Gait Analysis

Introduction & Clinical Application

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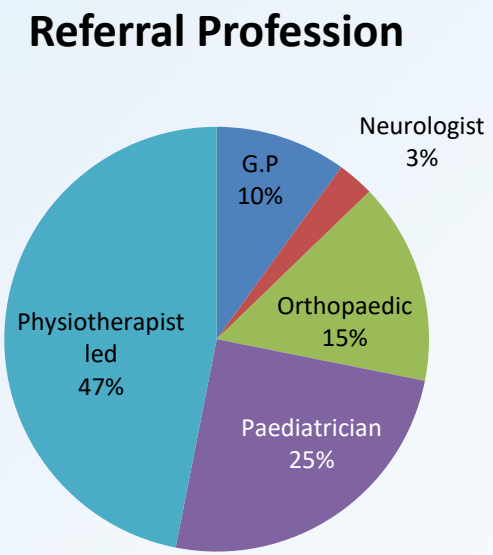
National Centre for Clinical Gait Analysis

Who are we?

Referrals

- Primarily from Medical Consultants (Orthopaedic, Paediatric, Neurology)
- Will accept GP referral if no consultant involved
- Physiotherapy led – pre-arranged circumstances e.g. CRC, Temple Street
  - On the understanding that referral is on behalf of consultant
  - The consultant is informed of the referral
  - Report goes to the consultant



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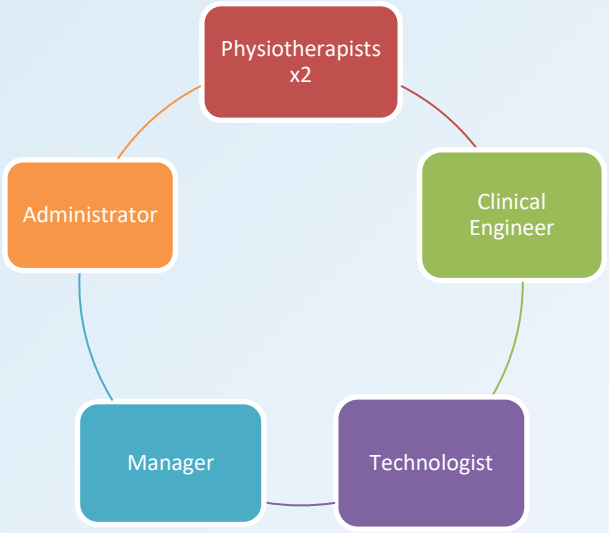
How do we do it?

Clinical assessment + 3D Motion Capture when walking + Video



+

Consultant Orthopaedic Surgeon

or

Consultant Paediatrician

=

Recommendations/Report

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Why do gait analysis?

We get asked specific questions by our referrers and clients about…

Treatment planning

Monitoring or Measuring change

Helping diagnose

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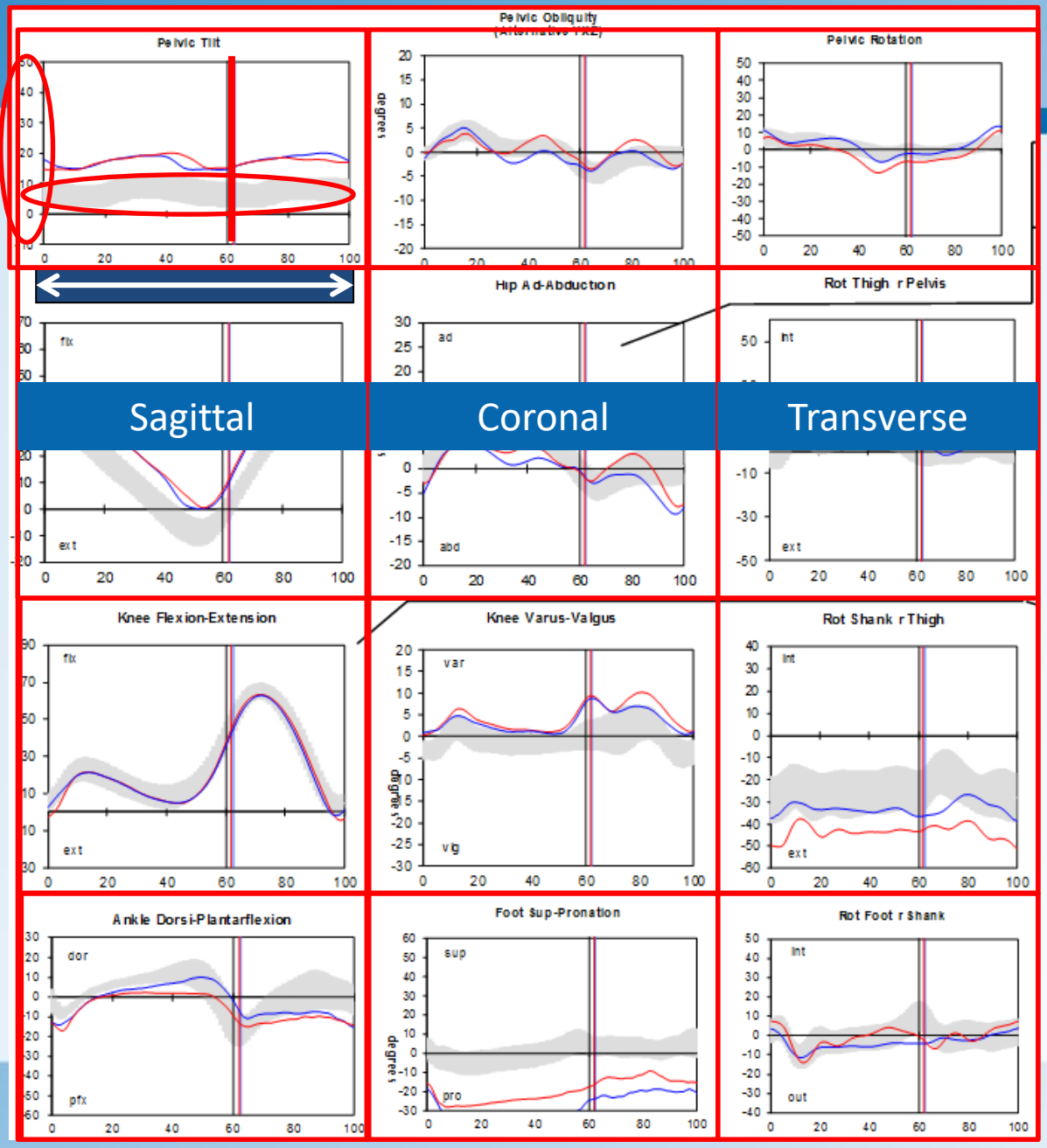

