

# Orthelligent™ VISION

AI-baserad gånganalys



Orthelligent<sup>®</sup> by OPED  
VISION



# Orthelligent® VISION: The future of gait analysis!

## Experience AI technology in action.

Orthelligent® VISION revolutionizes motion analysis through the combination of advanced AI-based image recognition technology with a user-friendly tablet. As a mobile app, Orthelligent® VISION enables fast, precise and markerless movement analysis, ideal for use in medical supply stores, physiotherapy and orthopaedic and rehabilitation medicine.

By using deep learning and neural networks, the app analyzes movements and provides detailed evaluations without the need for special cameras or markers on the body.



AI - Image recognition

**Orthelligent**  
VISION

## Conventional methods



**No markers**

Attaching the markers and evaluating them requires a great deal of knowledge.



**Measurement in under 5 minutes**

The preparations are time-consuming, taking 30-60 minutes per patient.



**Easy to use**

Special rooms with camera systems are often required.



**Automatic report**

The analysis and evaluation of the measurements are complex.

## Challenges in gait analysis: More than just counting steps!

Use Orthelligent® VISION to save time and resources.



## A new way of patient care

Global innovation for doctors, therapists, technicians and patients.

### For medical professionals

A powerful, user-friendly tool that provides fast, precise and reliable data for diagnosis and therapy and ensures data protection.

### Patient

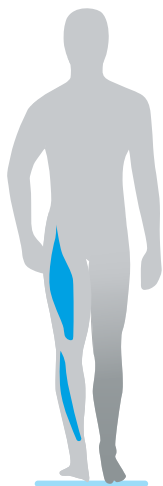
A system that makes diagnoses and treatment plans easy to understand and customize, with options for monitoring progress.

### Research

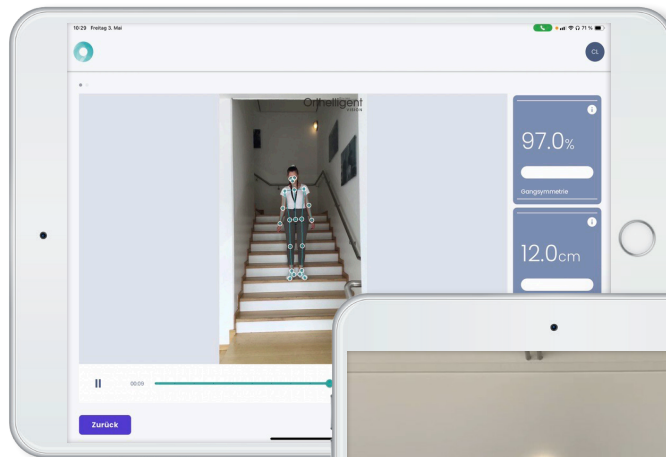
A comprehensive data platform that drives research in motion analysis through extensive data sets and interdisciplinary collaboration.

# Measurement options: Capture every angle!

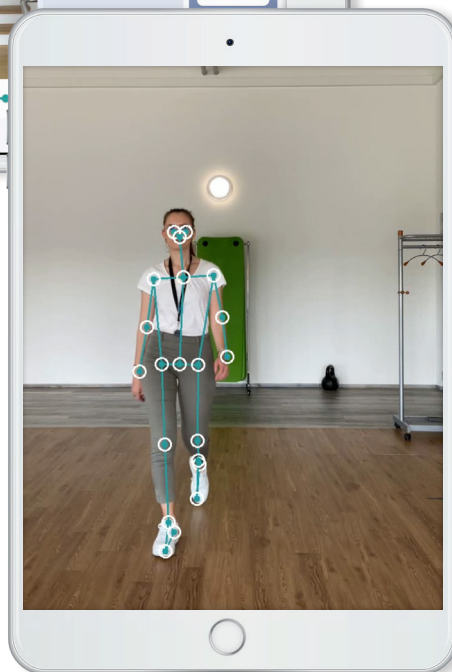
Frontal or lateral - complete flexibility.



