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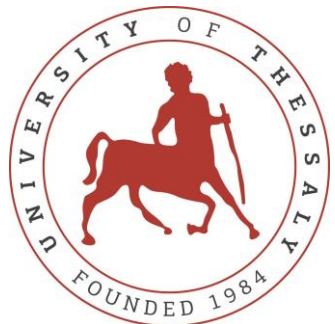


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Isokinetic Thigh Muscle Strength evaluation after a Fatigue-induced Plyometric Exercise Protocol in male amateur soccer players who underwent ACL Reconstruction

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The authors have no conflicts of interest to declare that are relevant to the content of this article.



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Introduction



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Main causes of ACL reconstruction failure

- Tunnel malposition
- Graft choice
- Inadequate graft stabilization
- Missed meniscal, chondral e/o PLC injury
- ↑↑↑ Pivot Shift
- ↑↑↑ Posterior Tibial Slope
- Inadequate Post - Op Rehab

**RtS if
Thigh Muscle Strength
≥90%**

Purpose



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Evaluation...

- Thigh Muscles Strength
- Delayed-Onset Muscle Soreness (DOMS)

...after a fatigue-induced plyometric exercise protocol in male amateur soccer players who underwent ACL rec.



Methods



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- 52 male amateur soccer players
- Age 24.8 ± 4.2 years
- ACLr. 28.4 ± 3.07 months before
- Graft 4SHG (gracilis + semitendinosus)
- Returned to Sport activity



Methods



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1st Session (48h. before the protocol)

- ✓ Medical history
- ✓ Anthropometric measurements
- ✓ Knees physical exam

2nd Session (Fatigue-induced protocol)

- ✓ 10 min. treadmill
- ✓ Stretching
- ✓ 5 sets x 15 reps plyometrics knee ext. & flex.
- ✓ Peak torques at 60°/s & 180°/s
- ✓ Break 10 sec./rep. & 2 min./set
- ✓ Max Isometric Quad. Contraction – 5 sec.

3rd Session (48h. after the protocol)

- ✓ Max Isometric Quad. Contraction – 5 sec.
- ✓ VAS score after palpation of main thigh muscles



