

Matti

Matti is an interactive sensor mat that enables therapists to significantly improve the rehabilitation process of their patients. Patients can use Matti to perform challenging exergames (therapy exercises) independently and review their progress each session, together with their therapist. Our research in cooperation with the University of Ghent has already shown that this increases their motivation and therapy compliance. In addition, as a therapist you gain more insight through the automatic data capture and analysis to ensure better Evidence Based Practice.



CREATIVE THERAPY

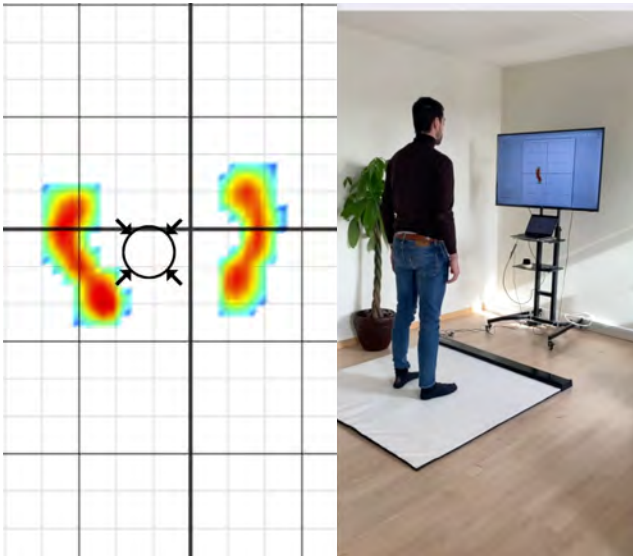


Advantages



1. Better rehabilitation through motivation

By using gamification strategies and real-time feedback, patients can be extra motivated. With a wide range of exercises to treat specific pathologies, Matti is very versatile. The use of precise pressure measurements helps to indicate to patients exactly how far they can go. The exercises are customisable and linked to the patient's profile to ensure a perfect adjustment of the level of difficulty.



2. Efficient technology through innovation

With Matti you are able to combine dozens of measuring & rehabilitation instruments on 1,5m². Save time and let patients perform some of the repetitive exercises more independently with Matti. Set goals together, automate exercises and treatment plans for your entire team so that you as a therapist can spend more time analysing and talking to your patient.



3. Generate correct insights by measuring

Make the transition to digital data collection and analysis, without pen and paper. Measure and record each session and provide objective insights that are displayed graphically. Integrate measurements via Matti into patient records for a holistic overview. Export these results with a click of a button and share them with the patient.