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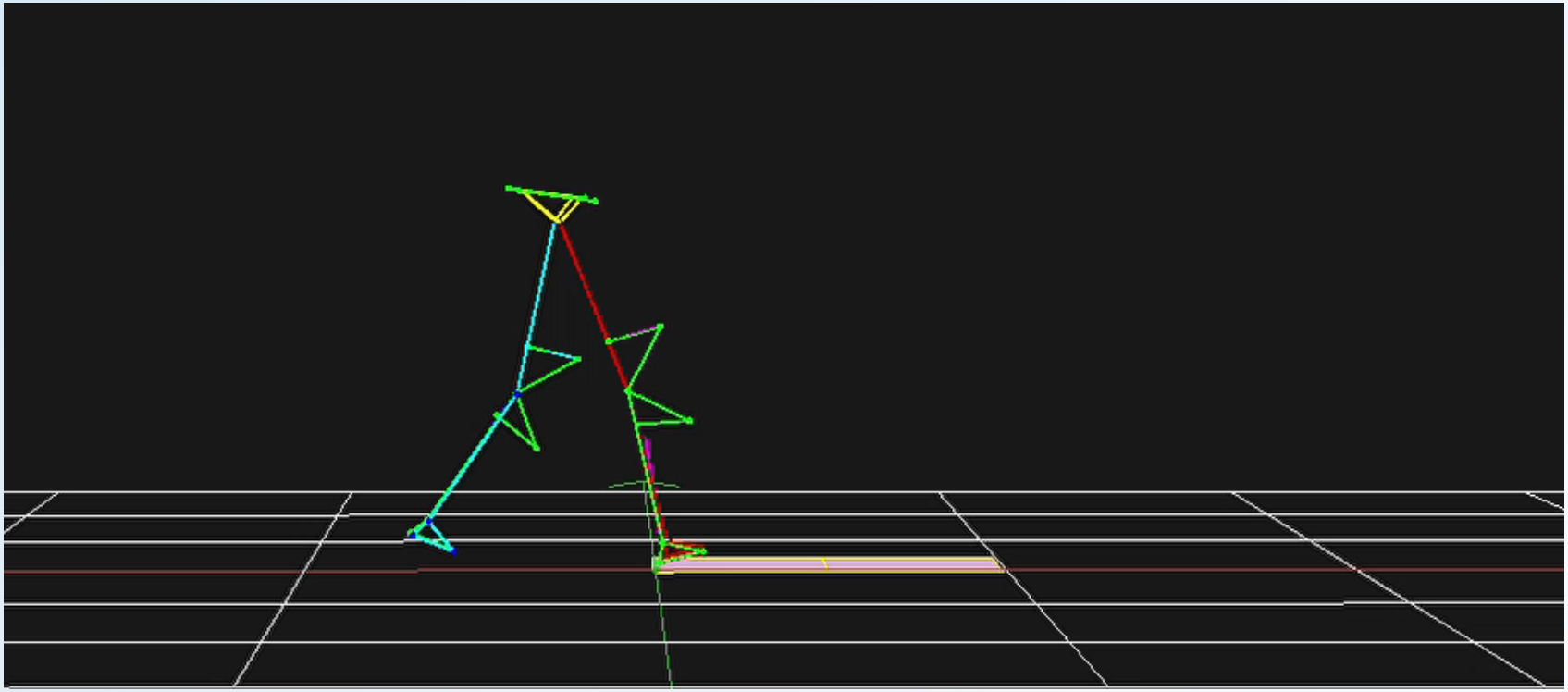
Force plates

The direction and magnitude (i.e. vector) of the forces on the floor



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At the joint level….