Results

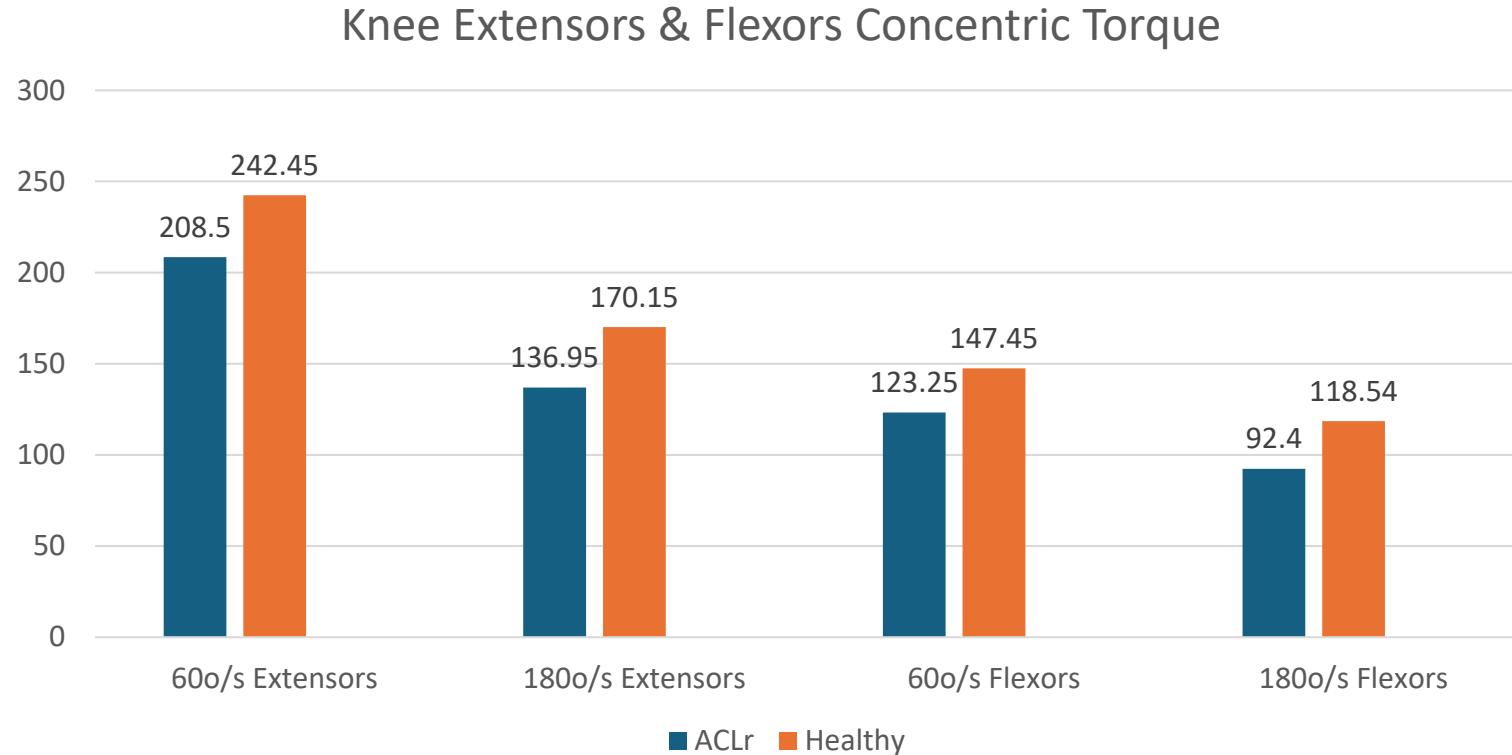


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Muscle Strength Asymmetry Index



- ✓ Extension deficit 15% at 60°/s and 20% at 180°/s
- ✓ Flexion deficit 17% at 60°/s and 22% at 180°/s