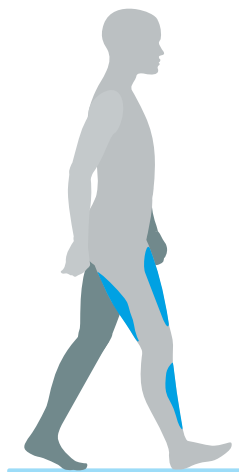
Frontal



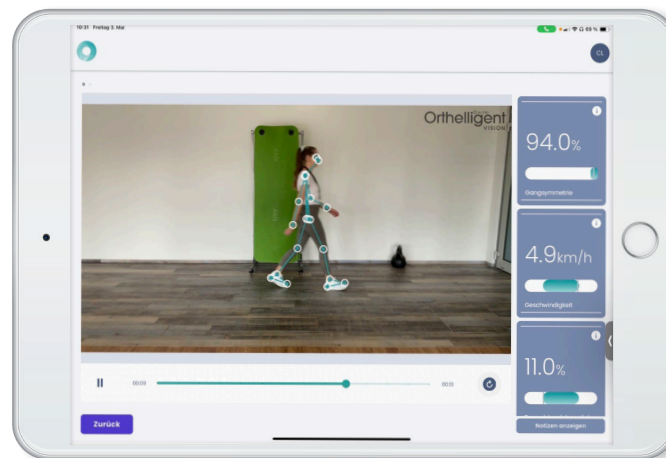
Frontal staircase



Frontal



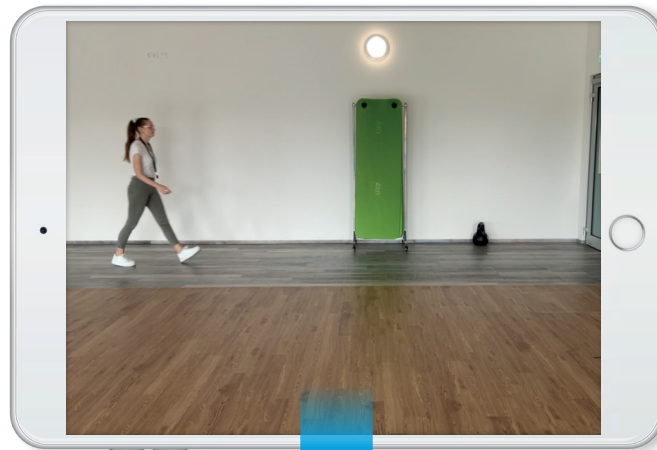
Lateral



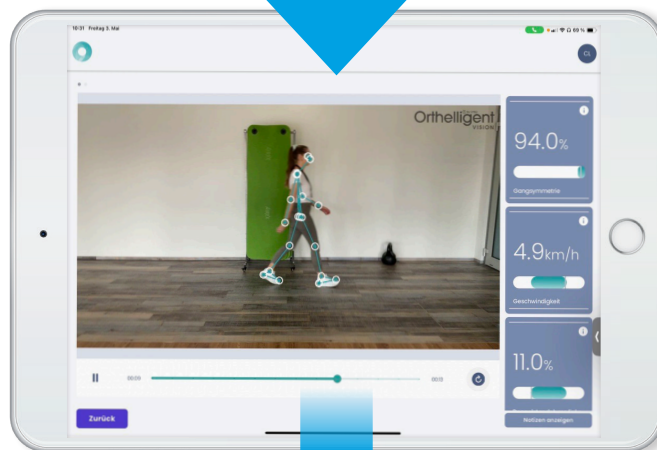
Lateral

# Carrying out a gait analysis: precision with every step!

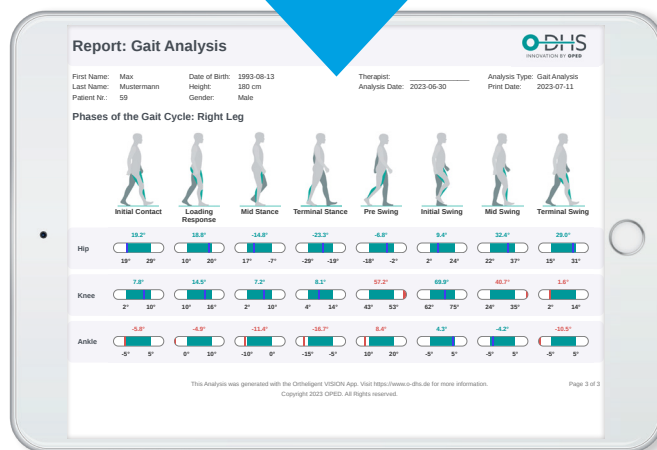
How modern gait analysis works.