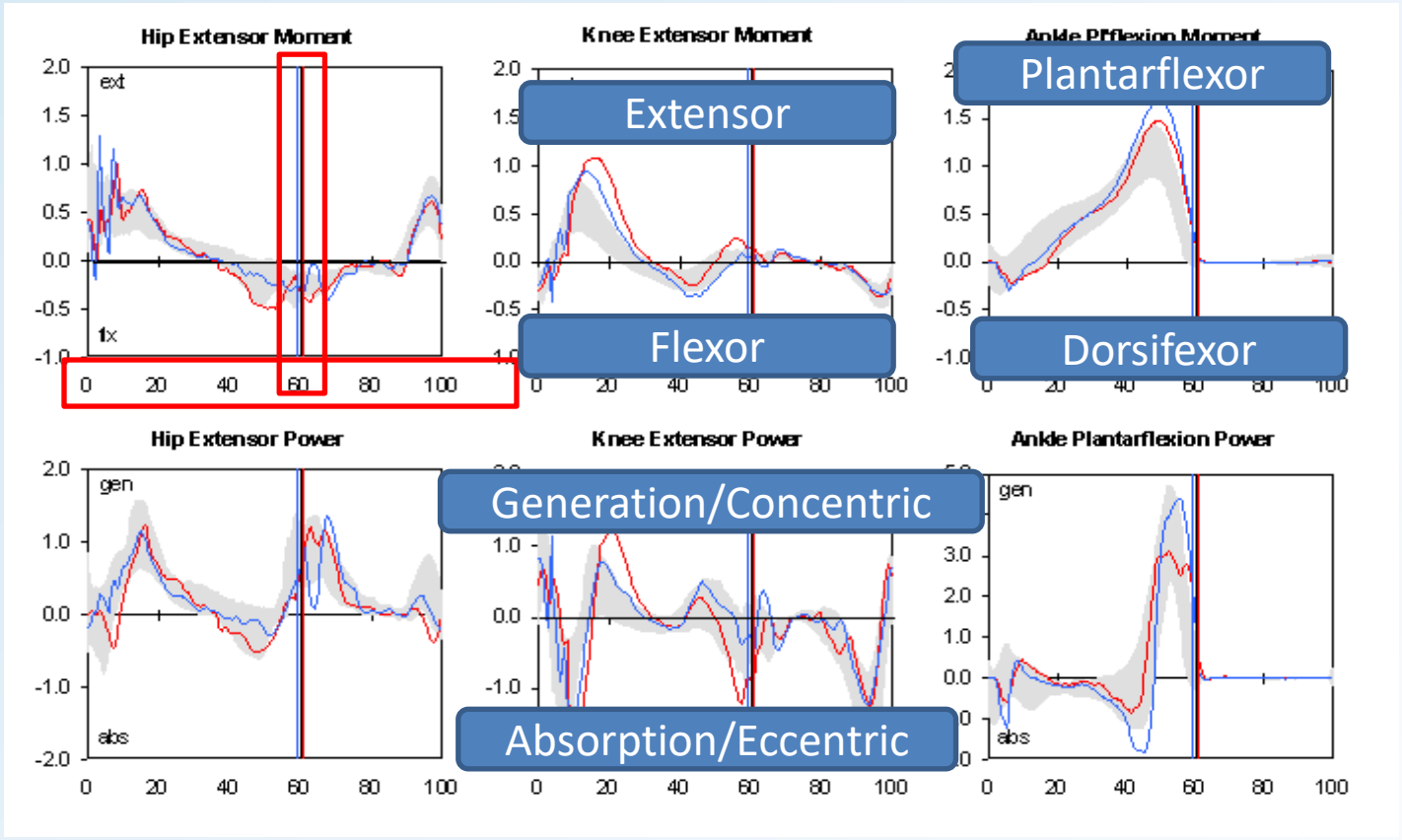
- Combining the vector information with joint kinematics:
  - Joint moments
    - Magnitude of rotation load (torque) applied to the joint
- Combining the moment with time:
  - Extrapolation of powers
    - The energy absorbed or generated across the joint
      - i.e. concentric or eccentric.