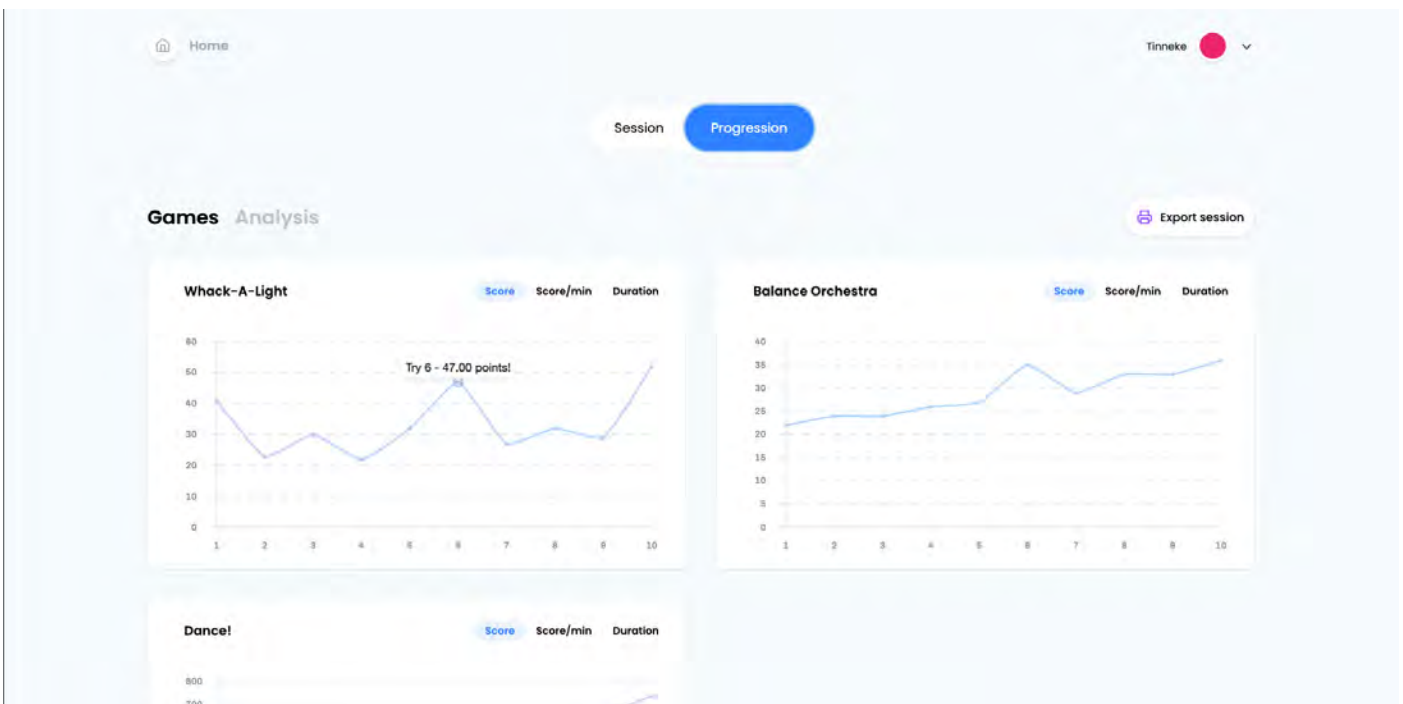
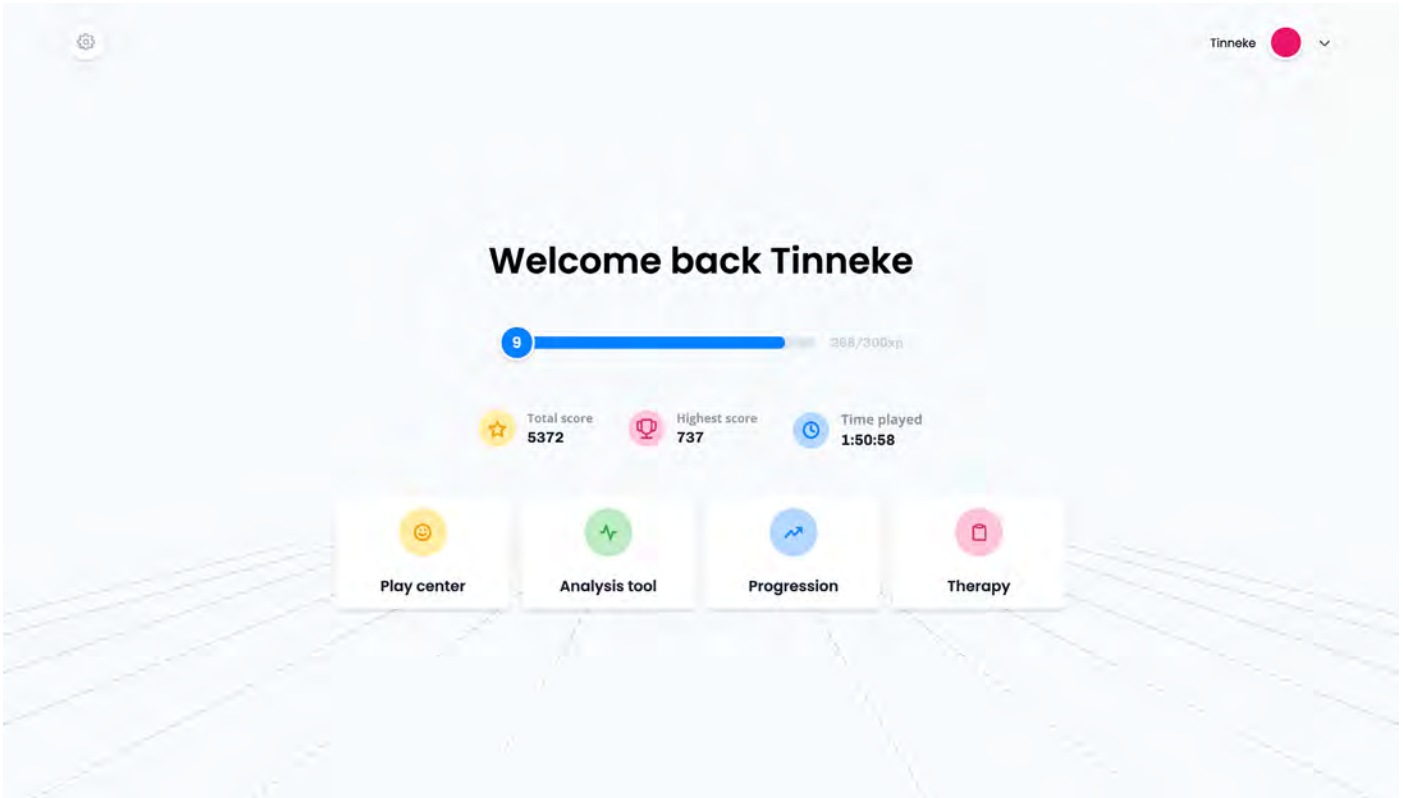
Pathologies

Kids	Adults	Elderly	Sport
Developmental Coordination Disorder (DCD)	Non-Annexpected Brain Injury (NBI)	Fallprevention	Cruciate ligament injury
Cerebrale Parese (CP)	Prothesis	Cerebrovasculair Accident (CVA)	Ankle fracture
Non-Annexpected Brain Injury (NBI)	Obesitas	Cognitive exercises	Shoulder injury
Balance problems	Pneumo- and cardio rehabilitation	Motoric activation	Jump analysis



Platform

Matti is connected to the online Creative Therapy Platform. This ever-expanding library of exercises, tests and applications already supports a variety of pathologies. The adaptability and growth provide hundreds of possibilities on only 2m², very easy to use and fully future-proof.



