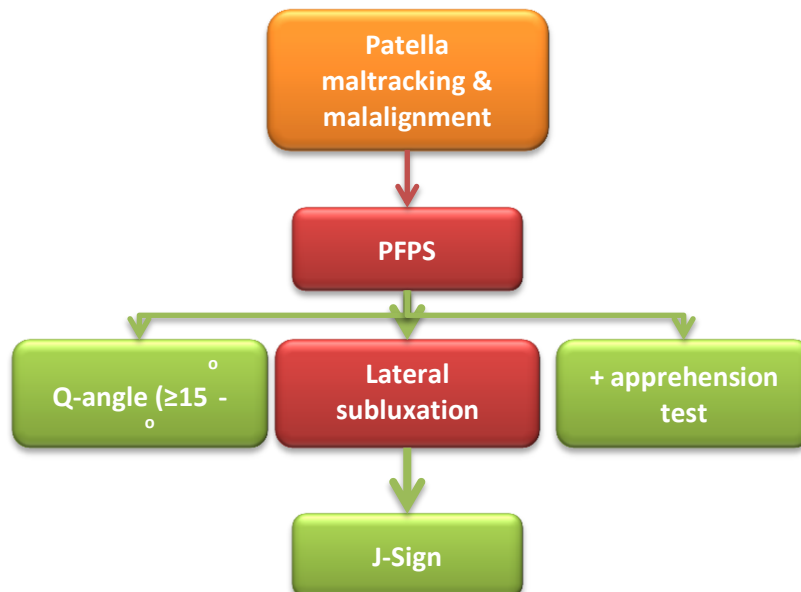
4. Tight ITB

F. Kerangka Berfikir

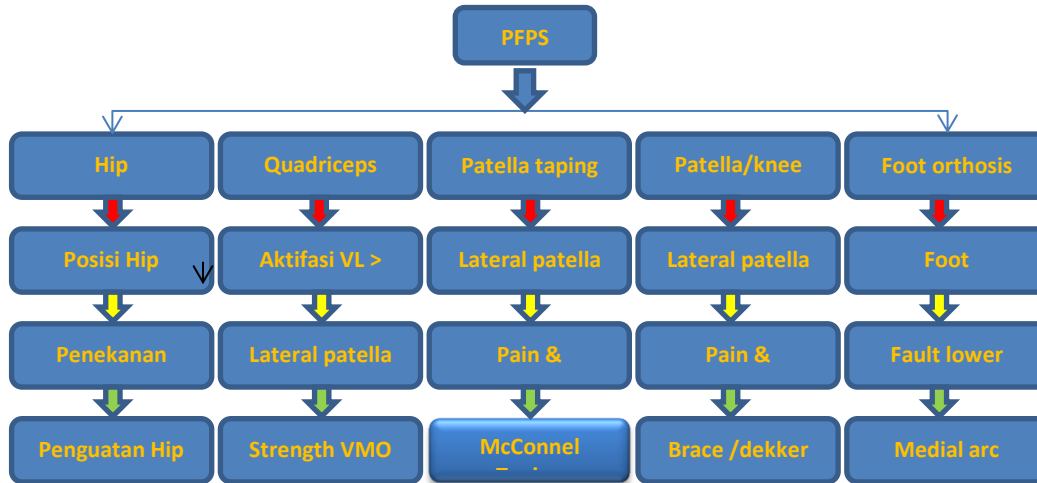
1. PFPS



2. Instability Patella



G. Strategi Penanganan



Tujuan : Koreksi Posisi Patela
 : 1. Tingkatkan medial stabilisasi
 : 2. Tingkatkan VMO neuromuscular
 : 3. Body Control

Target Akhir Short Term : 1. Bengkak berkurang
 : 2. Nyeri berkurang
 : 3. Muscle Imbalance berkurang

Long Term : 1. Fungsional & partisipasi
 : 2. Return to play/competition

1. Alat Bantu

Taping McConnell (koreksi patela) : 1. Alat : taping plester/rigid, hypafix
 : 2. Prosedur:
 a. posisikan lutut fleksi 30°.
 b. letakkan hypafix di sekitar patella secukupnya hanya sebagai pelindung kulit.
 c. dorong patela ke medial menggunakan ibu jari .
 d. sobek plester, letakkan anchor pada sisi lateral patela, tarik hingga epicondilus femur.
 e. sobek plester, letakkan anchor pada sisi lateral atas patela, tarik hingga epicondilus femur.
 f. sobek plester, letakkan anchor pada sisi lateral bawah patela, tarik memutar hingga epicondilus femur



