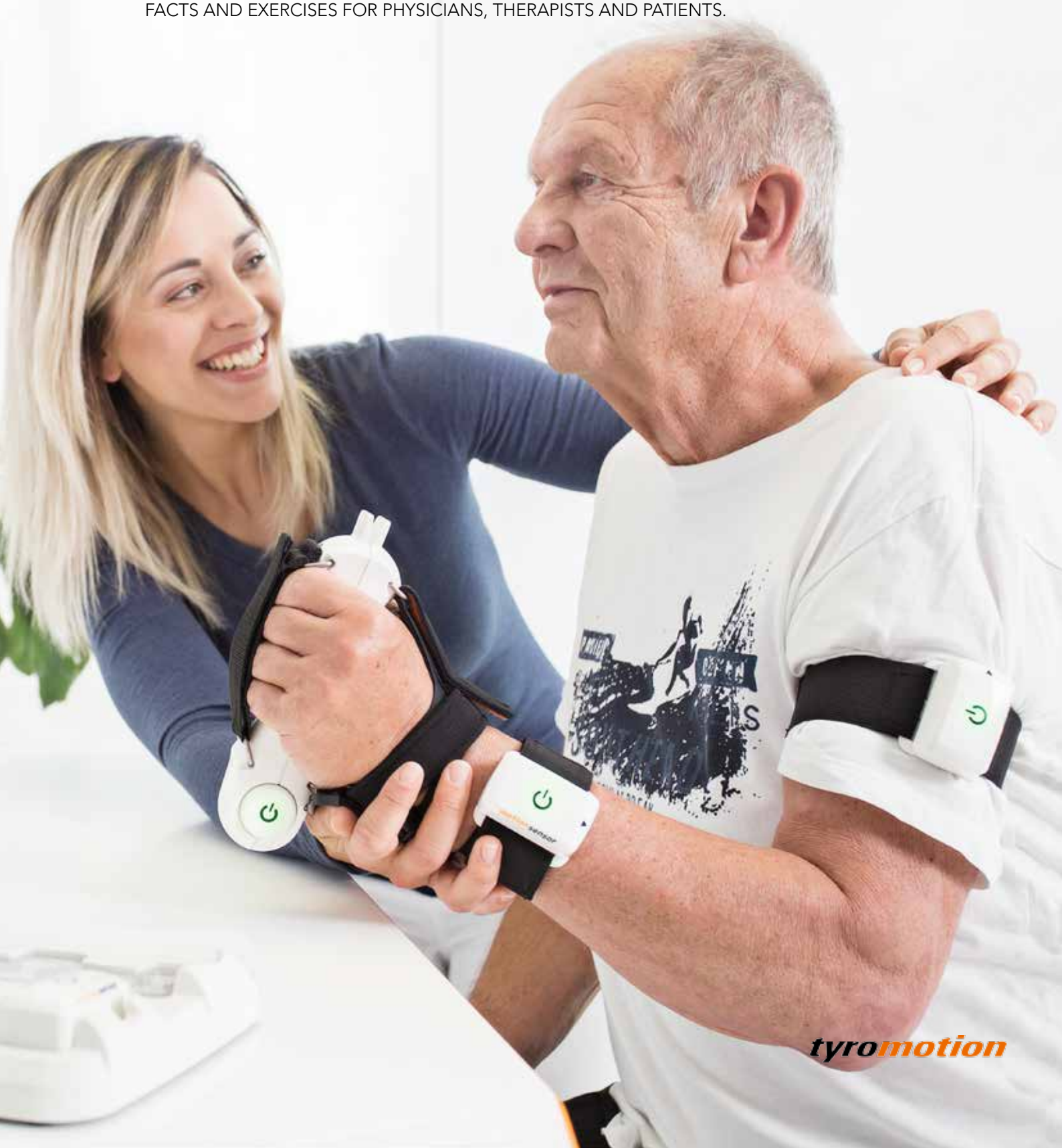
PABLO®

MULTIFUNCTIONAL REHABILITATION APPROACH

PART OF THE
TYROSOLUTION

FACTS AND EXERCISES FOR PHYSICIANS, THERAPISTS AND PATIENTS.



