



# Analysis of knee moments in sagittal/coronal plane during level walking in patients with stroke

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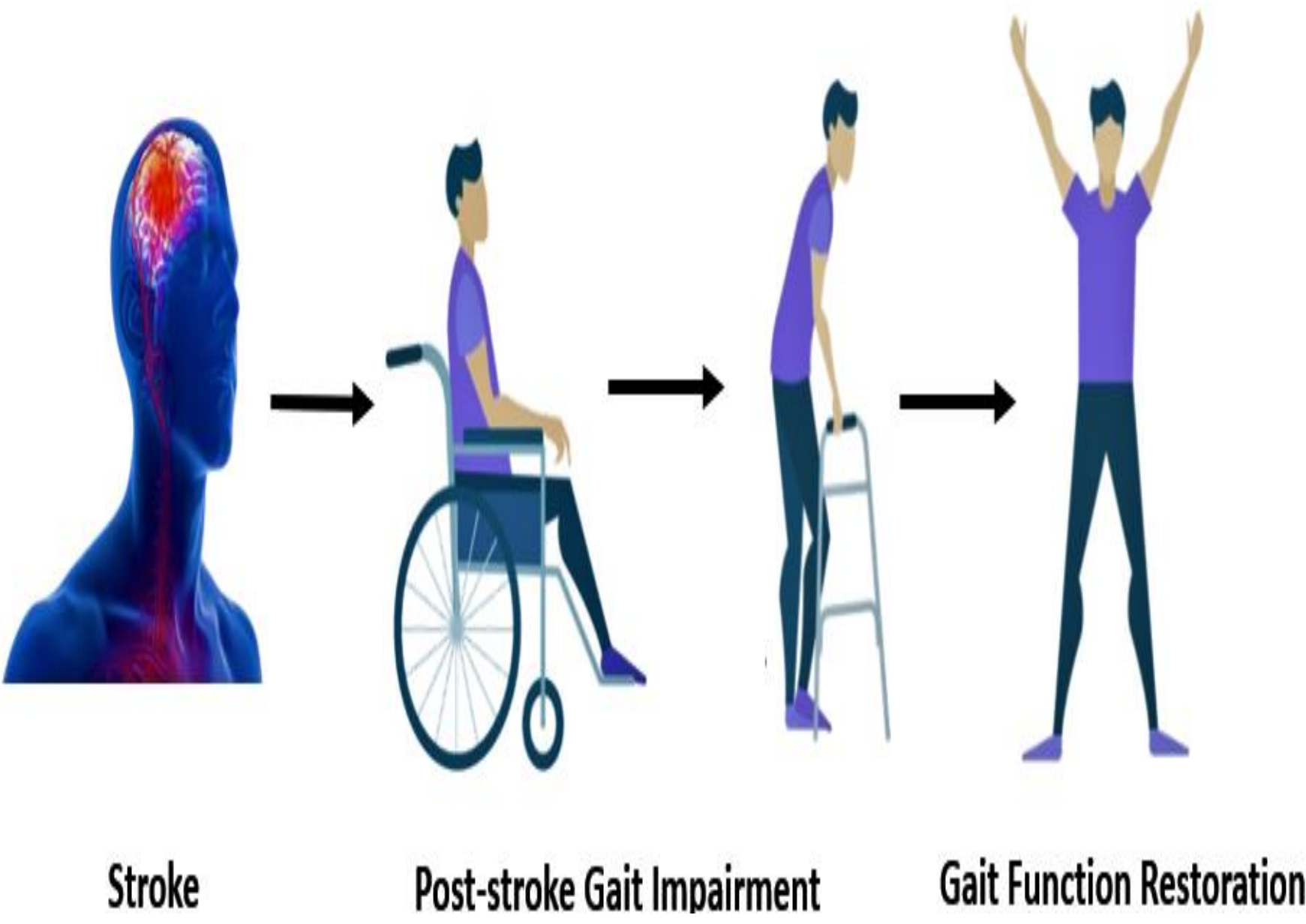
## [ Objective ]

### 1-1. Characteristics of Stroke

- A leading cause of death and disability in worldwide
- Having a common aftereffect, hemiplegia, which can be disruptive to patients’ daily life including gait

### 1-2. Importance of gait

- One of the most important movements for daily life
- A major goal of stroke rehabilitation (restoring gait function)



### 1-3. Present situation of the related studies

- Weighted previous studies primarily focused on the sagittal plane regarding forward movements during gait
- Little research investigating the relationship with other diseases

