

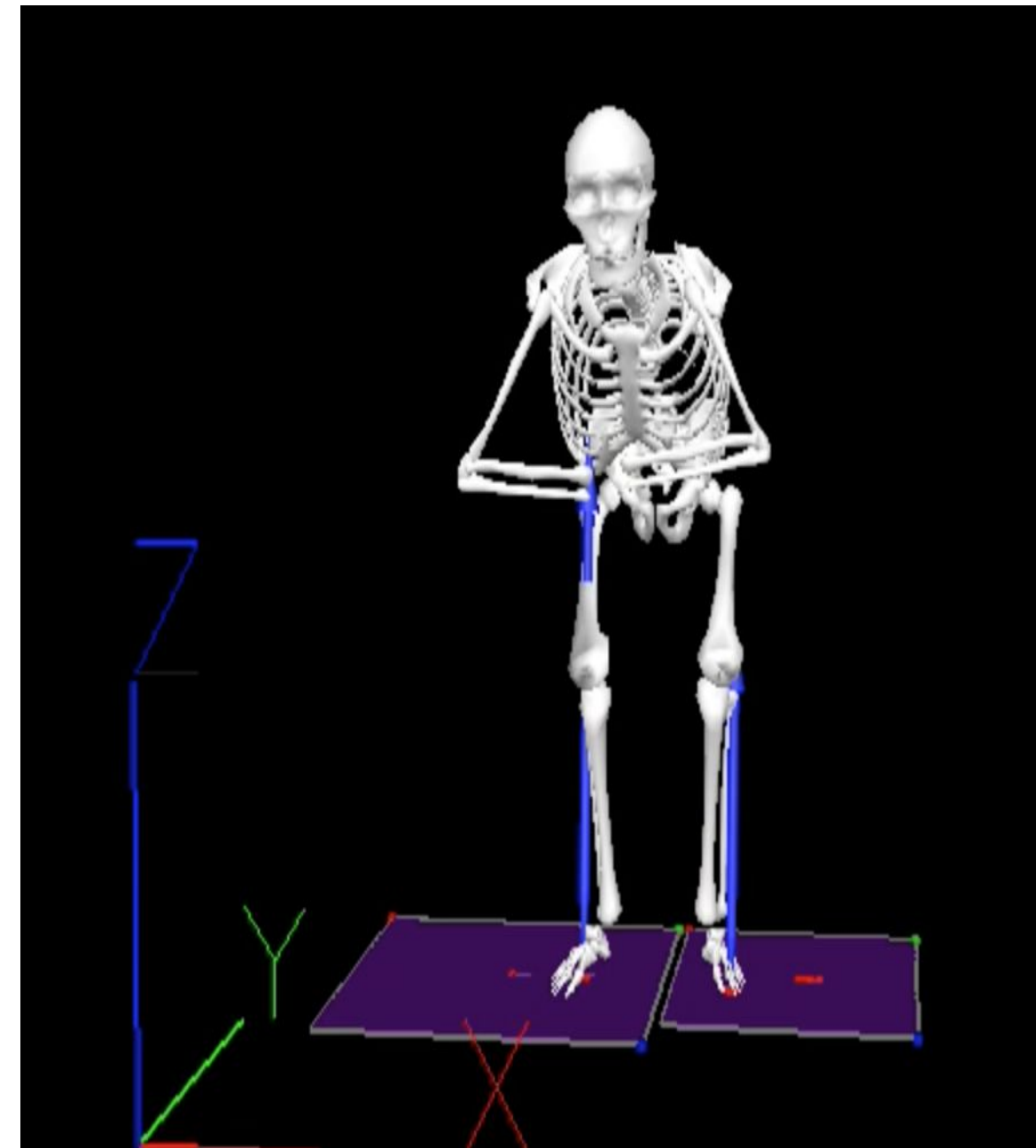