Scientific foundation

Mobility, as a sub facet of the domain of independence, is an important indicator of general quality of life [1]. The ability to maintain balance, to coordinate the body and to generate sufficient strength are examples of human functions that enable good mobility [2]. Within the field of rehabilitation sciences, therapists encourage or treat complaints of the supporting and locomotor apparatus in order to improve or regain these functions. They do this, among other things, by using passive techniques (such as mobilisations, manipulations, etc.) and active exercise therapy.

Such a therapeutic course serves as a motor and behavioural learning process, in which new skills are learned or old (erroneous) performances of certain functions/activities are corrected. Obtaining the right feedback is an essential part of this motor learning process [3]. By using more than 3000 integrated pressure sensors Matti can show the therapist and the patient a detailed visualisation of the different support points on the mat before, after and during a specific exercise. In addition it can calculate the displacements of the body's centre of gravity and display them in percentage terms. In this way Creative Therapy makes it possible to make the abstract concept of body awareness concrete and understandable for the patient. Common components of widely used balance tests (such as the Berg Balance Scale [4], the MABC-2 [5] and the BOT-2 [6]) are already present in the platform and quickly provide the therapist with a highly accurate, quantitative result (e.g. time duration). This allows the therapist to focus on the qualitative execution of the test. Through the Creative Therapy Platform all sessions over time can be efficiently followed and visualised.

It is not only the intention that the patient carries out the exercises and techniques in the correct manner, but also that this is done with the correct number of repetitions [7]. Therefore, the rehabilitation process requires a certain investment of time and effort from both therapist and patient. In order for patients to perform the exercises outside the therapeutic framework, it is important that their motivation is maintained [8]. Due to their emergence process, in which engagement and motivation are central, video games and exergames (which get their input from physical activity) provide an interesting application that will boost patients' motivation and training frequency [9,10]. The great flexibility and accessibility of the Creative Therapy Platform allows the therapist

to offer a wide range of exercises and tests. Almost all aspects of the exergames are adaptable to the specific needs and goals of the users. Depending on the game settings and the patient's starting position, the same exercise can be used to work on different aspects of movement. The real-time visualisation of the performance over time provides necessary feedback and has an additional motivating effect.

References

- [1] World Health Organization, Programme on mental health : WHOQOL user manual, 2012 revision. World Health Organization, 1998.
- [2] World Health Organization, International classification of functioning, disability and health: ICF. World Health Organization, 2001.
- [3] R. A. Magill and D. Anderson, Motor learning and control: concepts and applications, Tenth edition. New York, NY: McGraw-Hill, 2014.
- [4] K. Berg, S. Wood-Dauphinee, J. Williams, and B. Maki, Measuring balance in the elderly: Validation of an instrument, Canadian journal of public health. Revue canadienne de santé publique, vol. 83 Suppl 2, pp. S7-11, Nov. 1991.
- [5] R.H. Bruininks, B.D. Bruininks, BOT2 :Bruininks-Oseretsky test of motor proficiency : manual Minneapolis, Minn. : Pearson Assessments, 2005.
- [6] E. S. Henderson, A. D. Sugden, and L. A. Barnett, Movement Assessment Battery for Children-2, Pearson Education, London, 2007.
- [7] E. Roddy, W. Zhang, M. Doherty, K.M. Arden, J. Barlow, F. Birrell, A. Carr, K. Chakravarty, J. Dickson, E. Hay, G. Hosie, M. Hurley, K.M. Jordan, C. McCarthy, M. McMurdo, S. Mockett, S. O'Reilly, G. Peat, A. Pendleton, S. Richards, Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee—the MOVE consensus. Rheumatology, vol. 44, pp. 67-73. 2005.
- [8] B. Bonnechère, B. Jansen, L. Omelina, and S. Van Sint Jan, 'The use of commercial video games in rehabilitation: a systematic review', International Journal of Rehabilitation Research, vol. 39, no. 4, pp. 277-290, Dec. 2016.
- [9] B. Bonnechère, Serious Games in Physical Rehabilitation. Cham: Springer International Publishing, 2018.
- [10] Peters DM, McPherson AK, Fletcher B, McClenaghan BA, Fritz SL. Counting repetitions: an observational study of video game play in people with chronic poststroke hemiparesis. J Neurol Phys Ther., vol. 37, no. 3, pp. 105-111, 2013.



Contact

Contact Creative Therapy for a no-obligation trial and demonstration. Discover how Matti can be integrated into your organisation.

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