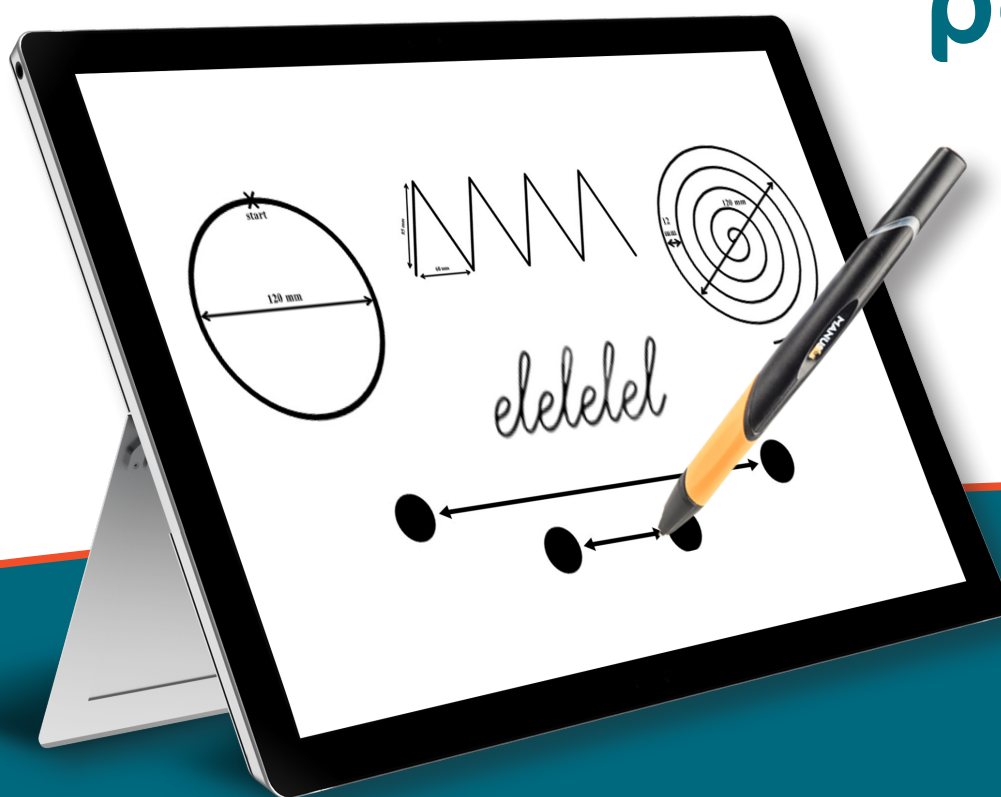


# Parkinson's Disease Diagnosis and Monitoring

with

neuromotor<sup>™</sup>  
pen 



Differential diagnosis and monitoring



Accurate fine motor skill quantification



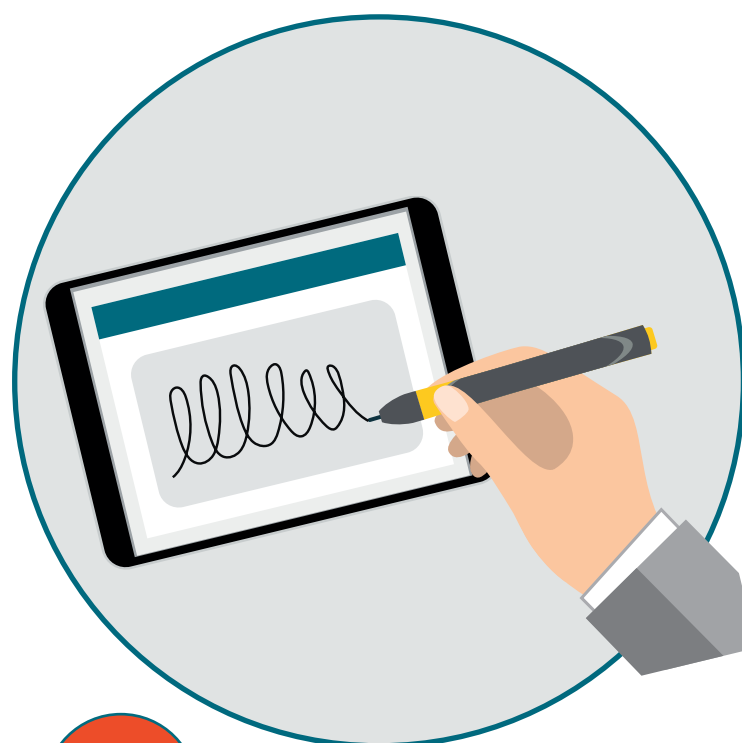
Quantifies bradykinesia, micrographia, tremor and spatial accuracy