PABLO®
ENDLESS POSSIBILITIES

The **PABLO®** system is a modern assessment and therapy device for the rehabilitation of patients with impaired motor functions. It is generally used for the neurological rehabilitation of distal upper extremity. The Pablo system supports upper and lower extremity as well as trunk and head applications. The target group not only includes neurological, but also orthopedic, pediatric and geriatric patients with deficits in movement and force control, accuracy, aiming, coordination, trunk control and balance.

The core components of the **PABLO®** system are the **PABLO®** Handsensor and **PABLO®** Motionsensors. The **PABLO®** Motionsensors are easily attached to the **PABLO®** Multiboard and Multiball to extend the therapy application spectrum. Thanks to the new ergonomic design of the **PABLO®** system, both adults and children can use the system in an optimal way.

The **PABLO®** Handsensor is a real allrounder: It is a **Hand-arm therapy and assessment device** in one. The **PABLO®** provides training for all gripping forms, and traces the strength of the hand and range of motion. Motionsensors can detect the range of motion of the extremities as well as the head and trunk.

The **PABLO®** Handsensor and Motionsensors connect wirelessly via Bluetooth. **PABLO®** provides an interactive movement training with audiovisual feedback based on the cross-system software **TYROS**. Even small movement or force improvements become visible. This motivates the patient, and results from each rehabilitation session are integrated in the database and therapy report.

PART OF THE
TYROSOLUTION

The wireless **PABLO®** Handsensor measures the various gripping patterns of the human hand and the resulting forces and displays these values as a trend. The extension and flexion force of the hand in the cylinder grip can be measured by built-in strength sensors.

The special design of the **PABLO®** Handsensor makes it possible to measure the exerted force for pinch, lateral-, three-point- and interdigital grips as well as the arms movement. Additionally, every kind of body movement (head, arm, trunk, leg) can be determined by the **PABLO®** Motionsensors with built in Inertial Measurement Units (IMU).

The therapist has the expertise.
Tyromotion has the tools!

PABLO® IN BRIEF

1. Sensor-based rehabilitation device for unilateral and bilateral training
2. Interactive therapies for the whole body (hand, fingers, arms, legs, trunk, head)
3. Wireless therapy device
4. Can be used by adults and children in all rehabilitation phases
5. Objective assessments, monitoring and reporting system
6. Assistance and movement guidance with Multiboard and Multiball for weaker patients

TYRO LINKED
PABLO IN ACTION

The following extensions make PABLO® even more versatile:

- **PABLO® Handsensor** – Measurement of grasp and release force and various finger grips as well as movements in all 3 axes of motion. This enables the patient to train the activities of daily living in a very life-like way (opening a bottle, turning a key, picking up a coin,…).

- **PABLO® Motionsensor** – Precise joint assessment due to measurement modules that are attached to the body with loop straps of various sizes. Individual positioning of the Motionsensors enables a variety of therapies. In addition to a unilateral application, symmetric and asymmetric bilateral and cooperative applications are possible.

- The **PABLO® Multiball** supports pronation and supination training as well as wrist extension and flexion training. The Multiball can be used in early rehabilitation phases for targeted therapy applications of the upper extremity. The Motionsensor can be easily attached to the Multiball. The hand is secured to the ball with a flexible fastening system.

- **PABLO® Multiboard** is used to guide and assist repetitive distal and proximal exercises for single or multiple joints. Even severely impaired patients can use this therapy form and learn to avoid compensating movements from the beginning.