Kinesiotaping

1. alat : Kinesiotaping
2. prosedur :
 - a. Pertama berikan fasilitasi pada otot *vastus medialis oblique* dengan menggunakan *kinesiotape* (KT) kurang lebih panjangnya 20 cm dan berikan potongan pada sisi tengah (potongan huruf Y) dan sisakan 5 cm sebagai jangkar. Fleksikan kaki kira-kira 30° dan letakkan jangkar pada origo VMO. Kemudian potongan taping diletakkan melingkari VMO dengan tarikan 25-50%.



Aplikasi *Kinesiotape* pada Otot *Vastus Medialis Oblique*

- b. Untuk koreksi posisi patella, dengan posisi lutut yang sama, ambil 17 cm KT dan potong membentuk huruf Y berikan 5 cm sebagai jangkar. Letakkan jangkar tepat di atas epikondilus medial tulang femur. Lalu lingkari patella dengan potongan KT tersebut dengan tarikan 25%.



Aplikasi *Kinesiotape* pada Patela

- c. Untuk menginhibisi otot *vastus lateralis* dan *illiotibial band* posisikan pasien tidur miring dengan target kaki yang akan diberikan KT berada di atas. Kemudian pasien diminta untuk menekukkan kaki yang menjadi target, lalu panggul hiperekestensikan dan adduksikan. Hal tersebut untuk mengulur otot *vastus lateralis* dan *illiotibial band*. Dengan posisi tersebut berikan taping sepanjang otot *vastus lateralis* tanpa dipotong sisi tengahnya (bentuk huruf I) berikan jangkar 5 cm yang diletakkan di tuberositas tibia

dan berikan tarikan ke proksimal 25%.



Aplikasi *Kinesiotape* pada Otot *Vastus Lateralis* dan *Iliotibial Band*

2. Protokol Rehab

Phase	Program	Kriteria/ Goal
1	<ul style="list-style-type: none"> : 1. Ice 15' 2. Taping/kinesiotape 3 days 3. Mobilisasi patella 4. Quad Set 6 sh, 10 reps, 2 set (+NMES) 5. SLR multi angle 6 sh, 8-10 reps, 2 set 6. Terminal knee extension 120°, 150°,180° 6 sh, 8-10 rep, 2 sets 7. Wall squat 45° 6 sh, 8-10 reps, 3 set 	<ul style="list-style-type: none"> 1. Reduce pain & inflamasi 2. Good quadriceps control & patela 3. Release lateral tightness
2	<ul style="list-style-type: none"> : 1. Taping/KT 2. Quad Set 10 sh, 10 reps, 2 set 3. SLR multi angle 6 sh, 8-10 reps, 2 set (increase weight) 4. Closed chain (eccentric): mini lunges, lateral step up, mini squat band 10-12 rep, 3 set, [slow] 5. Eccentric calf 12 rep, 3 set [slow] 6. Tidak boleh sepeda 7. Lower fleksibility exc 	<ul style="list-style-type: none"> 1. Minimal Pain & Inflammation (c) 2. Minimal lateral tightness (c) 3. Minimal vector pressure (c) 4. No pain in eccentric
3	<ul style="list-style-type: none"> : 1. Closed chain (eccentric): mini lunges, lateral step up, mini squat band 10-12 rep, 3 set, [slow] (increase weigth) 2. Eccentric calf 12 rep, 3 set [slow] 3. Bridge, dead lift, hip lift 6 sh, 10 rep, 2 set 4. Aerobic training 5. Plyometric exc : box jump, lateral bow jump, tuck jump 6. Propiceptive training (ladder drill n cone drill); Ladder : icky shuffle, side rocker, high knee run, two-in lateral shuffle. Cone dril: T- drill, 20 yd shuttle run, figure 8 drill. 	<ul style="list-style-type: none"> 1. No pain (c) 2. Quadriceps strength 80% (c) 3. No pain & inflamasi (c) 4. Full ROM (c) 5. Propioceptive agility 6. Power ability
4	<ul style="list-style-type: none"> : 1. Cross Training 2. Running drill 3. Cutting drill 4. Reaction drill 	<ul style="list-style-type: none"> 1. No pain (c) 2. Quadriceps strength 90% (c) 3. Return To Play

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