

## Three Dimensional Gait Analysis of Normal Adults with Electrogoniometer Domotion

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**Background:** The aim of this study is to present the basic reference data of kinematic gait analysis of normal Korean adults with 3 dimensional electrogoniometer, Domotion .

**Method:** The basic kinematic gait parameters of hip, knee and ankle joints on the sagittal plane were obtained from 10 healthy adults with 5 repetition for each. Three-dimensional gait analysis was performed with Domotion electrogoniometer in 10 meters long flat floor. Each data collected was processed with IBM PC equipped with gait analysis program.

**Results:** Mean maximal hip flexion was  $23.05^{\circ} \pm 4.62^{\circ}$  and mean maximal hip extension was  $6.46^{\circ} \pm 1.30^{\circ}$ . Knee flexion was observed with two peak values. The first peak knee flexion was  $6.50^{\circ} \pm 2.07^{\circ}$  at 20.4% of gait cycle and the second peak flexion was  $50.34^{\circ} \pm 2.23^{\circ}$  at 75.8% of gait cycle. Mean maximum ankle dorsiflexion was  $5.57^{\circ} \pm 1.19^{\circ}$  at 44% of gait cycle and mean maximum ankle plantar flexion was  $15.51^{\circ} \pm 1.73^{\circ}$  at 68.5% of gait cycle.

**Conclusion:** We concluded three dimensional gait analysis with electrogoniometer Domotion offers a valid and reliable kinematic data and the application of this tools for clinical gait evaluation will be helpful in management of pathological gait.

**Key Words:** Gait analysis, Electrogoniometer, Three dimensional

가  
2,5-6  
가  
(kinematic analysis),  
(kinetic analysis), (dynamic  
electromyography) (energy  
expenditure measurement)

1-4

가  
가  
3  
가  
6,8,9-10  
가  
가  
가

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Figure 1. Joint unit



Figure 2. A Man in DOMOTION

1.

2002 9

2002 11

10

2

(Fig. 2).

3

가

가

가

26 34

10

3

5

10 meter

2.

PC

가

가 1 kg

Domotion

3

(Fig. 3) 1

Motion analysys

Motion analysis

10

(Fig. 4).

software

IBM-PC

3

6

가

3

가

가

가

(Fig. 1).

1.

10

6

4

27.9

26

34

168.3 cm,

79.8 cm

(Table 1).

2.