THERAPY APPLICATIONS

Unilateral and bilateral training	✓
Symmetric and asymmetric excercises	✓
Computer-assisted therapy device	✓
Sensor-based system	✓
Feedback modalities (audiovisual feedback)	✓
Possibility for therapists hands-on	✓
Pediatrics	✓
Adults	✓
Neurology	✓
Orthopaedics	✓
Geriatrics	✓
Wheelchair accessible	✓
Objective assessments for the upper extremity	✓
Force control (Handsensor)	✓
Isometric training (Handsensor)	✓
1D therapies (ROM)	✓
2D therapies (ROM)	✓
Assistive therapy (Multiboard, Multiball)	✓
Active therapy	✓
Various positions (seated, standing, kneeling, etc.)	✓
Functional Training (e.g. sit-to-stand)	✓
Part- & whole-body training	✓
Activities of daily living (ADL)	✓
Cognitive therapies according to Verena Schweizer	✓
Class I medical device	✓
Scientific study verifications	✓

SOFTWARE TYROS

The system's **TYROS** software is therapeutically coordinated and supports the hardware of the **PABLO®** system with various interactive therapy games, which are designed for the pace, needs and goals of rehabilitation. Game parameters can be shaped to address each patient's functional status. This stimulates the motor learning process and engages the user to perform the high numbers of active repetitions required to drive neuroplasticity. Moreover, therapy games are usable with all different components of the **PABLO®** system and thereby allowing to optimally address the patients pathology.

With the **PABLO®** system the rehabilitation process is exciting and motivating for the patient. Variations such as mirroring, difficulty level, acoustic and visual feedback make it possible to adapt the therapy to the patient's specific needs. The software's documentation system saves all performed settings and the therapy progress in the corresponding patient file. At the end of the therapy, a final report, complete with progress diagrams, can be created which makes it easy to evaluate the efficacy of the therapy.

PABLO® IN PRACTICE

ASSESSMENTS

The **TYROS** software includes assessments for measuring the strength of hand functions and the active range of motion of the upper extremity. Measurements can also be performed from a pathological starting position. Important notes can be archived in individual comment fields.

INTERACTIVE THERAPY GAMES

A large variety of therapy games is available. Therapists can choose the ideal game to motivate their patient and to ensure a targeted, repetitive and automated manner of therapy by concentrating on an external focus. Training of Motion control, force control, cognitive abilities, concentration, balance, posture control, targeted motor function, coordination, motion sequence, precise force exertion.

*Further, the integration of objects (e.g. steering weel) opens up a large field for active training with a high repetition rate customized towards the patients personal goals (driving a car).

REPORT AND DOCUMENTATION OPTIONS

The **TYROS** software records individual data in an electronic patient file, which is created by a therapist within the **TYROS** documentation system at the start of a therapy. Each new session result is automatically saved and summarized by the system in the background as a therapy and final report with progress diagrams.

LINK TO DAILY ROUTINE

Activities of daily living can be implemented into the therapy sessions at a high rate of repetition with the **PABLO®** system. This link to daily routines supports the motivation of the patient and enables his/her motor learning. Sit-to-stand, steering a car, reaching for objects or climbing the stairs are just a few examples.

MINIMAL MOVEMENTS BECOME VISIBLE

The sensitivity of the Motionsensors enables the tracking of elemental movements. Patients who perform a therapeutic game with minimal movements are more motivated and have more fun during the rehabilitation process.

ENDLESS POSSIBILITIES

Creativity has no limits! In combination with the **TYROS** software every therapeutic movement-exercise can be done in a motivating way and additional feedback using the **PABLO®** Motionsensors. It's simple handling enables a very quick therapy setup with almost no chances for compensation movements.

Sources and references: Brailescu CM, Scarlet RG, Nica AS, Lascar I. A study regarding the results of a rehabilitation program in patients with traumatic lesions of the hand after surgery. Palestrica of the third millennium- Civilization and Sport. 2013; 14 (4): 263-270.
Nica AS, Brailescu CM, Scarlet RG. Virtual reality as a method for evaluation and therapy after traumatic hand surgery. Stud Health Technol Inform. 2013; 191: 48-52. (PMID: 23792841)
Seitz RJ, Kammerzell A, Samartzi M, Jander S, Wojtecki L, Verchure PFMJ, Ram D. Monitoring of visuomotor coordination in healthy subjects and patients with stroke and Parkinson's disease: An application study using the PABLO®-device. Int J Neurorehabilitation 1:113. doi:10.4172/2376-0281.1000113.