**Measurement**



**Analysis**

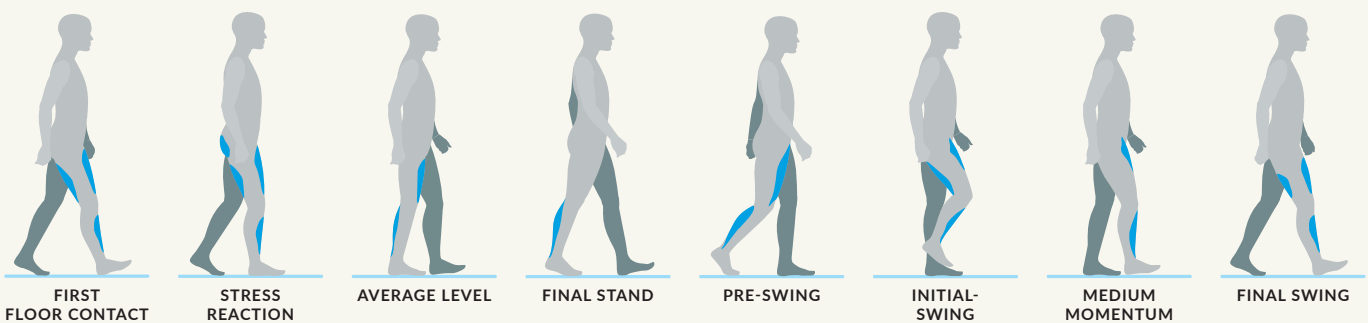


**Evaluation**

# Gait parameters: Accuracy of the measurement!

Recording and analysis with precision.

Parameters	Lateral	Frontal
Gear speed	✓	✓
Gait symmetry	✓	✓
Step length	✓	✗
Crotch width	✗	✓
Cadence	✓	✗
Step time right/left	✓	✓
Service life right/left	✓	✓
Double stance phase right/left	✓	✗



**Key events**  
The foot touches the floor, mostly with the heel.

**Meaning**  
Starting point of the gait cycle, facilitating weight transfer to the supporting leg.

**Key events**  
Weight transfer through the leg; completely begins to bend.

**Meaning**  
Absorption of the impact forces; Preparation for full weight transfer.

**Key events**  
Body weight is completely carried by the supporting leg.

**Meaning**  
Most stable phase; body weight is directly above the supporting leg.

**Key events**  
Heel lifts from floor; body is preparing for the forward movement.

**Meaning**  
Preparation for the transition to the swing leg.

**Key events**  
Toes push off the ground as the leg prepares to swing forward, ready for the next step.

**Meaning**  
Transition from stance to swing leg.

**Key events**  
The leg begins to move to the front.

**Meaning**  
First phase of the leg swing; preparation of the leg for the next step.

**Key events**  
The leg swings through the center; the foot passes the supporting leg.

**Meaning**  
Continuation of the forward movement of the swing leg.

**Key events**  
Preparation of the leg on the ground contact; knee begins to stretch.

**Meaning**  
Conclusion of the swing; preparation for stable ground contact.

## Correct measuring procedures: Perfect the technique!

### Tips for quick results.

The Orthelligent® VISION application comprises simple steps: registration and login to the app, creation of a patient profile, recording of the movement sequence with the tablet camera, automatic analysis by the app and retrieval of the detailed report. The app offers a user-friendly interface that makes it possible to carry out precise movement analyses in just a few minutes.

- The person's head and feet must be in the picture at all times. Only one person may be seen in the video.
- Minimum body height of 3 feet required.
- The patient should be able to walk 10 steps straight ahead.
- Wear close-fitting clothing without patterns (no dots/stripes). Skirts and very dark clothing can distort the results.
- Align the camera to the center of the body.
- Hold the tablet camera at least 6 1/2 Feet away, stabilize the camera.
- Ensure adequate lighting without strong background lighting.
- The silhouette on the tablet serves as orientation for the optimum position of the test subject in the video. If the silhouette lights up green, the tablet is in the optimum position.
- Alternatively, a treadmill/walking pad can also be used for the measurement. It is important that the head and feet are clearly visible.
- Always have the analysis carried out by a qualified specialist. Do not place the iPad on the floor to avoid distortion.
- Up to 10 measurements can be recorded in offline mode. The results are made available as soon as the tablet is connected to the network again.