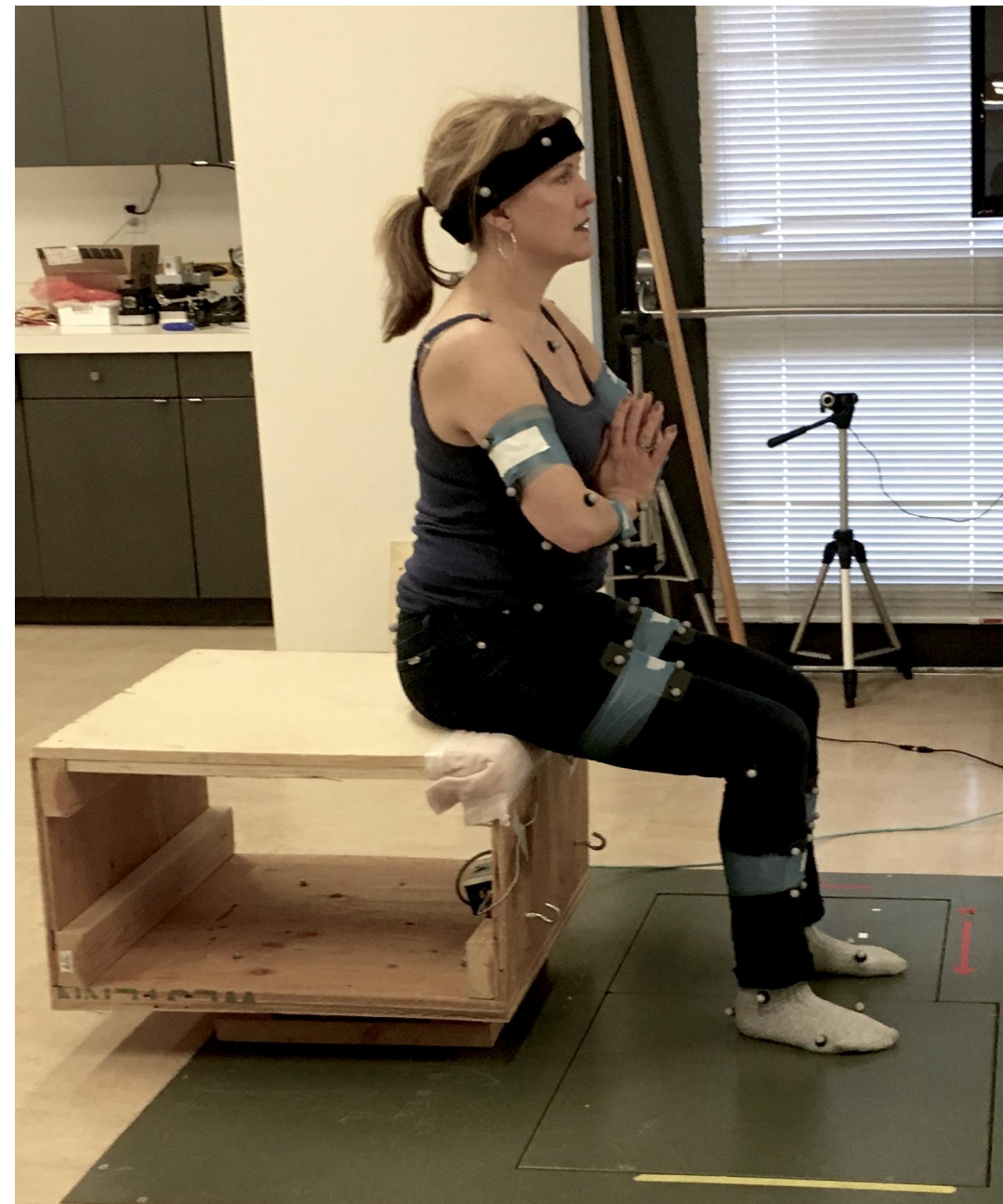