Kinetic Graphs - Sagittal

Hip | Knee | Ankle

Moment

Power



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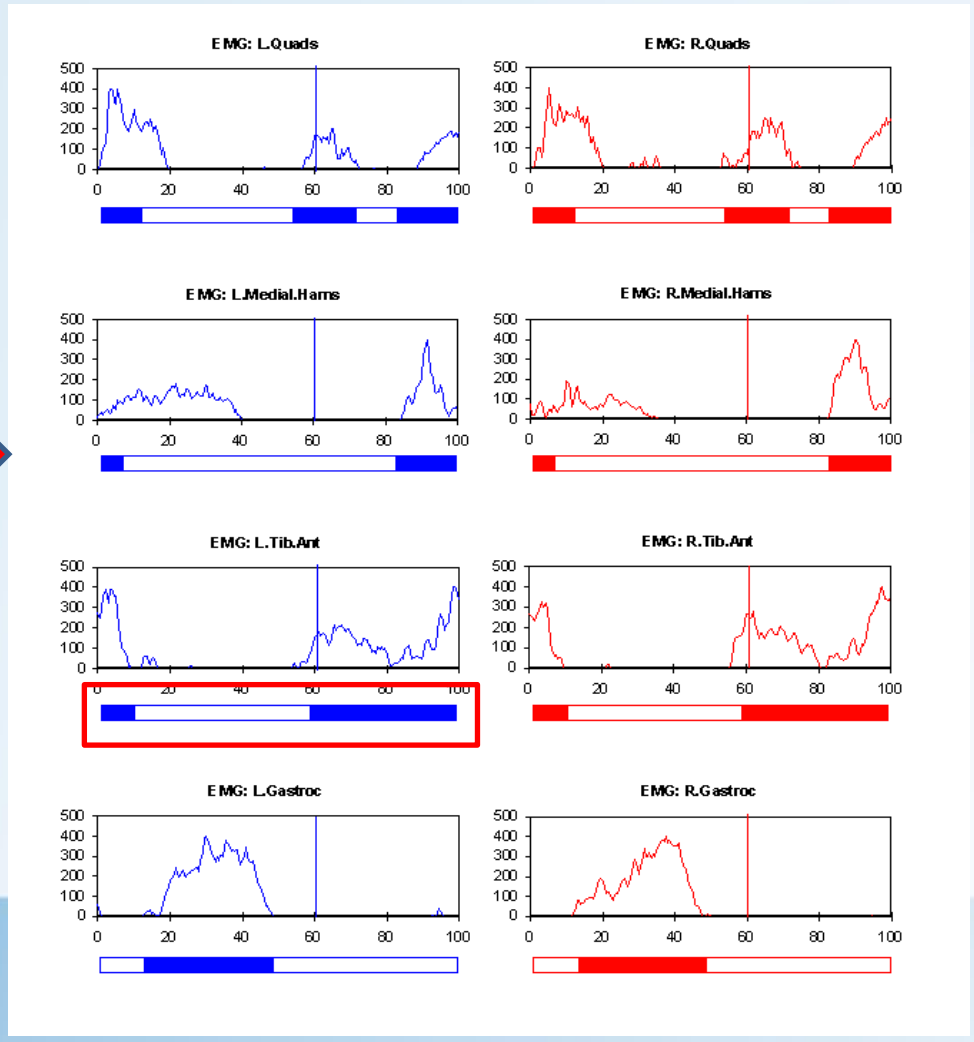
Electromyography (EMG)