Short, 15 minutes test

# Introducing the NeuroMotor Pen™

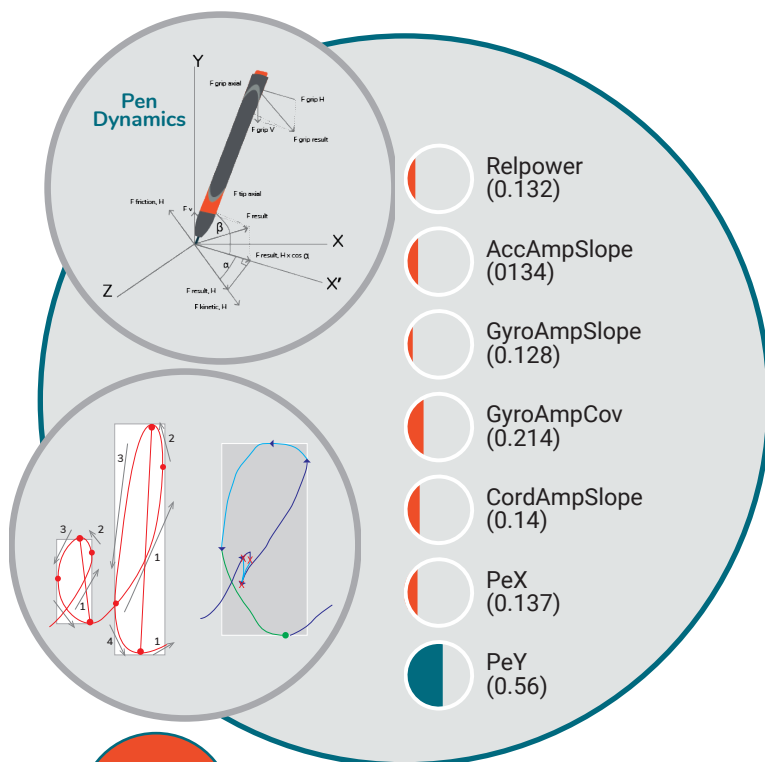
for neuromuscular assessment with proven clinical applications  
in Parkinson's and other movement disorders.



1

## Record pen motion

Recording complex movement parameters with NeuroMotor Pen™ sensor system using NeuroMotor Pen™ “standardised tasks”



2

## Biomarker extraction

Extracting Digital Biomarkers: representing motor skill features and Parkinson's symptoms using sophisticated AI algorithms, enabling accurate and objective quantification

### Easy to use:



Hand-held device which provides accurate fine motor skill quantification



Validated for use in differential diagnosis and monitoring



Useful when no equivocal diagnosis can be made on the basis of clinical observation only



Quantifies movement disorder motor signs: bradykinesia, micrographia, tremor and spatial accuracy



Short, 15 minutes patient test with instant results

### NeuroMotor Pen™ Platform



Use in a clinical setting or at home



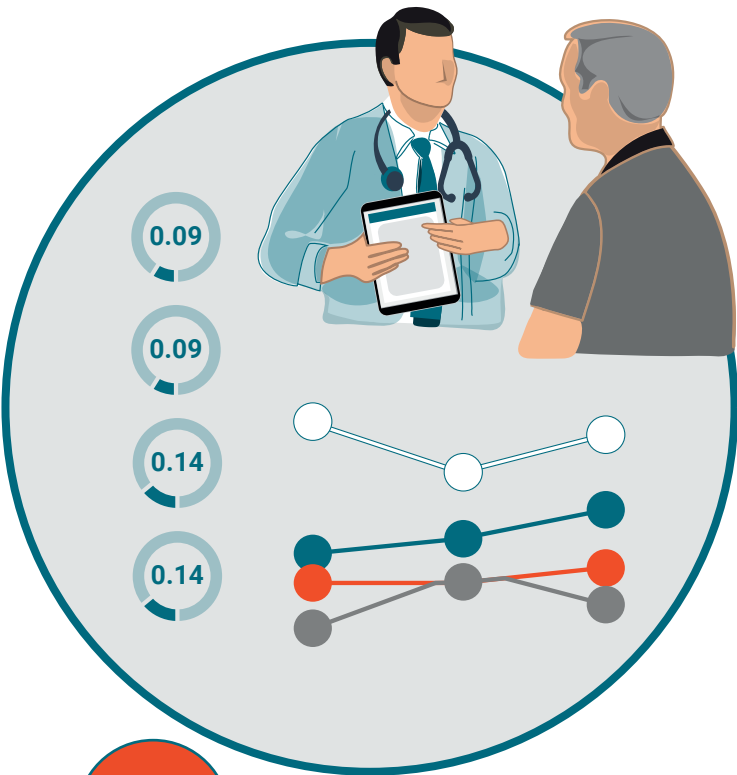
Automated non-invasive upper limb function assessment



Remote analytics provide ease of implementation, automated record keeping and improved cybersecurity