### 1-4. Aim of this study

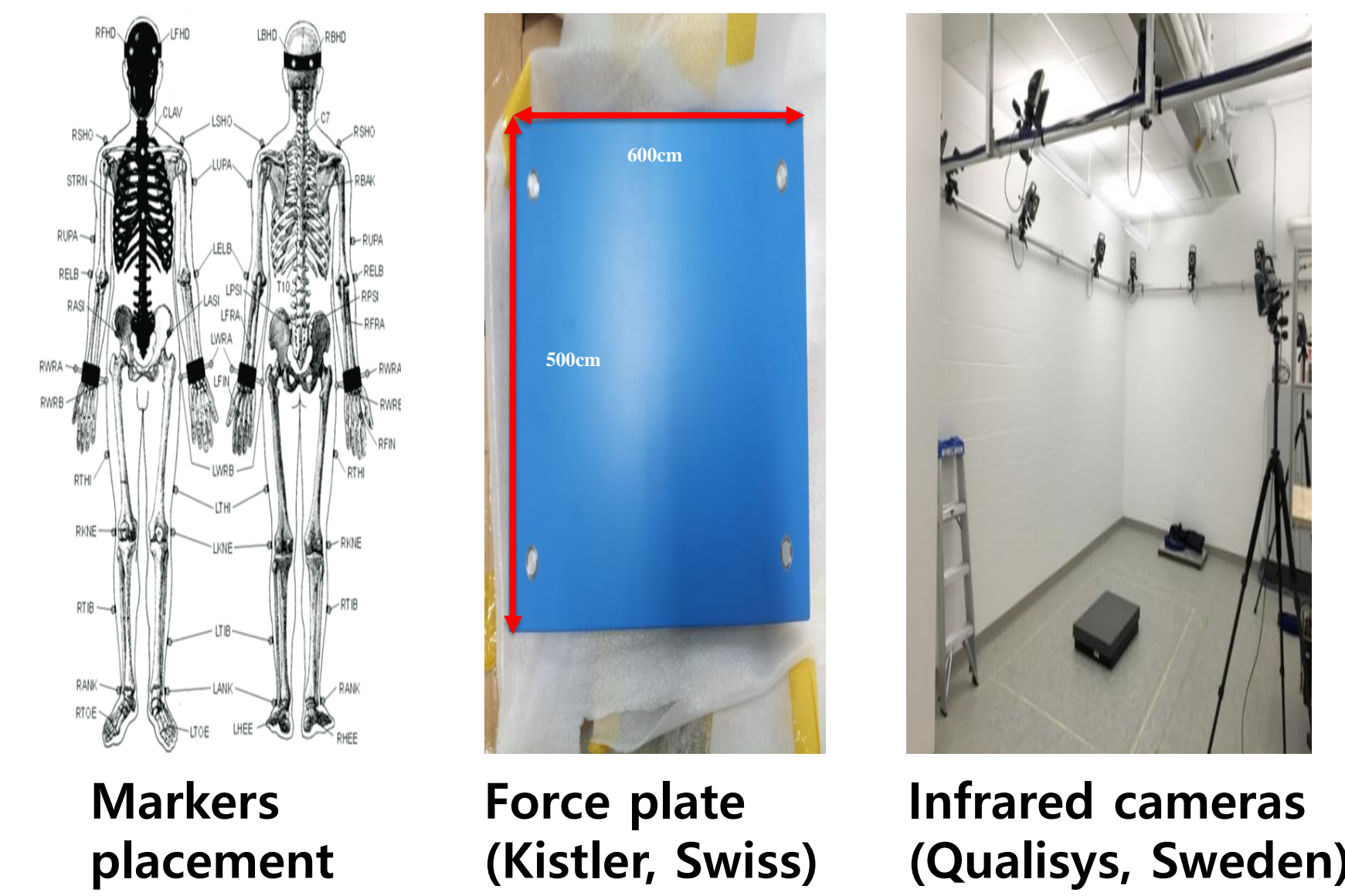
- Investigating the knee moment in the coronal plane associated with femorotibial joint osteoarthritis (FT OA)
- Acquiring the basic data to establish rehabilitation and exercise strategies

## [ Methods ]

### 2-1. Subjects

|            | Patients (n=8) | Healthy persons (n=8) |
|------------|----------------|-----------------------|
| Age(years) | 50±12          | 41±13                 |