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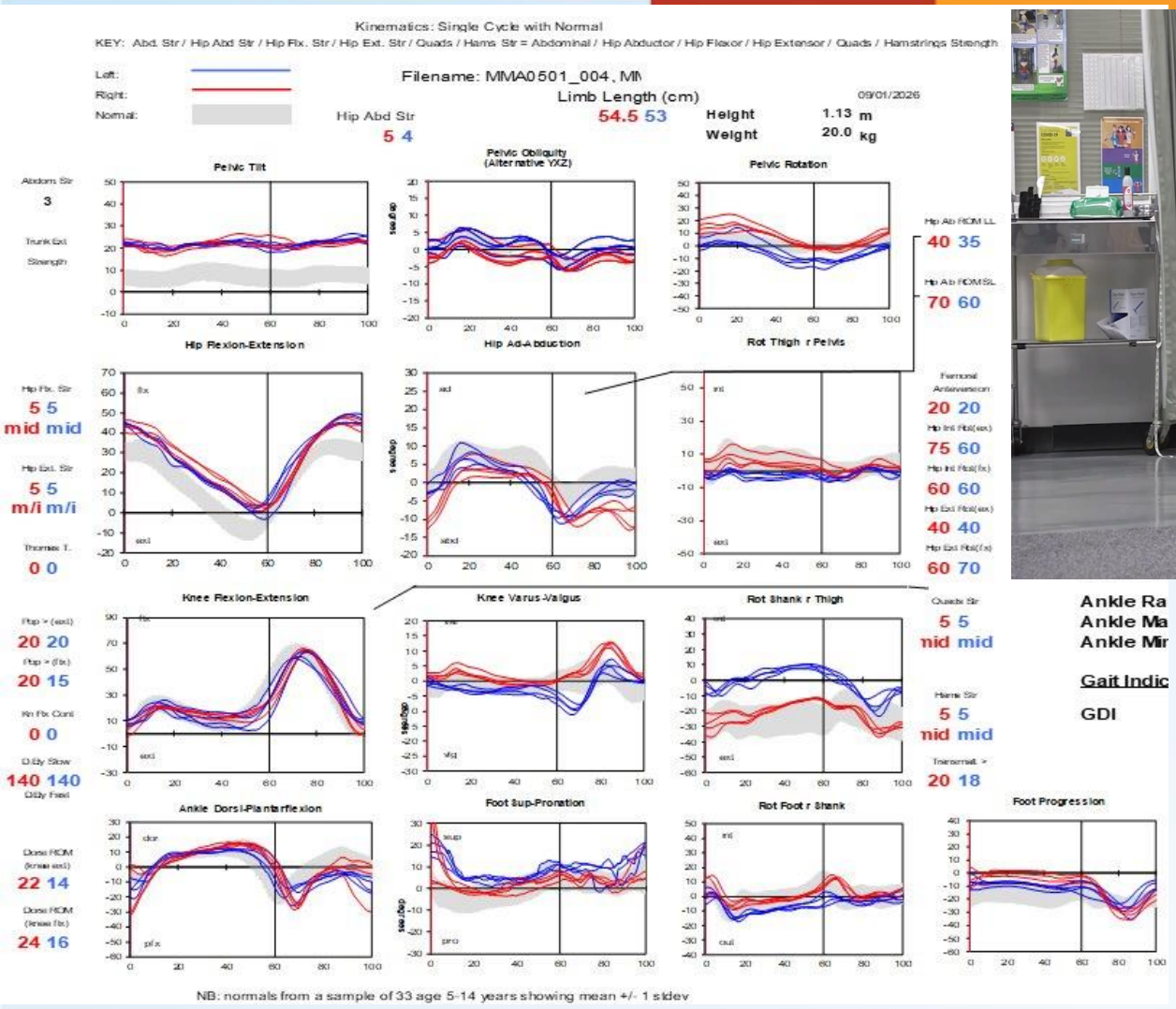
Query Diagnosis



- 6 years old
- h/o neonatal care
- Mild intoeing
- Difficulty hopping on the left

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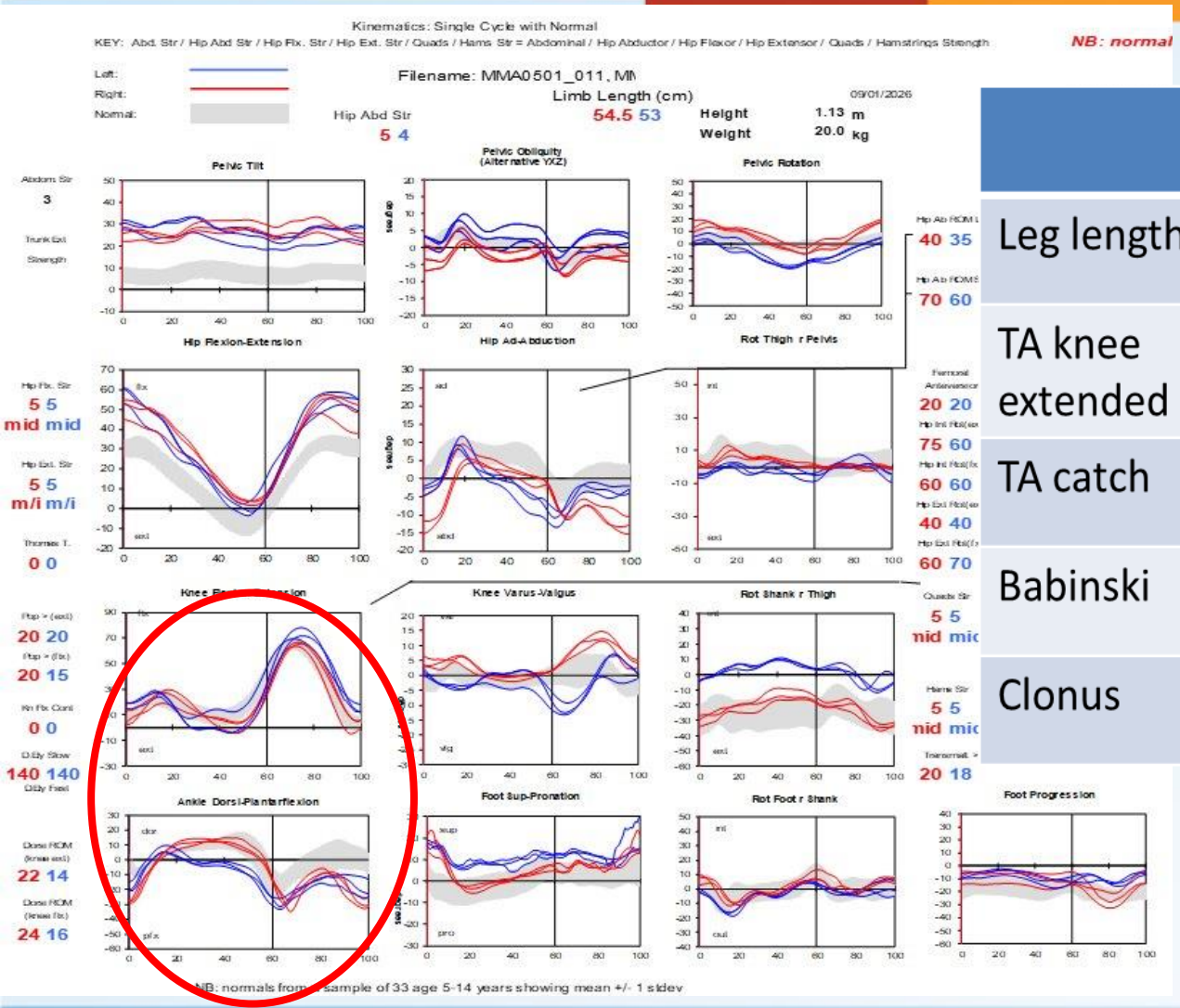
Fast instructed walking



