

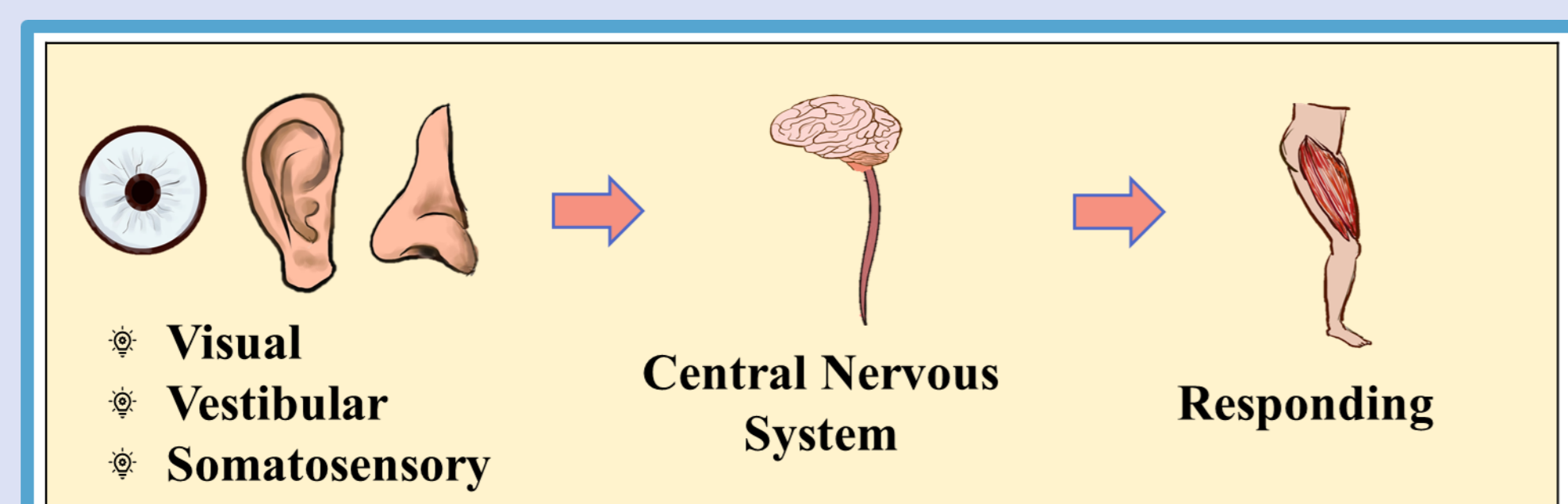


Dynamic Postural Control During Single-Leg Landings in Anterior Cruciate Ligament Reconstructed Individuals after Return to Play- A Pilot Study

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Introduction

Dynamic postural control



☉ The ability to transit from moving the action to a static state while maintaining stability

Landing tasks

- ☉ Used as a screening procedure for dynamic postural control
- ☉ Feedforward stimulations in sensorimotor control
- ☉ Higher ground reaction force than static balancing
- ☉ Reflect our moving patterns in sports better

Anterior cruciate ligament reconstruction (ACLR)

- ☉ One of the most common non-contact injuries in sports
- ☉ Altered landing strategies
- ☉ Higher risk of re-injury

Purpose

To define dynamic postural control between legs of ACLR athletes by time to stabilization (TTS) and dynamic postural stability index (DPSI) during single-leg landing tasks

