Relationship Between Changes in Activity Level and Single-Leg Hop Performance Following Anterior Cruciate Ligament Reconstruction

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PURPOSE

To examine the relationship between current and pre-injury activity level difference and affected limb hop distance in individuals at least 1-year post-ACLR. Single-leg hop distance (SLHD) has a strong correlation with knee strength and stability, and is commonly used as a return to activity task after ACLR. We hypothesized that there would be a positive relationship between changes in current and pre-injury activity levels and SLHD. This relationship would mean that smaller or no decreases in activity would be associated with better SLHD.

METHOD

1. Participants scored themselves on the Tegner Activity Scale, at two time points: prior to injury and current. The Tegner activity scale is a self-administered, patient-reported measure that describes a patient's level of activity on a scale of 0-10. A score of 0 reflects no activity whatsoever, and a score of 10 reflects involvement in elite competitive sport. Tegner change scores were then calculated as (current Tegner score - pre-ACLR Tegner score).
2. Participants performed a maximum effort single leg hop once a light 3m in front of them illuminated and landed on a single foot without falling over. The distance (cm) was recorded for the ACLR limb. Hop distance was normalized based on body height (% body height). Average distance (cm) was calculated with all trials.
3. A linear regression analysis was conducted with ACLR average hop distance and Tegner change score. Alpha was set *a priori* to p<0.05.

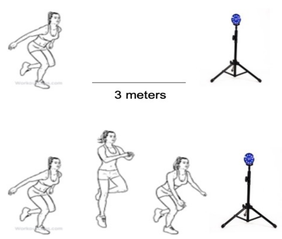


Figure 1. Single-Leg Hop Test Set-Up

Tegner Activity Scale

No relationship between single leg hop performance and changes in activity level following ACLR.

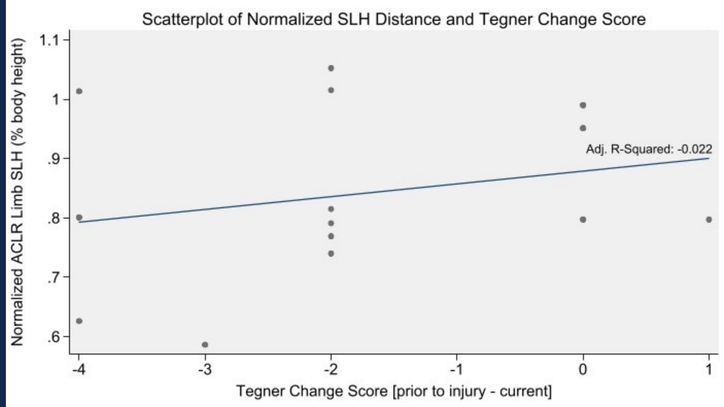
Funding for this study was provided by the Mid-Atlantic Athletic Trainers' Association.

RESULTS

Table 1. Descriptive Statistics (N=14)

Descriptive statistics presented as mean (SD) for continuous variables or count (%) for categorical variables.

Sex, females	12 (85.7%)
Height, centimeters	166.7 (6.8)
Weight, kilograms	68.8 (12.1)
Time Since Surgery, months	30.2 (17.6)
ACLR SLHD, meters	1.39 (0.21)
Normalized SLHD (%body height)	0.839 (0.145)
Pre-Injury Tegner Score	8.5 (1.4)
Current Tegner Score	6.6 (1.5)
Tegner Change Score (current-previous)	-1.9 (1.6)
Regression Model	
ACLR Limb Normalized SLHD and Tegner Change Scores	
Model Adjusted r^2	-0.0222
Model P-value	0.4133



DISCUSSION

- No association between Tegner change score and SLHD on the ACLR limb suggests that a change in activity level post ACLR does not impact normalized single-leg hop distance based on this analysis.
- The average Tegner change score shows a drop from competitive (8-9) to recreational sport (6-7) with a minimum activity level of heavy labor or recreational sports (5). These scores indicate the sample is still physically active, which can contribute to improved strength and single-leg hop performance.
- Further research should explore this relationship in a larger sample size and using other metrics to measure changes in physical activity.

REFERENCES

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