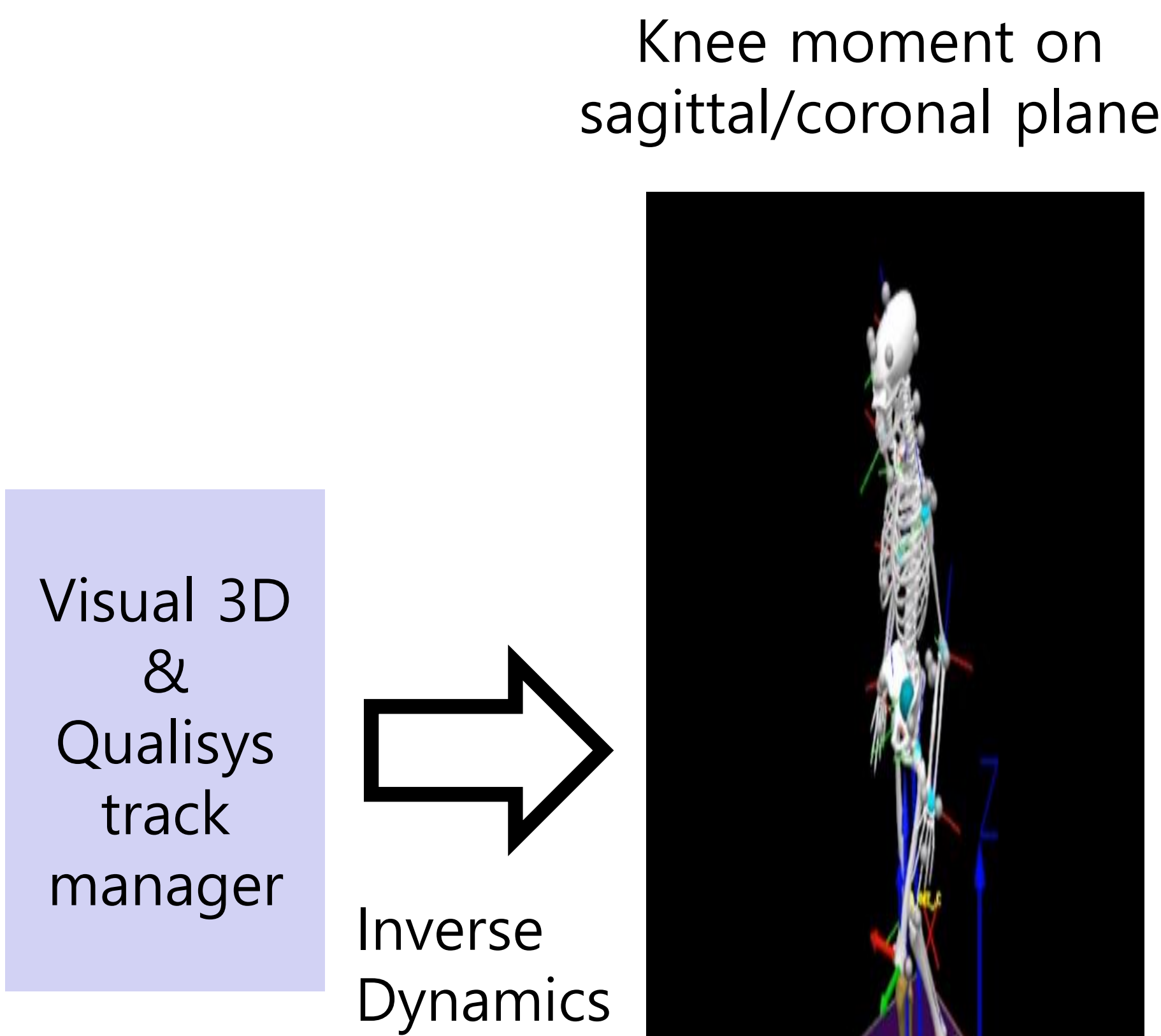
### 2-2. Measurement system



### 2-3 Protocol

- Natural gait speed
- Keeping upright upper body and gazing frontside during gait
- Walking on level surface
- 3~4 times practice before measurement
- Measuring 2 trials, one for main experiment and the other for preliminary

### 2-4 Data processing



## [ Discussion ]

- Patients with stroke could have higher possibility that FT OA would be occurred compared to healthy individuals.
- Patients with stroke showed not enough knee moment on the affected side to propel the body forward during gait.

## [ Conclusion ]

- Rehabilitation strategies to prevent FT OA need to be considered for patients with stroke.
- A lack of moment in the sagittal plane could have caused compensation moment of other joints or planes.
- Hence, future research should include the investigation of moments in other planes and the study of other joints.

