



## ICSC05 – Lower Extremity

# Functional Assessment and Rehabilitation of the Lower Extremity



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**Outline – Hip & knee**

**Assessment Tiers 1-5**  
Posture  
Functional Assessments

**Rehabilitation Tiers 1-5**  
Remove the negatives  
Static Stabilization  
Dynamic Stabilization  
Mobilizer Conditioning  
ADL's




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### Tier 1 - No movement, No Load

- Paradoxical breathing
- Faulty Mechanics
- Static Posture
  - Lengthened Tissues
  - Shortened Tissues
  - Tissue tone assess




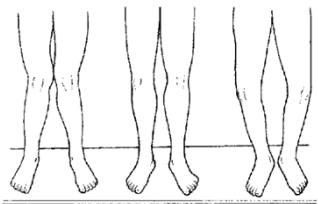
*Looking and Touching*

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### Tier 1

- Paradoxical breathing
- Faulty Mechanics
- Static Posture
  - Lengthened Tissues
  - Shortened Tissues
  - Tissue length Assess

Genu valgum    Normal    Genu varum  
[www.answers.com/topic/genu-valgum](http://www.answers.com/topic/genu-valgum)    [www.thion-medical.com](http://www.thion-medical.com)

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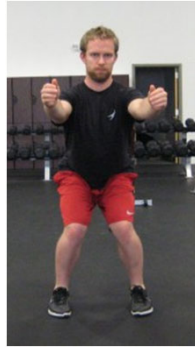
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# Tier 1

## Functional knee posture



[ericcressey.com](http://ericcressey.com)



[getrealhockey.com](http://getrealhockey.com)



[GotPosture.com](http://GotPosture.com)



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## Tier 2 - Movement

### No Load

- Orthopedic testing
- Dynamic Observation



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**Tier 2 - Movement  
No Load**

Lower Extremity Clearance Test



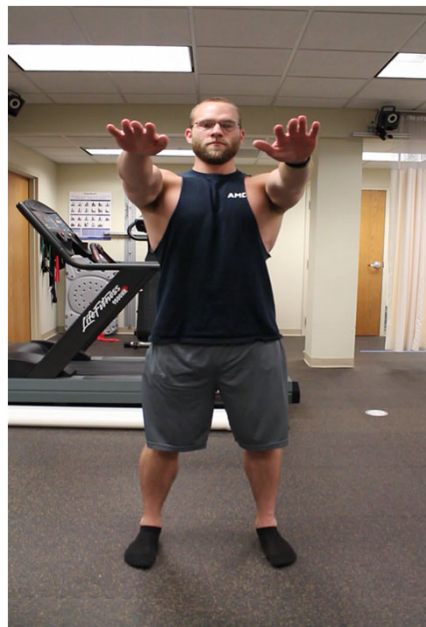
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**Tier 2 - Movement No Load**

Lower Extremity Clearance Test



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**Tier 2 – Movement No Load**

Janda's Hip Abduction Test



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**Tier 2 – Movement No Load**

Janda's Hip Abduction Test



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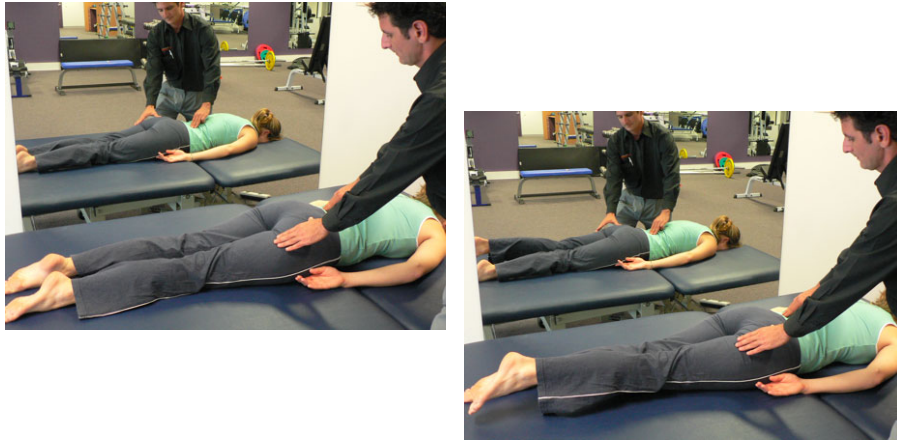
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## Tier 2 – Movement No Load

### Janda's Hip Extension Test



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## Tier 2 – Movement No Load

### Proprioception assessment

- Angle recreation
- Flexion or abduction



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**Tier 2 – Movement No Load**

- Assessing lumbar neutral as well as the stability of the hip
- Single leg lunge for stability & motor pattern



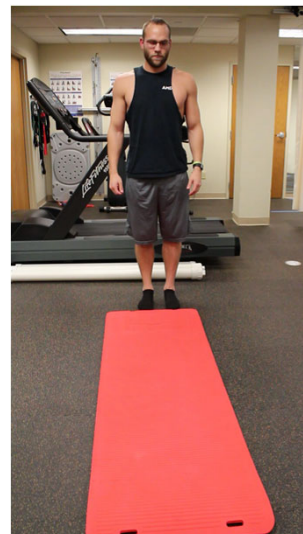
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**Tier 2 - Movement, No Load**

Video shows a shift to the patient's right with right knee valgus tendencies.