# Sit-to-Stand Symmetry in Individuals with Hip Pathology

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## Research Gap:

Post-hip fracture patients continue to exhibit asymmetries during sit-to-stand task following rehabilitation. While strength is thoroughly addressed, perceptual deficits may be a missing component to rehabilitation post-hip fracture.



## Subject: (n=1)

51 year-old community-dwelling female who sustained a left hip fracture following a fall from height in 1994 and underwent left hip ORIF shortly after the incident.

## Methods:

Case study of one individual post-hip fracture under 10 conditions to test the subject's sense-of-effort versus sense-of-force production, comparing affected hip to non-affected hip.

Data was collected using a 10 camera Qualisys IR system, 2 ATMI force platforms, and Visual 3D (C-Motion) software.

## Are They Asymmetric?

### Hypothesis #1

While rising from StS, individuals post-hip fx will shift weight off their involved lower extremity resulting in an asymmetrical vGRF.

## Do They Know They are Asymmetric?

### Hypothesis #2

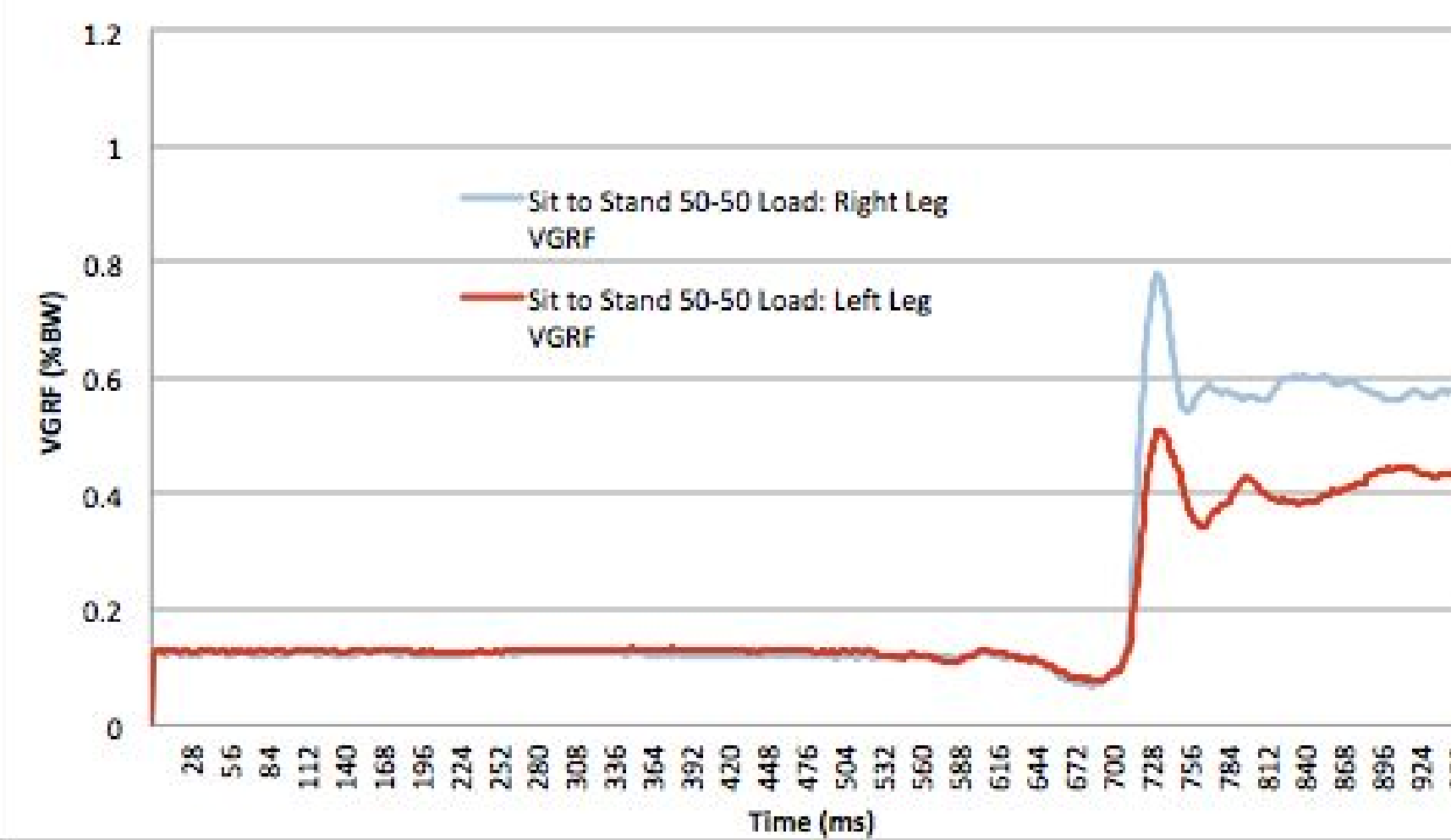
Individuals post-hip fx, will not accurately perceive the presence of their own StS asymmetry.

