INTRODUCTION

Total Hip Replacements (THR) are a common procedure for older people who suffer from degenerative joint disease. Golf is a very popular leisure sport played by many older Americans including those with THR. Hip torques encountered in a golf swing after THR has not been reported. The purpose of this study was to describe three-dimensional (3D) hip joint torques generated during a golf swinging by those with THR.

METHODS

Inclusion criteria:
- Male golfers who were at least 1 year post THR
- Between the ages of 55-75
- Right handed golfers

Exclusion criteria:
- Any other total joint replacements in the lower extremities
- Current low back pain
- Neuromuscular disease affecting balance

Table 1. Demographics

<table>
<thead>
<tr>
<th>Sub ID</th>
<th>L001</th>
<th>L002</th>
<th>R001</th>
<th>Seniors (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>71</td>
<td>59</td>
<td>66</td>
<td>56.9</td>
</tr>
<tr>
<td>Hi (meters)</td>
<td>1.82</td>
<td>1.80</td>
<td>1.75</td>
<td>1.78</td>
</tr>
<tr>
<td>BMI</td>
<td>28.05</td>
<td>27.01</td>
<td>31.58</td>
<td>28.97</td>
</tr>
<tr>
<td>Handicap</td>
<td>18.0</td>
<td>17.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>HHS</td>
<td>.9501</td>
<td>.8602</td>
<td>.9301</td>
<td>n/a</td>
</tr>
<tr>
<td>Peak Club Velocity (mph)</td>
<td>57.93</td>
<td>84.23</td>
<td>74.525</td>
<td>89.75</td>
</tr>
</tbody>
</table>

Participants completed the following assessments:
- Hip Harris Score (HHS): questionnaires about pain, function, functional activities and a short physical exam on the side with the hip replacement.
- Golf Swing: Using 10 Camera Motion Capture Analysis and AMTI force plates

RESULTS

Table 2: Hip torques throughout the golf swing for R THR (Red) and L THR (Black). Gray represents healthy seniors.

Table 3: Sagittal plane results.

Table 4: Frontal plane results.

Table 5: Transverse plane results.

DISCUSSION

- Participants with THR demonstrated the same hip torque pattern as the healthy Senior group.
- Like the Senior group, participants with THR demonstrated peak torques during the downswing portion of the golf swing.
- Average Club head velocity was slower than senior group.
- Sagittal Plane: Golfers with THR exhibited the largest peak hip torque in the sagittal plane mimicking the pattern found in the senior group.
- Frontal Plane: Golfers with THR demonstrated a lower hip adductor torque on the lead leg compared to the trail leg and compared to senior group.
- Transverse Plane: Those with THR exhibited higher hip external rotation torques compared to the internal rotation torques and compared to the senior group.

CONCLUSION

THR golfers demonstrated slower club head speed but higher hip torques in the transverse plane as compared to those without a THR. Hip external rotation torque was higher in all of the THR compared to the senior group.

CLINICAL RELEVANCE

These results suggest that individuals with a THR may be prone to abnormal forces during the golf swing in the transverse plane. Future studies are needed to determine impact on return to golf decisions following a THR.

REFERENCES