Results

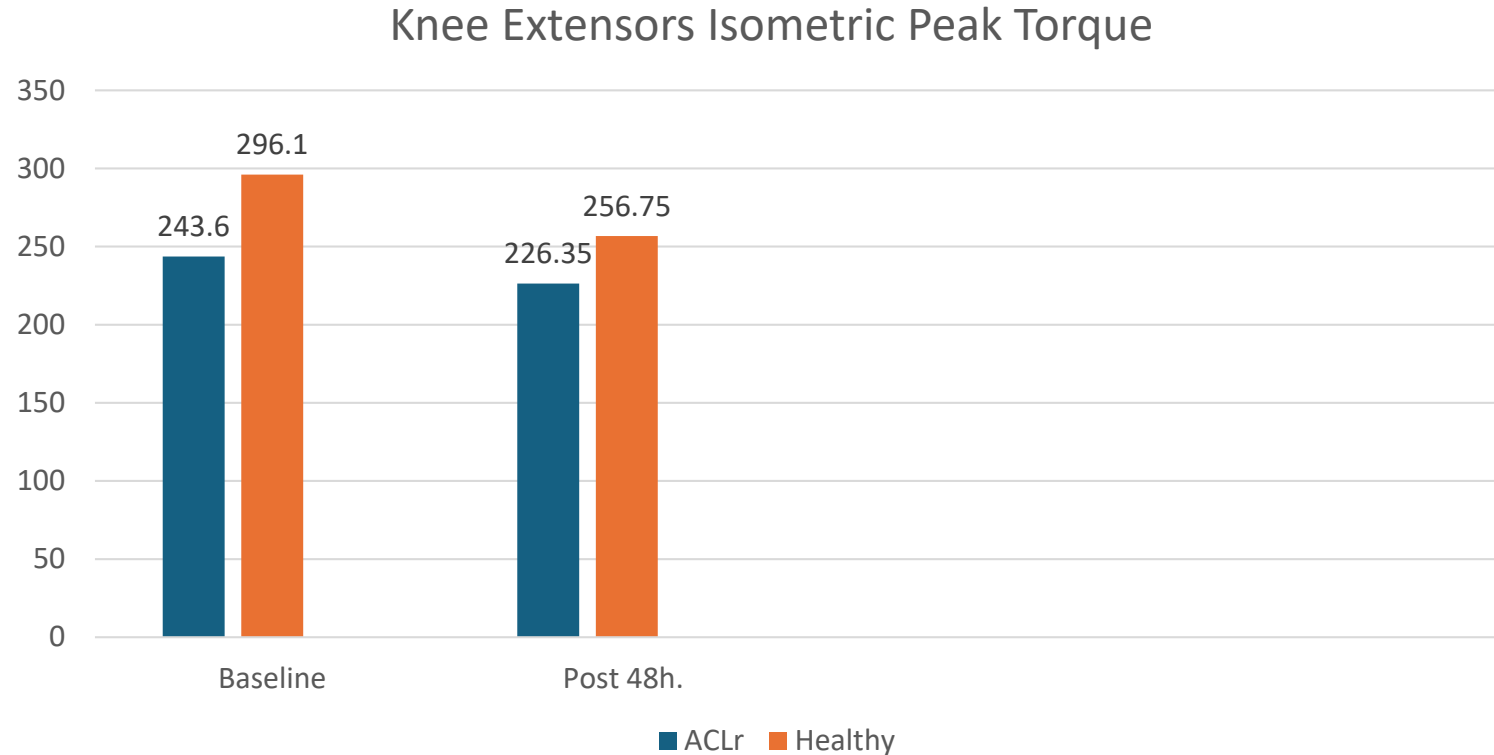


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Muscle Strength Asymmetry & DOMS Index



Isometric peak torque of the injured knee was at 82% at baseline and 88% 48 hours after the fatigue-induced protocol, compared with the healthy knee

Results

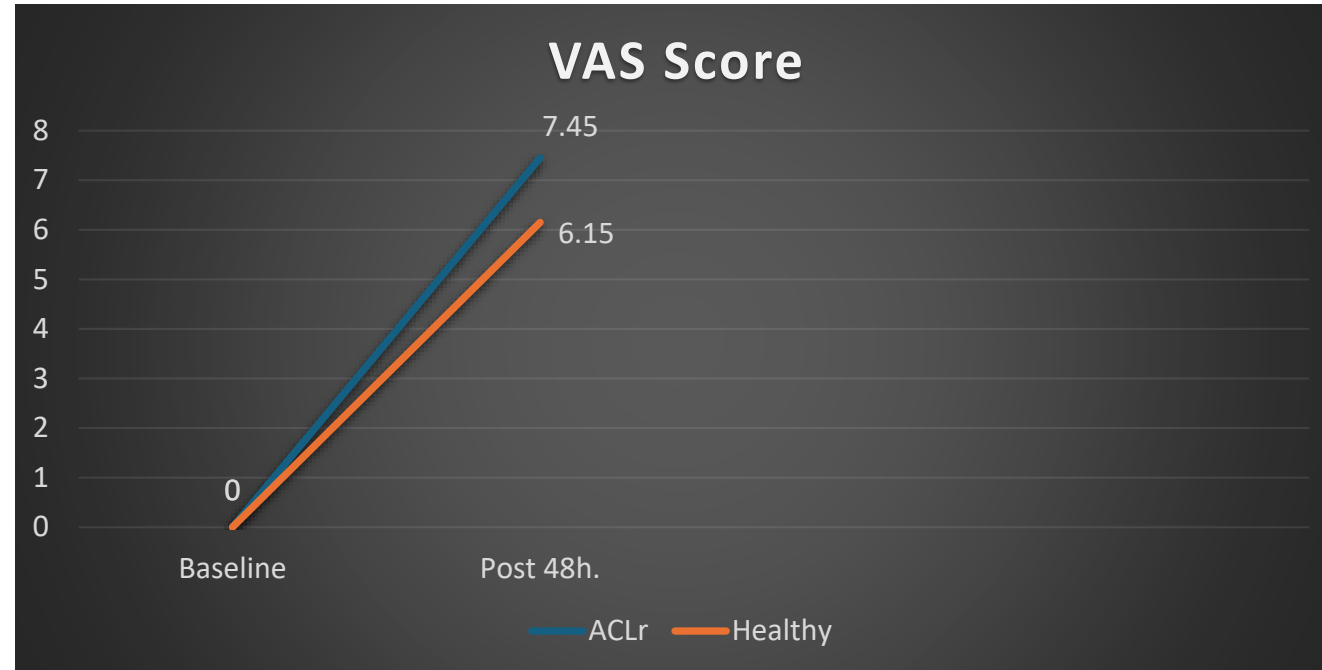


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DOMS Index



VAS score statistically significant higher in the injured knee 48 hours after the plyometric exercise.

Conclusions



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- ✓ Extensors & flexors muscle strength statistically significant asymmetry between the healthy and the injured knee.



Not secure Return to Sport Activity

- ✓ Statistically significant & asymmetrical DOMS



Different Knee Loads during sport activity



↑↑↑ risk of graft failure

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