### Specific requirements for frontal analysis:

- Ideally in a room measuring 6 x 16 Feet.
- At least 5 steps per analysis in one run. Ideally 2x 5 steps towards the camera (in between 1x 5 steps away from the camera).
- Switch off the rotation and stage manager lock in the iPad. For older iPads, check the side switch and select the function of the side switch in „Settings“, „General“.

### Specific requirements for lateral analysis:

- Ideally in a room measuring 16 x 16 Feet.
- At least 6 steps per analysis in one run.



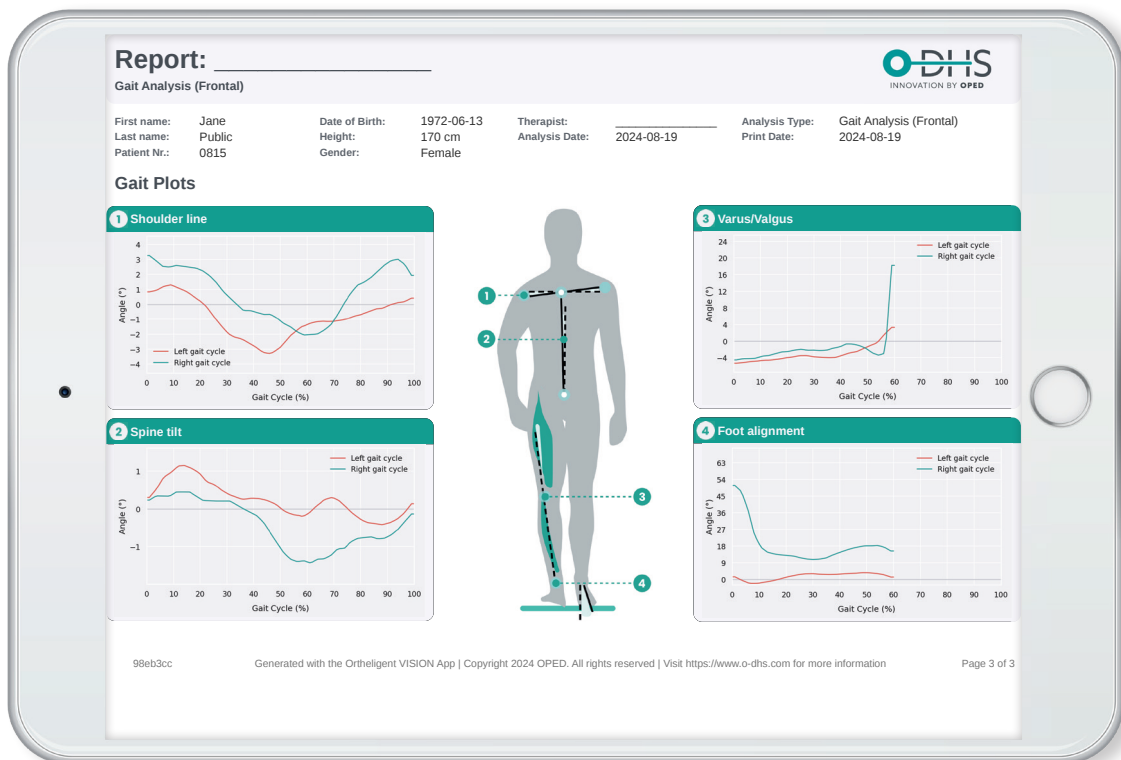
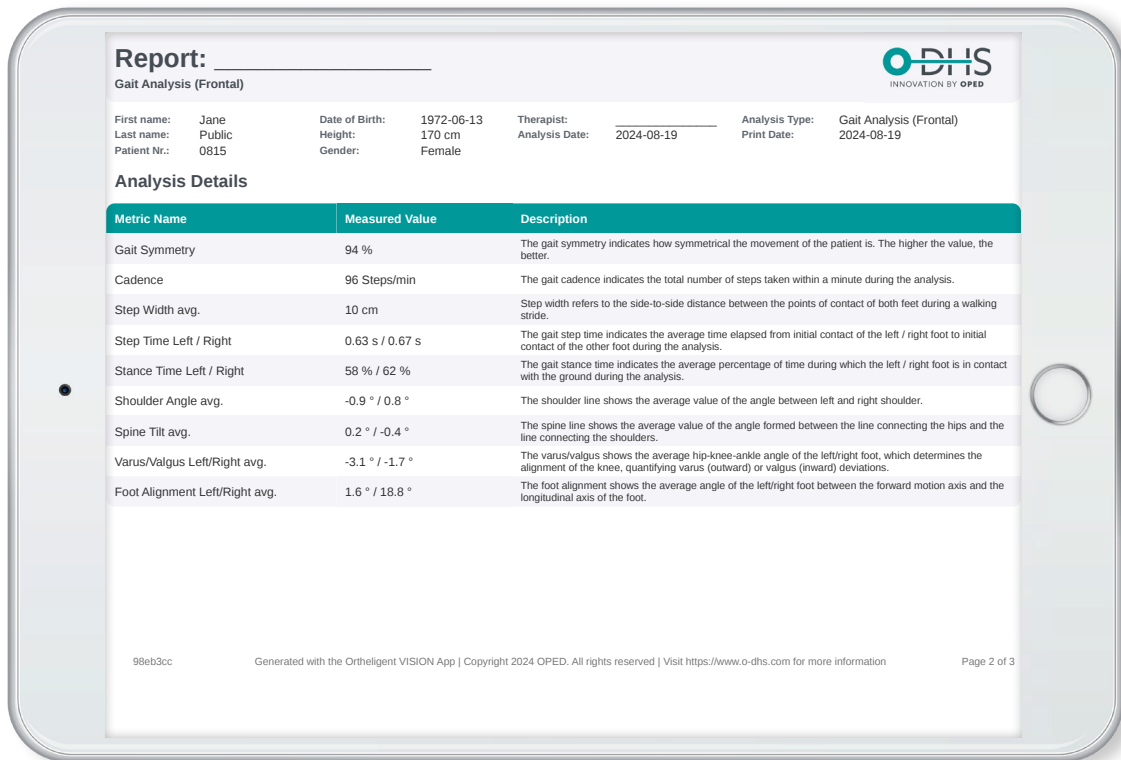
# PDF report: Detailed results - Lateral!