	Left	Right
Leg length	530	545
TA knee extended	90+14	90+22
TA catch	90-4	No catch
Babinski	Present	Absent
Clonus	Present	Absent

Recommendations:
Further work up
Referral to Paediatrics

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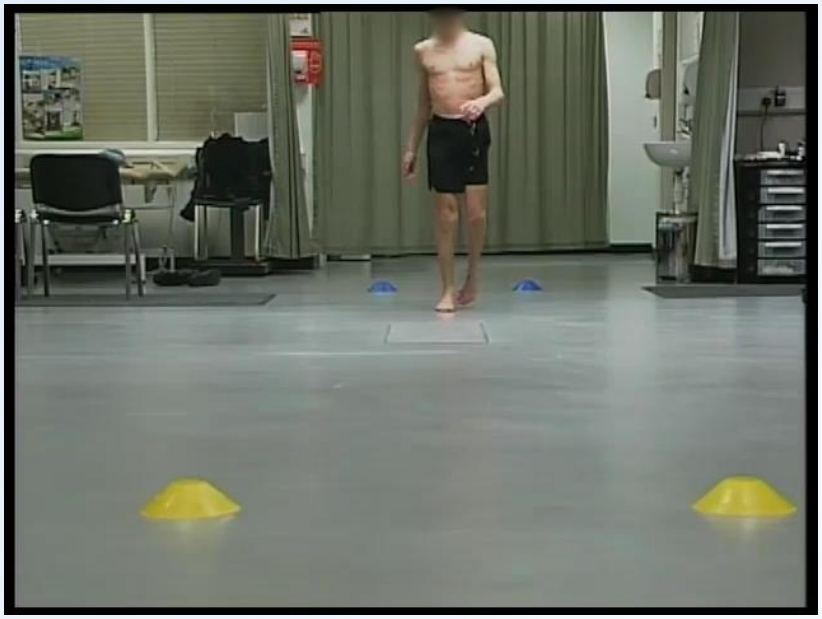
Management advice

- 14 year old boy, asymmetric bilateral GMFCS 1
- Issues with tripping and falling
- Left TA contracture



Initial GA	Left	Right
TA knee extended	90-7	90-1
TA fast catch	90-10	90-5
TA knee flexed	90	90+7