# Streamlining the Parkinson's disease diagnosis clinical pathway



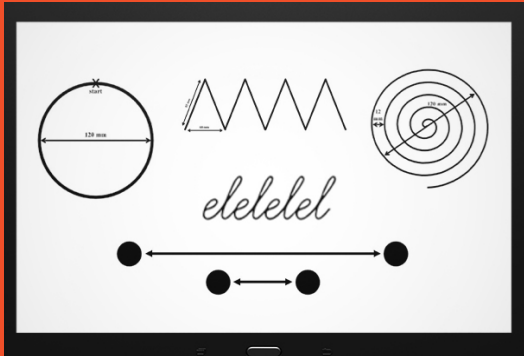
## 3 Decision Support

Decision Support Algorithms:  
Differential diagnosis and monitoring  
(Severity measurement), using proven  
AI algorithms trained on clinical  
database

The NeuroMotor Pen™ can be used to support diagnosis and monitoring of Parkinson's Disease and other neuromotor impairments in a quick, inexpensive, non-invasive, and objective fashion.

It is a unique and patented system that combines sensor technologies built into a digital pen with software and an analytical engine with Decision Support System.

The NeuroMotor Pen™ records and analyses parameters of minute limb and hand motion which enables non-invasive quantification of fine motor skill. These parameters are used as 'digital biomarkers' which provide objective information about movement abnormalities.



## Testimonials

"NMP is particularly useful to help specialists with differential diagnosis of complex cases, where otherwise DaTscan would be essential".

"NeuroMotor Pen™ will help large GP practices to improve the referral accuracy"

*Prof. Richard Walker, Consultant, North Tyneside General Hospital*

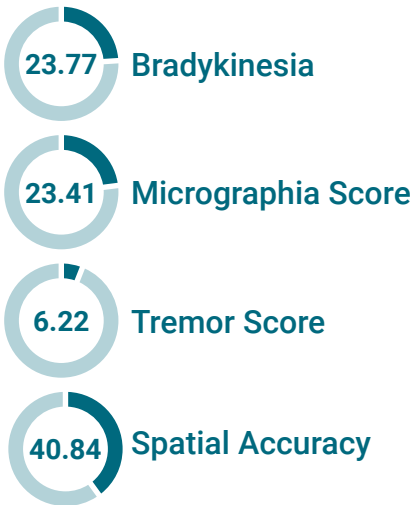
"...accurately measures motor symptoms in patients with Movement Disorders, including Parkinson's disease and atypical Parkinsonism."

"... a useful tool in the differential diagnoses of movements disorders and in the observation of their clinical course including responses to medication."

"...it measures subtle early signs and symptoms not visible to the naked eye"

*Dr. A. Deutschländer, Neurologist and Movement Disorder Specialist*

## Subject Results



Severity scoring - 0-100  
(0-not presence;100-strong presence)

## Specifications

The **NeuroMotor Pen™** is a unique and patented system that combines sensor technologies built into a digital pen with software and an analytical engine with Decision Support System. The interface enables users to record non-invasively and analyse parameters of minute limb and hand motion. This enables quantification of fine motor skill.

These parameters are used as ‘digital biomarkers’ to provide objective information about movement abnormalities.

The **NeuroMotor Pen™** can be used to support diagnosis and monitoring of Parkinson’s Disease (PD) and other neuromotor impairments. It is a quick, inexpensive, non-invasive, and objective aid to diagnosis.

### NeuroMotor Pen™ System General Specifications

|   |  |
|---|--|
| Manufacturer:                               | Manus Neurodynamica Ltd  |
| Equipment Classification:                   | Medical class I  |
| Applied parts:                              | Type B. Tested according to IEC 60601-1  |
| Internally powered equipment:               | Samsung Galaxy tablet PC and NeuroMotor Pen  |
| Parts not suitable for O2 rich environment: | All  |
| Bluetooth frequency:                        | 2.4 GHz  |
| Temperature:                                | Operational: 0 C to +40 C  |
| Humidity:                                   | Operational: 20% to 80% RH   |
| Atmospheric pressure:                       | Operational: 700 KPa to 1060 KPa   |
| Free fall on hard surface:                  | (orthogonal/tip up; longitudinal/tip down)<br>Operational: 1.2m; 0.08m<br>Transport & storage: 1.2m; N/A |

### NeuroMotor Pen™

|   |  |
|---|--|
| Dimensions:                                       | 167 mm (l) x 15 mm (max. diameter)   |
| Weight:   | 25 g   |
| Battery:  | Lithium-Ion  |
| Operating voltage:                                | 3V   |
| Electrical safety test specification:             | All  |
| Electromagnetic compatibility test specification: | EN 60601-1-2:2015<br>(Incorporating amendments: A11:2001, A1:2013, A12:2014) |
| Pen Charger Dimensions:                           | 55 x 31.5 x 41 mm  |
| Working temperature:                              | 0 C to 45 C  |
| Storage Humidity:                                 | 10 – 90% RH  |
| Input Voltage:                                    | 100 – 240V   |
| Input frequency:                                  | 50 / 60 Hz AC  |
| Input current:                                    | 160 to 80 mA   |
| Output voltage:                                   | 5 V  |
| Output current:                                   | 1400mA   |