Methods

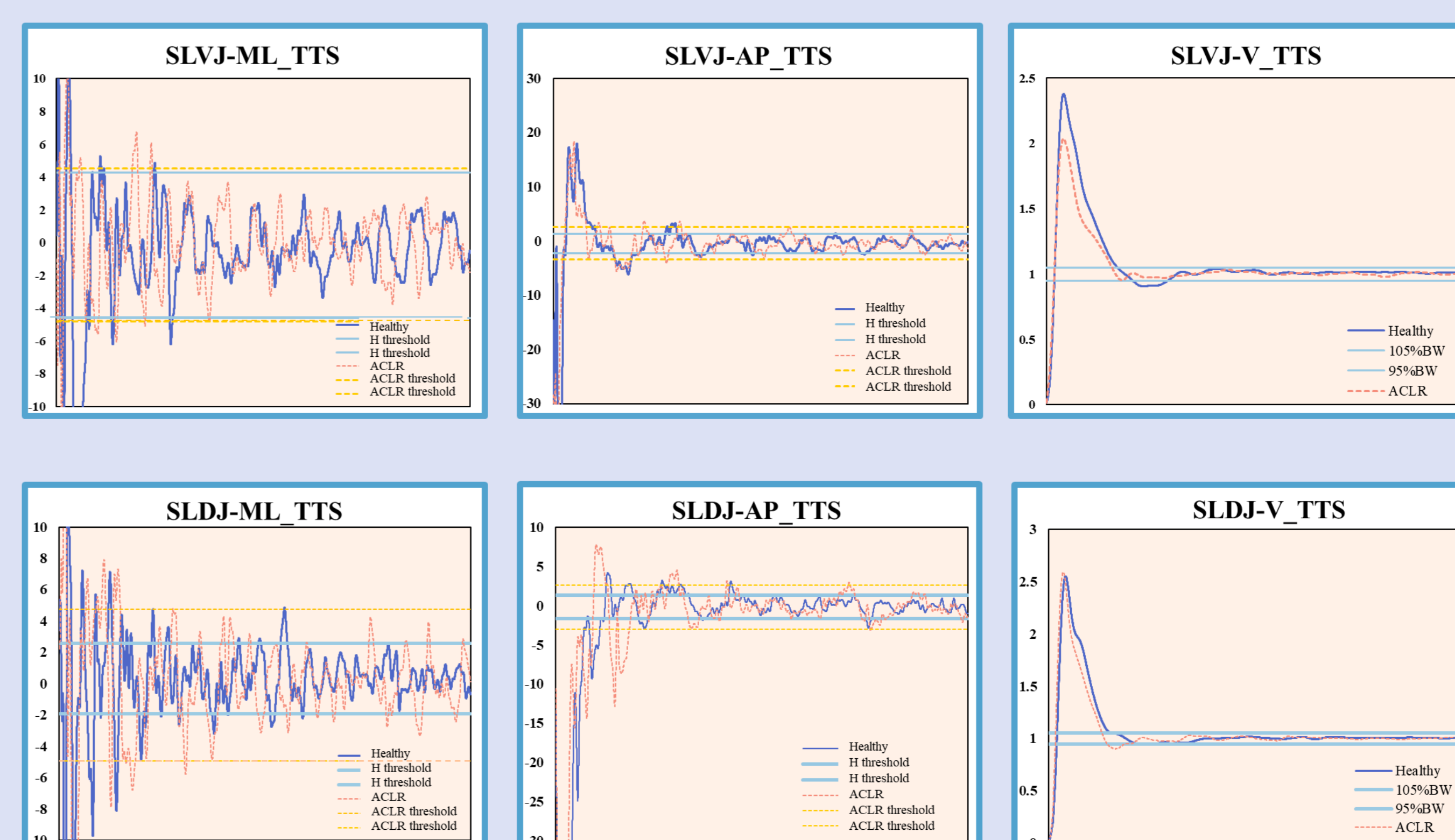
☉ 3 ACLR male athletes was recruited

Sex	Male	Postoperative time	1.44±0.51 years
ACLR side	Left	Graft	Semitendinosus
Age	20.33±0.58 years old	Specialty	Rugby, bodybuilding

- ☉ A force plate (Kistler, 1000 Hz)
- ☉ 30cm height single-leg drop jump landing (SLDJ) and single-leg vertical jump (SLVJ)
- ☉ TTS - the time from landing to static state
 - ☐ Was collected and calculated from ground reaction force (GRF) in 3 directions (anteroposterior (AP), mediolateral (ML), and vertical (V)).
- ☉ DPSI - combination measurement of mean squared deviations of GRF
 - ☐ Was collected and calculated in 3 directions
- ☉ Data was presented in a descriptive format.