## Every step, precisely documented.





PDF report: Clear insights - Frontal!  
Visibly document progress.



## Gait analysis methods: Comprehensive overview!

Discover different techniques.



### Visual observation

- Simple and cost effective to implement.
- No special equipment required.
- Immediate feedback option.

### Pressure measuring plates

- Quantitative data on soil reaction forces.
- Helps to identify stress distribution patterns.
- Useful for evaluating and fitting foot orthoses.

### EMG

- Measures muscle activity and coordination during walking.
- Helps to understand the causes of gait disorders.
- Can be used in combination with other technologies.



- Subjective and dependent on the experience of the observer.
- Quantitative data is difficult to collect.
- Subtleties and fast movements can be overlooked.

- Can be expensive to purchase.
- Only records the forces acting on the standing surface.
- Mobility and flexibility in use are limited.
- Measurement limited to a small area, which can lead to deviations in gait pattern when patient tries to hit plate.

- Requires specific knowledge to interpret the data.
- The placement of the electrodes can influence the results.
- May be inconvenient for patients.

## Gait analysis methods: Comprehensive overview!

### Further diagnostic tools.



#### Wearable soles

- Enables gait analysis in a natural environment.
- Cost-effective and user-friendly.
- Detection of movements in real time.

#### Video analysis with markers

- High-precision detection of movements in three dimensions.
- Enables detailed biomechanical analyses.
- Quantitative data on joint angles, speeds and more.

#### Video analysis without markers

- More natural movement of the test subjects without physical restrictions.
- Faster setup and execution of tests.
- Flexible use in various environments without special equipment.



- May be less precise than laboratory instruments.
- Data analysis can be complex and statements are difficult to make.
- Necessity of calibration and correct placement.

- High costs for purchase and maintenance.
- Requires special expertise for setup and data interpretation.
- Time-consuming preparation (e.g. attaching the markers).

- Potential accuracy and precision problems in complex movement scenarios.
- Susceptibility to changes in environmental conditions such as lighting.
- Dependence on the quality of the image processing software.

When selecting the right tool for gait analysis, various factors must be taken into account, including the specific application, the budget, the required accuracy and the availability of expertise for implementation and evaluation. Results from clinical studies and case studies underline the accuracy and reliability of Orthelligent®VISION. The app has been successfully used to identify gait disorders, evaluate the effectiveness of rehabilitation programs and develop individual therapy approaches.



# Support for Better Life

Everyone should be able to live their life to the fullest, regardless of their mobility challenges. With innovative solutions developed in close collaboration with healthcare professionals and patients, we strive to provide Support for Better Life.



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