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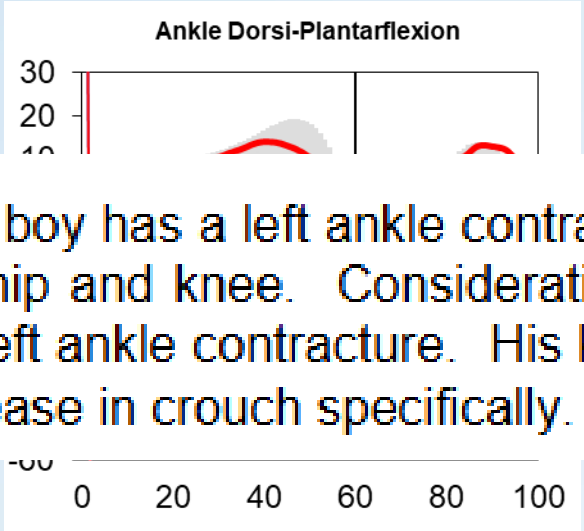
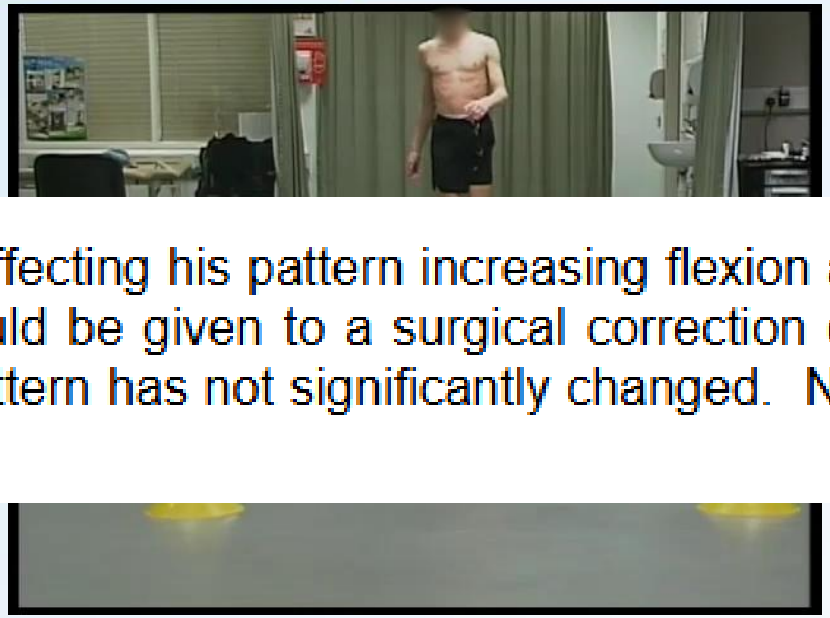
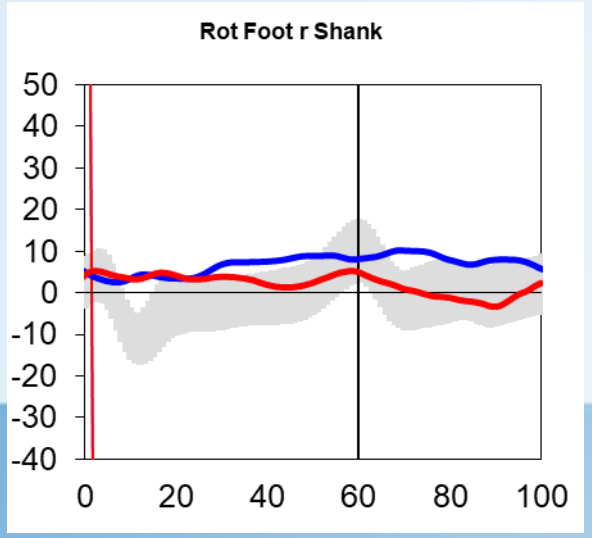
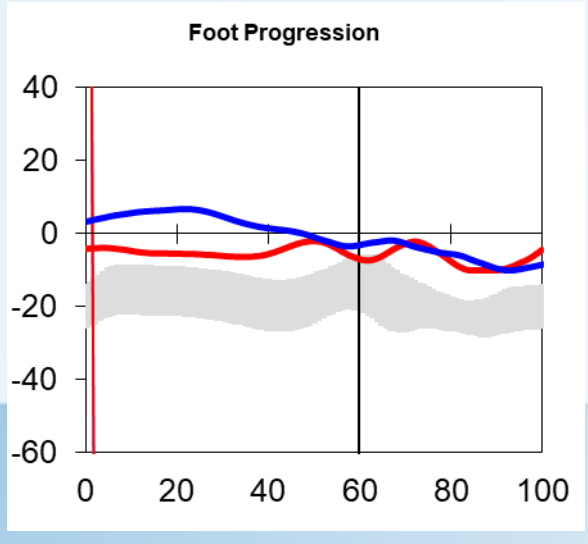




This boy has a left ankle contracture affecting his pattern increasing flexion at the hip and knee. Consideration should be given to a surgical correction of his left ankle contracture. His knee pattern has not significantly changed. No increase in crouch specifically.





