Participants performed 2 different landing tasks:
- Double leg landing from a 30 cm high box placed at a distance of 50% of the subject's height from the edge of two force platforms.
- Single Leg jump-cut over a small hurdle from a distance equal to 50% of the subject's height.

Participants completed 5 jump landing trials for each task before completing a standardized exercise protocol lasting 30 minutes. The protocol consisted of 6 cycles of treadmill walking at self-selected speed between 3.0-3.5 mph for 5 minutes followed by a minute of jumping activities.
- Following the exercise protocol, participants immediately repeated the two landing tasks.

OUTCOME MEASURES AND STATISTICAL ANALYSES
- Peak internal knee varus moment, peak knee valgus angle, and frontal plane hop and knee angles at initial contact
- Mean values across trials during the Pre and Post-exercise conditions were calculated for each dependent measure
- Paired-samples t-tests were used to compare landing biomechanics between conditions

RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Double Leg Jump</th>
<th>Single Leg Cut-Jump</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Peak Internal Knee Varus (Nm)</td>
<td>20.9±15.3</td>
<td>21.4±14.7</td>
</tr>
<tr>
<td>Frontal Plane Knee Angle (°)</td>
<td>-1.9±2.9</td>
<td>-2.0±2.9</td>
</tr>
<tr>
<td>Peak Knee Valgus Angle (°)</td>
<td>-7.3±6.9</td>
<td>8.1±6.2</td>
</tr>
<tr>
<td>Frontal Plane Hip Angle at Initial Contact (°)</td>
<td>-7.1±3.7</td>
<td>6.9±3.7</td>
</tr>
</tbody>
</table>

Table 1. Means ± SDs for frontal plane biomechanical variables of interest Pre- and Post-Exercise. There were no significant changes in any of these landing biomechanics for either task (p > 0.05).

Conclusions
- Contrary to our hypotheses, we observed very few changes in frontal plane landing biomechanics during either task following exercise.
- While peak hip adduction angle and internal hip abduction moment achieved statistical significance, the absolute magnitude of the changes likely has no clinical relevance with respect to ACL injury risk.
- Given previous research that has shown biomechanical changes in landing mechanics following exercise, it is possible that the lack of expected findings could be the result of:
  - Subjects not being adequately fatigued through the exercise protocol
  - Too much time elapsing between finishing the exercise protocol and the Post Exercise Testing such that any fatigue effects were mitigated, or
  - Trunk compensations by subjects following fatigue which was noticed anecdotally during testing

Materials and Methods
Participants
- 31 Female Volunteers between the ages of 18-30 years old
  - No current injuries or illness that limits their ability to perform regular physical activity
  - No history of lower extremity or back surgery in the last 6 months
  - No history of low back, hip, knee, or ankle surgery
  - No previous ACL injury
  - Physically active a minimum of 150 minutes of moderate to vigorous physical activity a week
  - Previously has participated in a physical activity involving cutting or jumping motion in the last 6 months

Instrumentation
- Kinematics
  - Nine camera motion capture system (Vicon, Inc.) using a standard retroreflective marker set (25 static, 21 dynamic) sampled at 120 Hz
- Kinetics
  - Two type 4060-08 force plates (Bertec Corp.) sampled at 1,560 Hz

Procedures
Participants performed 2 different landing tasks:
1. Double leg landing from a 30 cm high box placed at a distance of 50% of the subject’s height from the edge of two force platforms.
2. Single Leg jump-cut over a small hurdle from a distance equal to 50% of the subject’s height.

REFERENCES