가

10

5

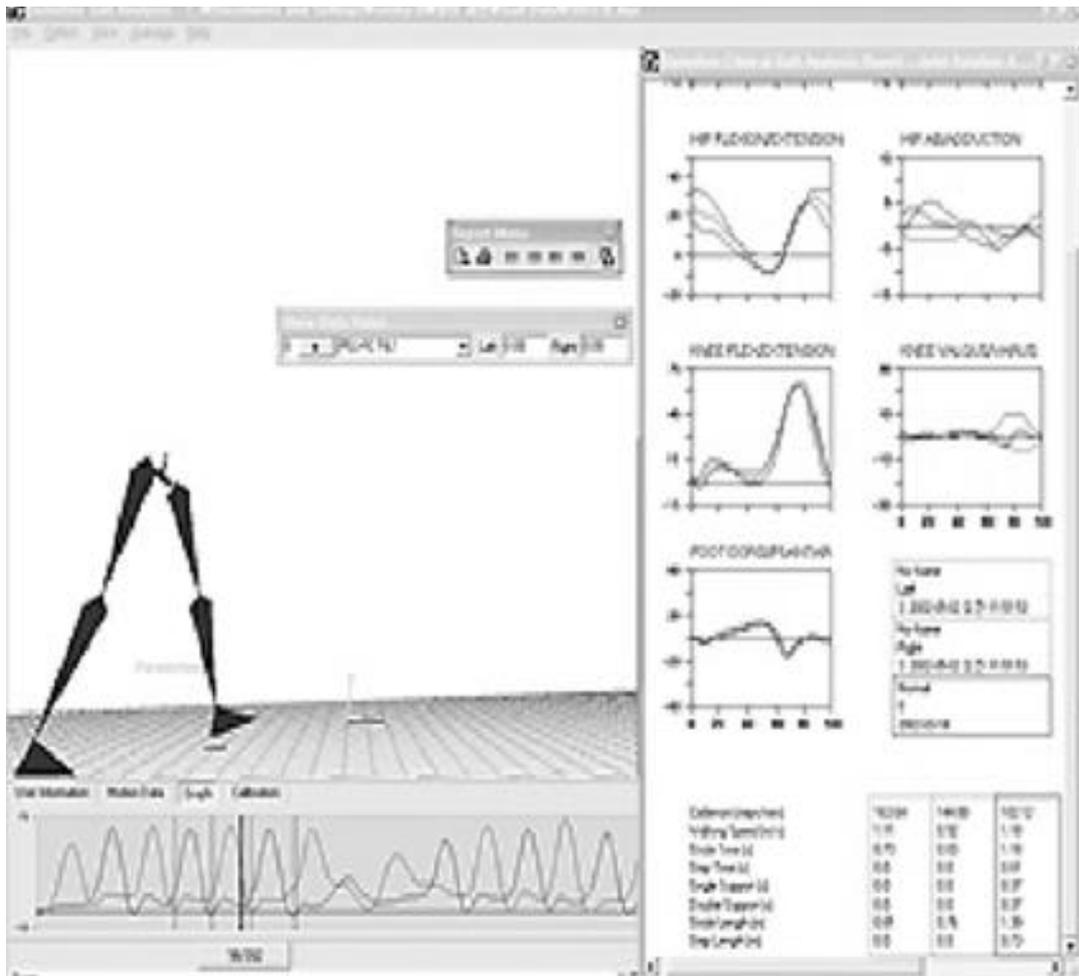


Figure 3. Domotion Motion Analysis Program

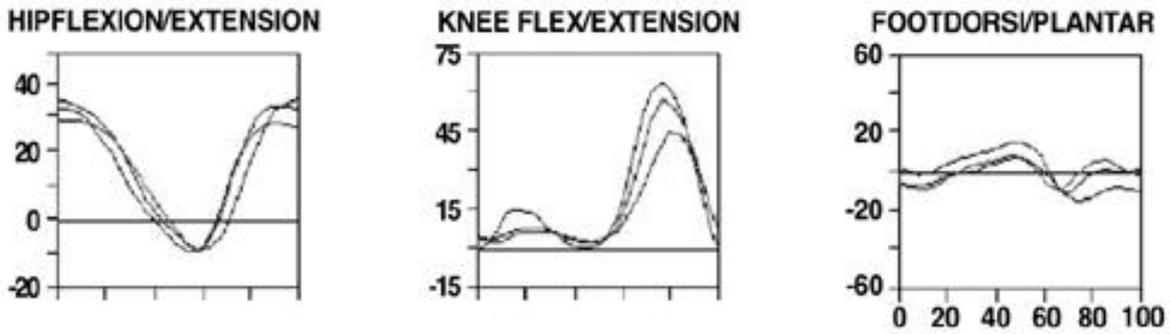


Figure 4. Gait Analysis Graph

| Parameter | Value         | Unit          |
|-----------|---------------|---------------|
| 6가        | 23.05 ± 4.62° | 6.46 ±        |
| 가         | 1.30°         | 6.50 ± 2.07가  |
| 5         | 75.8% ± 1.19° | 50.34 ± 2.23가 |
| 가         | 5%            | 44%           |
| test      | 5%            | 15.51 ± 1.73° |
| 3.        |               | 68.5%         |
| 10        |               |               |

(Table 2).



29.5 8.8 ,  
57 4.2 , 18.1  
14.4

39.74 4.10 ,  
56.97 2.47 ,  
15.93 13.67 .

가

가

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