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Left TAL and SPLATT performed

Post Op	Left	Right
TA knee extended	90+10	90+7
TA fast catch	90+10	90+7
TA knee flexed	90+18	90+15

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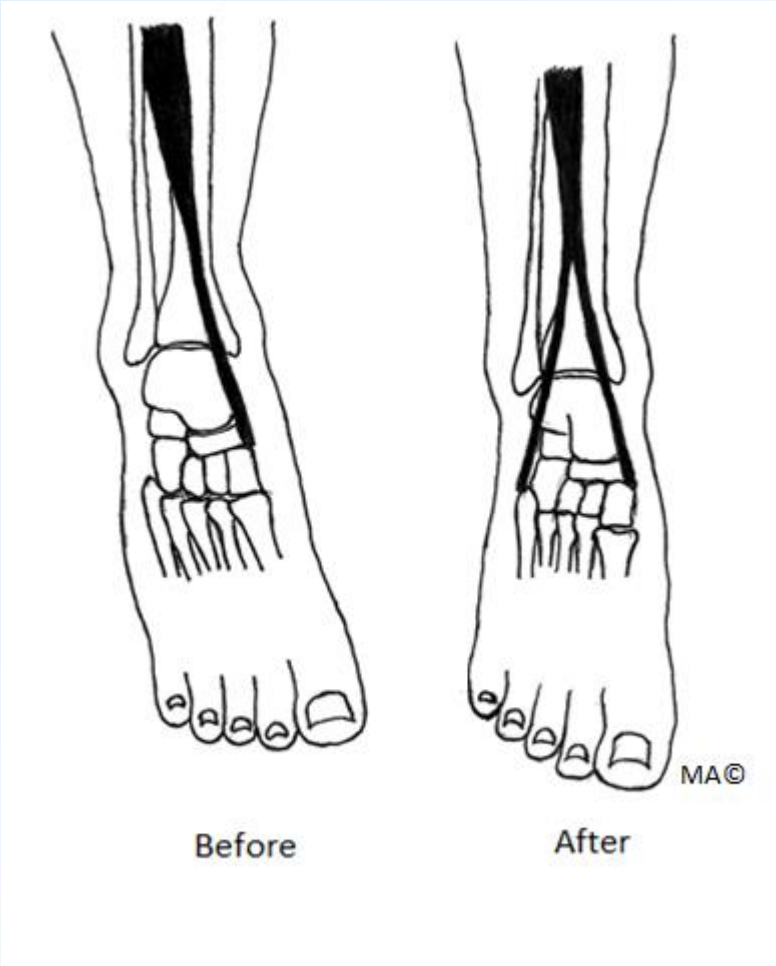
SPLATT

- **Spl**it **a**nterior **t**ibialis **t**ransfer
- Where the foot is flexible AND
- A varus/adducted foot deformity is due to:
  - Relative overactivity of Tib Ant
  - Relative underactivity of peroneii.

  = imbalance of foot

- Various options for insertion:
  - Peroneus brevis (SPLATT PB)
  - Bony tunnels:
    - Cuboid
    - Base of 5th MT



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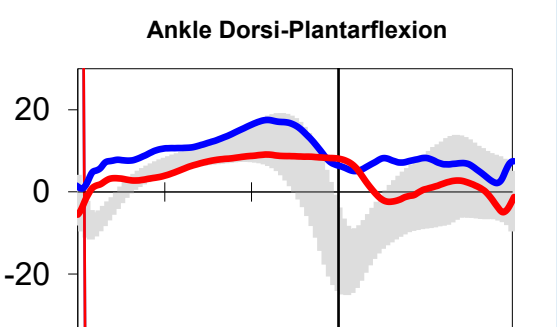
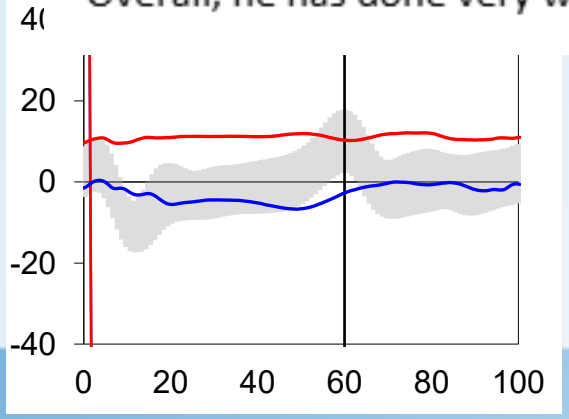
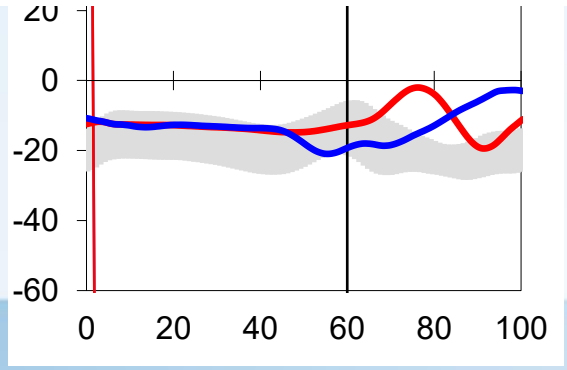


This is a post-op gait analysis. This young man had a TAL and SPLATT performe[illegible] and Overall, his kinematic profiles are excellent. He does have some stiff knee gait on the [illegible] knee. He does have some torsional profile differences between right and left however, they cancel each other out and he has got a neutral foot progression line.

Overall, he has done very well in the post-op period.





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Thank you..

Questions?

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