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Correlation Between Knee Functional Scores Or Quality Of Life Questionnaire And Pivot Shift Test Measurements In Patients With ACL Injury

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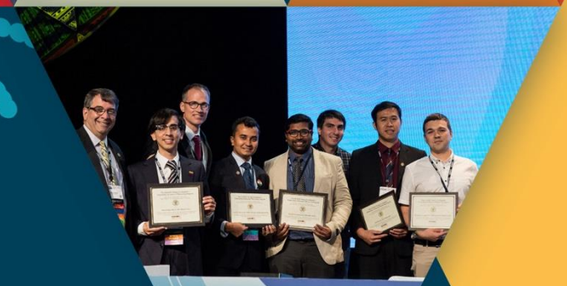

Faculty Disclosure Information

- Nothing to disclose

Introduction

- Validated non-invasive devices can measure the pivot shift test in ACL-injured patients, such as an iPad app and inertial sensors
- This study aimed to determine if subjective or quantitative pivot shift measurements correlate with knee functional scores and quality-of-life assessments
- Hypothesis: Higher quantitative pivot shift test results are associated with worse functional and quality-of-life scores

Methods

- Participants: 60 ACL-injured patients (Level 1 or 2 athletes), scheduled for reconstruction surgery
- Questionnaires: Lysholm, IKDC, SF-36
- Pivot Shift Test: Performed under anesthesia by the same surgeon in both affected and unaffected knee
  - Clinical grading according to IKDC
  - Quantitative measurements: iPad app (video analysis) and inertial sensor (KiRA)
- Statistical Analysis: Spearman correlation coefficient

Results

- Weak correlations were observed between some pivot shift measurements and certain questionnaire scores (next slide)
- However, none of these correlations demonstrated clear clinical significance
- No consistent or strong relationship was identified between device-based pivot shift measurements and functional or quality-of-life outcomes

Correlation Summary Table

			Lysholm	IKDC	SF 36 Physical Functioning	SF 36 Role Limitations due to Physical Health	SF 36 Role Limitations due to Emotional Problems	SF 36 Vitality	SF 36 Mental Health	SF 36 Social Functioning	SF 36 Pain	SF 36 General Health
Spearman's rho	PS affected side iPad	Correlation Coefficient	,324*	,243	,011	,055	,103	,146	,129	,000	,086	,186
		Sig. (2-tailed)	,017	,060	,932	,671	,431	,260	,320	,999	,512	,151
		N	54	61	61	61	61	61	61	61	61	61
	PS clinical grading affected side	Correlation Coefficient	-,116	-,185	-,023	,121	-,009	-,234	-,278*	,018	-,069	,005
		Sig. (2-tailed)	,404	,155	,861	,352	,943	,069	,030	,890	,595	,972
		N	54	61	61	61	61	61	61	61	61	61
	mean inertial sensor affected side	Correlation Coefficient	-,132	-,027	-,032	,171	,063	,001	-,019	,048	,008	,062
		Sig. (2-tailed)	,341	,835	,808	,188	,631	,996	,882	,712	,953	,636
		N	54	61	61	61	61	61	61	61	61	61
	PS unaffected side iPad	Correlation Coefficient	-,042	-,013	,032	,092	-,157	-,226	-,156	-,174	-,171	-,003
		Sig. (2-tailed)	,763	,920	,804	,480	,228	,080	,229	,180	,188	,984
		N	54	61	61	61	61	61	61	61	61	61
	PS clinical grading unaffected side	Correlation Coefficient										
		Sig. (2-tailed)										
		N	54	61	61	61	61	61	61	61	61	61
	mean inertial sensor unaffected side	Correlation Coefficient	,101	,117	,027	-,013	,119	,154	,077	-,073	,082	,046
		Sig. (2-tailed)	,469	,368	,836	,923	,362	,235	,556	,577	,529	,722
		N	54	61	61	61	61	61	61	61	61	61

*. Correlation is significant at the 0.05 level (2-tailed)

Conclusion

- Although some weak statistical correlations were observed between pivot shift measurements and patient-reported outcomes, they lack clear clinical significance

- Quantitative pivot shift measurements using non-invasive devices do not appear to predict subjective function or quality of life in patients with ACL injury prior to reconstruction

References

1. Hoshino Y, et al. Knee Surg Sports Traumatol Arthrosc. 2013;21(4):975–80

2. Musahl V, et al. Am J Sports Med. 2016;44(9):2393–8

3. IKDC, Lysholm and SF-36 original validation papers