## Why Are They Asymmetric?

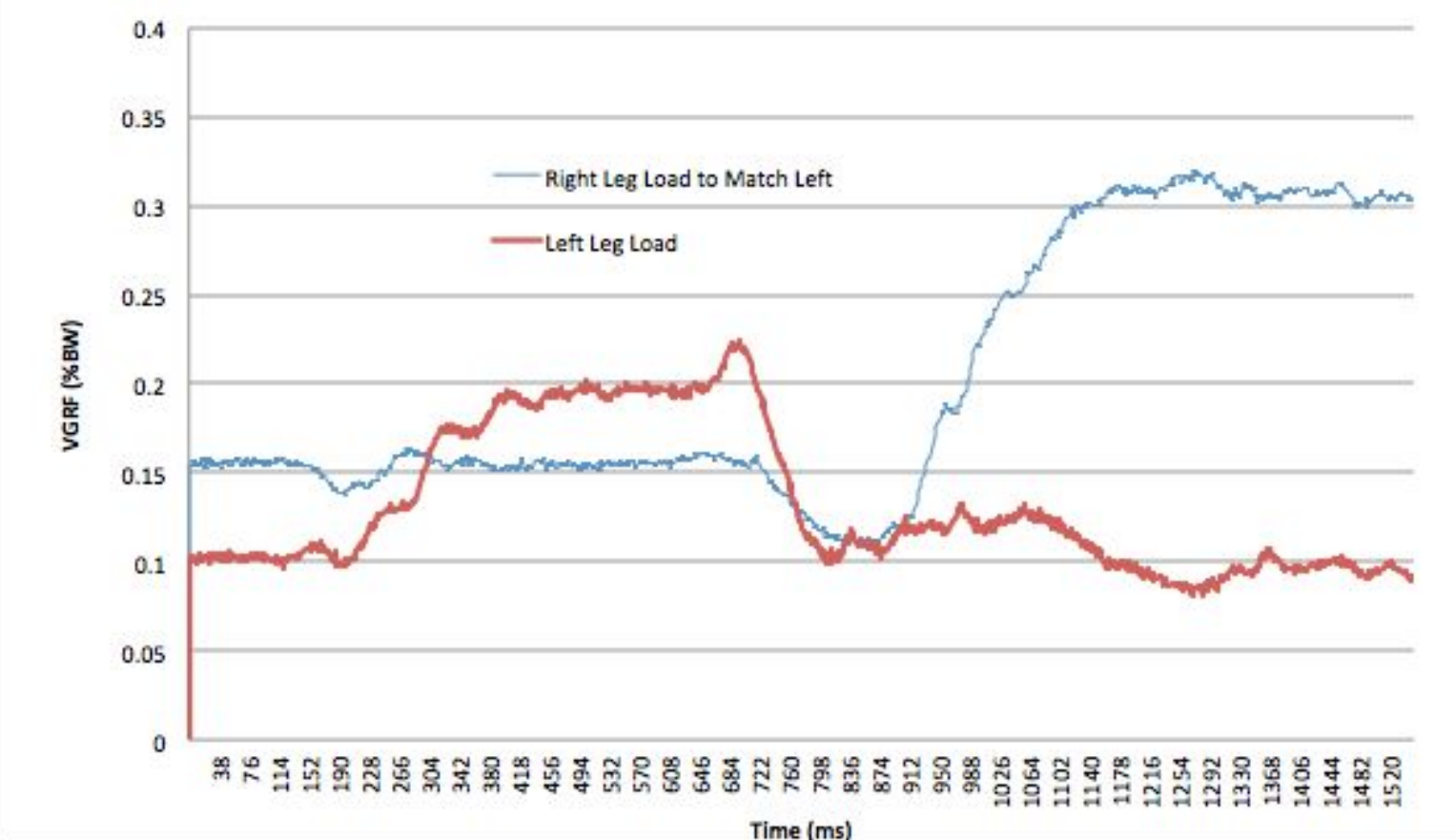
### Hypothesis #3

During StS, individuals post-hip fx will determine loading through the feet (Vgrf) based upon perceived level-of-effort rather than actual level-of-force.