## [ Acknowledgement ]

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## [ Results ]

- Significant differences between stroke patients and healthy individuals ( $p=.008$ )
- Significant differences on the 2<sup>nd</sup> peak adduction moment of both sides compared to healthy individuals (figure 1)
- The peak of the adduction moment is an indicator of the load that triggers and exacerbates FT OA
- Lower values on the 2<sup>nd</sup> peak flexion moment on the affected side of the patients compared to healthy individuals ( $p=.048$ )
- The peak of the flexion moment causes the main force to propel the body forward during walking

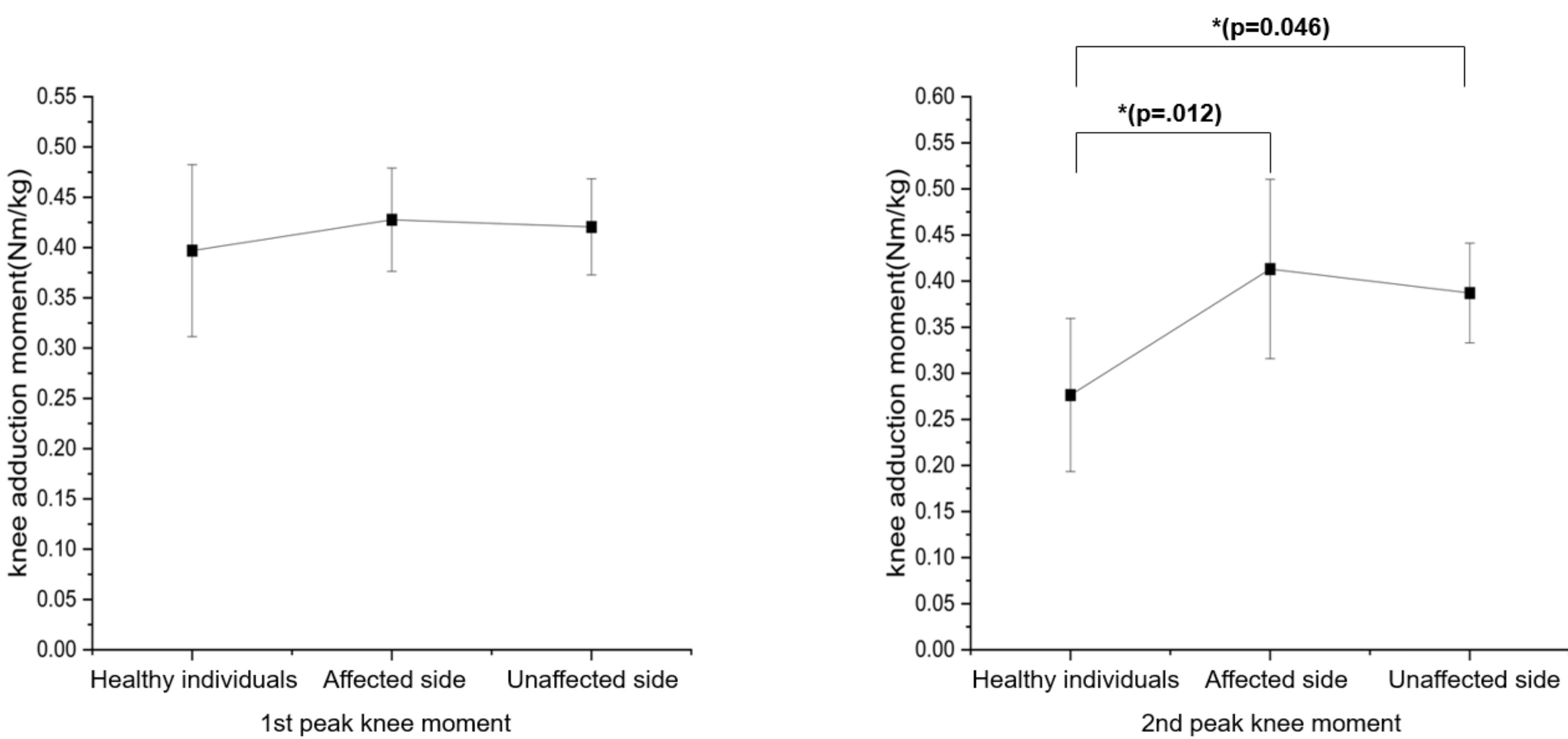


Figure 1. Knee adduction moment during gait.  $* < 0.05$