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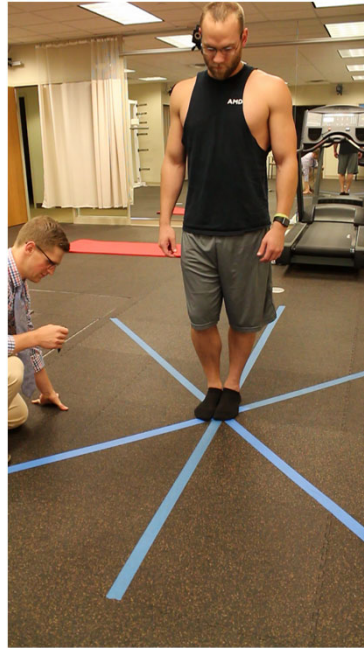
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## Tier 2 – Movement No Load

### Star Excursion Test

- Closed chain and open chain functional range
- Quantifiable!



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## Tier 2

### Proprioception assessment for the knee

- Angle recreation – **non-weight bearing**



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## Tier 2

Proprioception assessment for the knee

– Angle recreation – **weight bearing**



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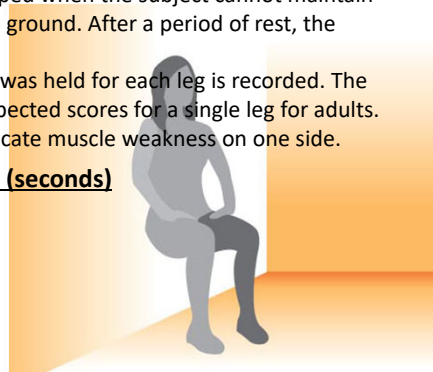
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## Tier 3 - Low load long duration - High load short duration

Other Tier 3 - Inner holding tests

- Stand comfortably with feet approximately shoulder width apart, with your back against a smooth vertical wall. Slowly slide your back down the wall to assume a position with both your knees and hips at a 90° angle. The timing starts when one foot is lifted off the ground and is stopped when the subject cannot maintain the position and the foot is returned to the ground. After a period of rest, the other leg is tested.
- The total time in seconds that the position was held for each leg is recorded. The table below gives a general guideline to expected scores for a single leg for adults. Comparing the scores for each leg may indicate muscle weakness on one side.

<u>rating</u>	<u>males (seconds)</u>	<u>females (seconds)</u>
excellent	>100	> 60
good	75-100	45-60
average	50-75	35-45
below average	25-50	20-35
very poor	< 25	< 20



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**Tier 3 - Low load long duration - High load short duration**

1 legged squat/lunge test



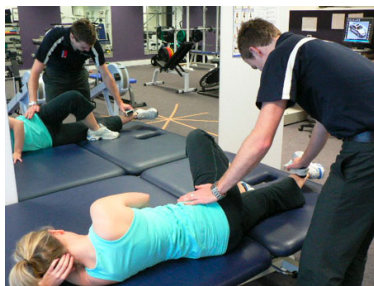
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**Tier 3 - Low load long duration - High load short duration**

MMT/HHD



**Adductors**



**Abductors**

Chamorro (2017) – Syst Rev - demonstrated very high correlation when HHD testing the hip and moderate correlation when testing the knee and ankle...when compared to isokinetic testing.



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## Tier 3

Manual Muscle Testing/HHD



Hip Flexors

Hip Extensors

Knee Flexors



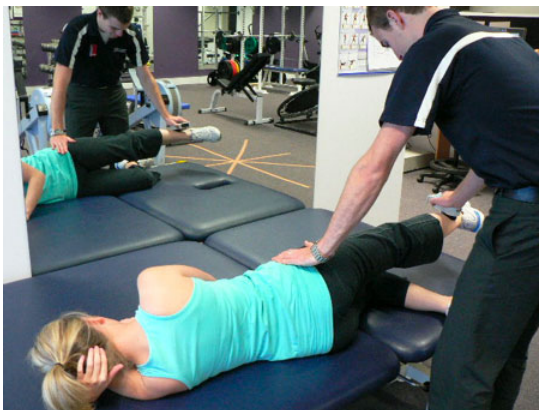
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## Tier 3 - Low load long duration - High load short duration

Other Tier 3 - Inner holding tests



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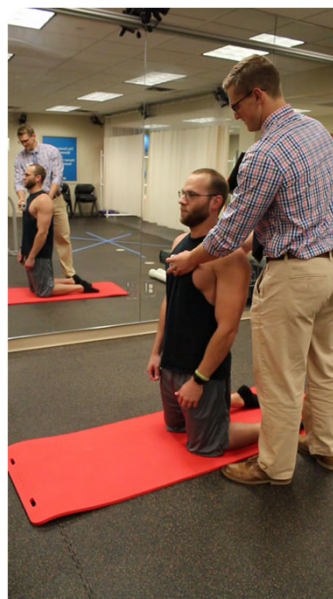
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### **Tier 3 - Low load long duration High load short duration**

Other Tier 3; [J Athl Train. 2006 Oct-Dec; 41\(4\): 427-434.](#)

- 60 second tall kneeling test
  - Assesses the eccentric strength and endurance of the iliopsoas/rectus femoris.
  - As many eccentric knee flexion movements to 70 degrees as possible without flexing at the hips and while maintaining lumbar neutral.



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### **Tier 4 - Ballistic and mobilizer fatigue**

Box Drops



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## Tier 4 - *Ballistic and mobilizer fatigue*

### Leg Press



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