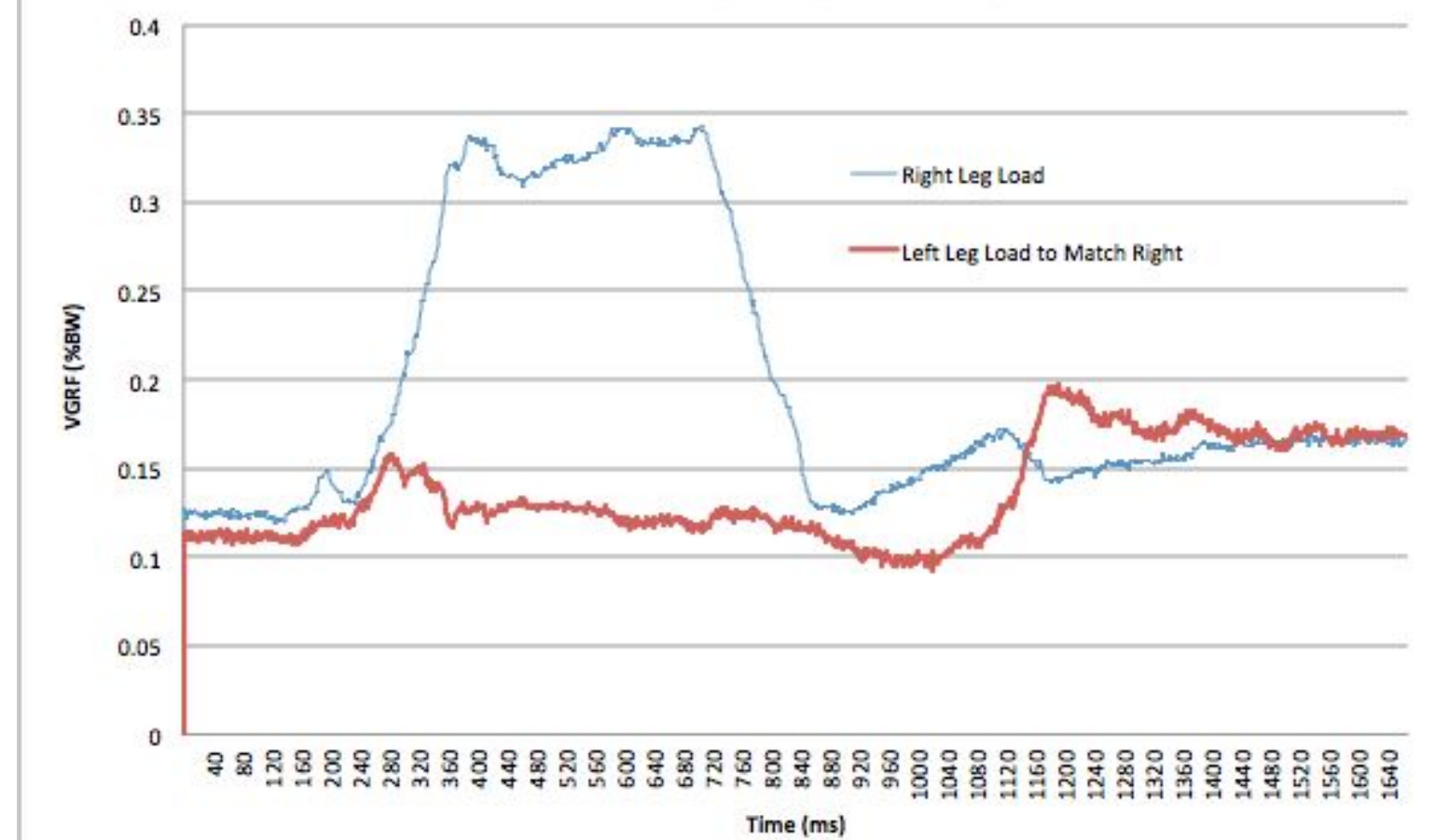
Sit to Stand 50-50 Load VGRF: Right Leg versus Left Leg



Match Load of Left Leg in Sitting (VGRF)



Match Load of Right Leg in Sitting (VGRF)



Trial	Right Leg Peak % Body Weight	Left Leg Peak % Body Weight	% Difference Body Weight
StS Self-Selected	67%	61%	6%
StS 50-50 Load	78%	51%	27%
StS 50-50 Load to Fix the Asymmetry	74%	50%	24%

## Conclusion #1

Subject exhibited asymmetry during Self-Selected StS. When prompted to complete 50-50 StS, the asymmetry become more pronounced.

## Conclusion #2

The subject reported knowledge of asymmetry during the Self-Selected trial, but not for the 50-50 trial. As the asymmetry became more pronounced, she was unable to perceive it.

## Conclusion #3

Since the subject was asked to match at a self-selected submaximal force during the load matching tasks, the asymmetry cannot be explained entirely by weakness.