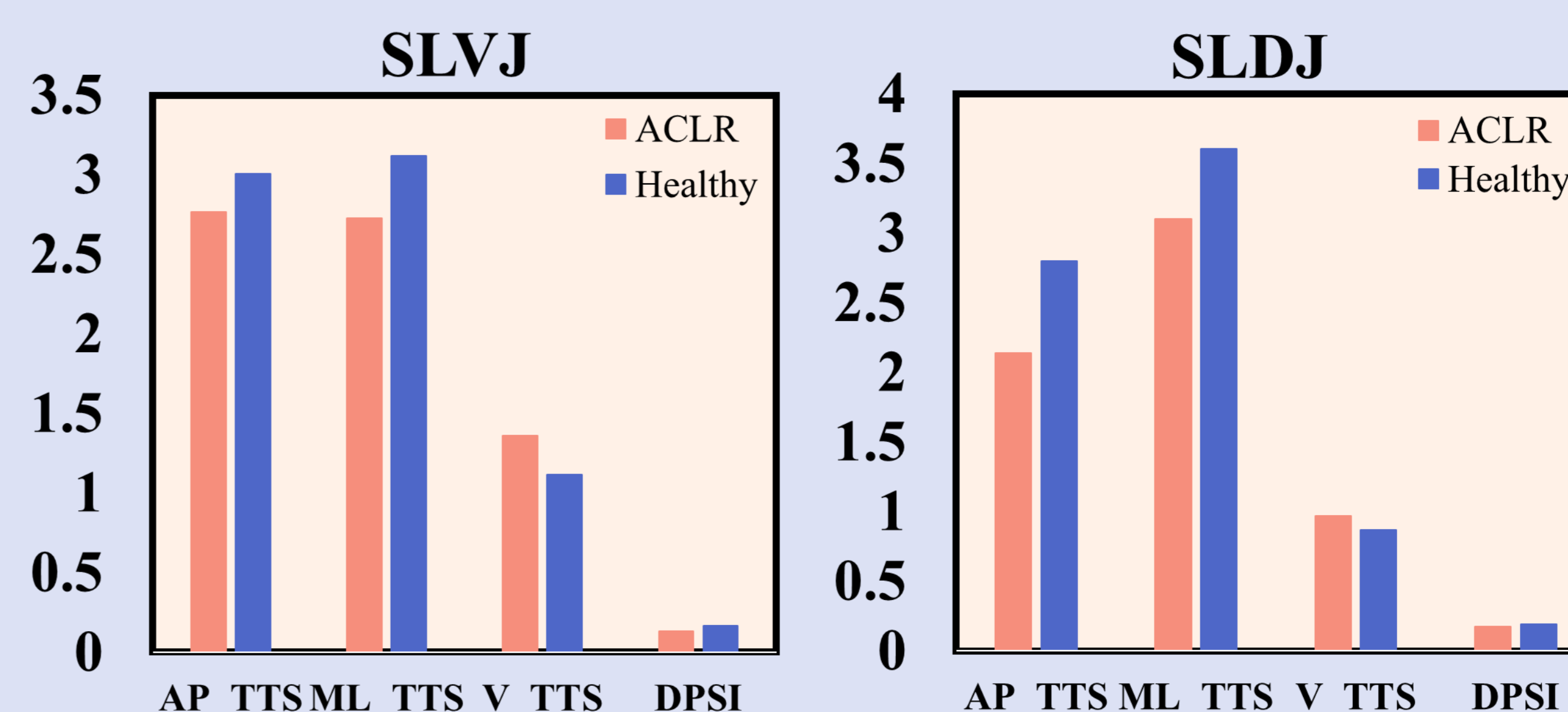
Results:

- ☉ Figure 1, 2, 3, 4, 5, and 6
- ☐ TTS was defined as the time reach the threshold and remain for 1 second.
- ☐ The thresholds of AP_TTS and ML_TTS was the average of last 2 seconds ± 3*standard deviation (SD)
- ☐ The thresholds of V_TTS was between 105% and 95% body weight (BW)



☉ Chart 1 and 2, Figure 7 and 8
The AP_TTS, ML_TTS, V_TTS, and DPSI of ACLR and Healthy limb in SLVJ and SLDJ

	SLVJ	ACLR	Healthy		SLDJ	ACLR	Healthy
AP_TTS	2.78±1.03	3.01±1.38			2.14±1.04	2.80±1.46	
ML_TTS	2.73±0.43	3.12±1.11			3.10±0.34	3.61±1.47	
V_TTS	1.36±0.64	1.12±0.45			0.97±0.51	0.87±0.21	
DPSI	0.13±0.01	0.17±0.00			0.18±0.03	0.19±0.01	



Conclusion & Limitation

- ☉ There was no tendency of difference of AP_TTS, ML_TTS, V_TTS, and DPSI between healthy limbs and ACLR ones in both SLVJ and SLDJ.
- ☉ More ACLR participants should recruit for this study for further analysis.