

Lindera in Portugal

Looking for partnerships to push the limits of human motion in every phase of life:
Fall prevention in age | Faster recovery | Better online workouts





Our Company

Our Mission

With AI, we tackle fall prevention in age, avoid unnecessary hip/knee surgeries, help achieving a faster recovery and generate better results for digital therapies

Our Mission

We **push the limits of human motion** in every phase of life to be painless, happy and healthy.



About us

Based in Berlin | Live nationwide in Germany | 31 FTEs in 2020

- **Data Science Team:**
Building a unique motion algorithm to solve real world problems
 - 6 Computer Vision scientists
 - Generated a unique foundation with training data for multi-disease and aged humans
 - Developed patented solution
- **Regulatory Affairs & Clinical Research Team:**
For the evidence-based AI
 - Regulatory Affairs Manager to comply with the European Medical Device Regulation
 - Clinical Researcher to get the reimbursement in Germany (DiGA) and other markets
 - Clinical Coordinator to generate clinical evidence out of our unique AI database
- **Customer Success Team:**
How to get into the customers' working routine
 - 4 fulltime manager based nationwide to be close to the customers
 - Drive rollout and usage in all nursing homes
 - Support the clinical research team to generate evidence for our scientific studies



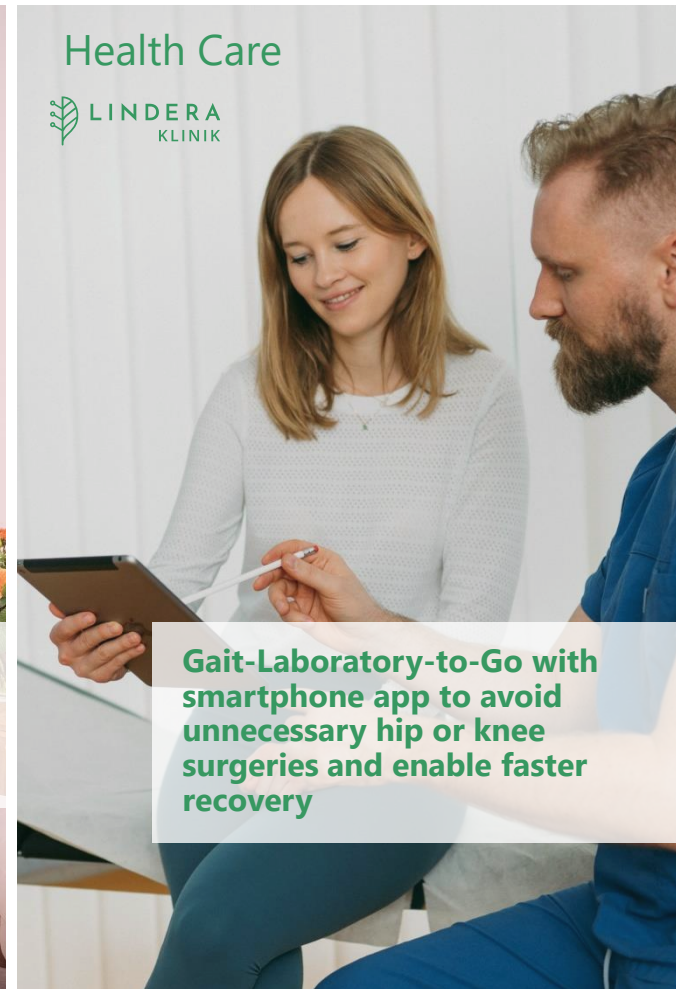
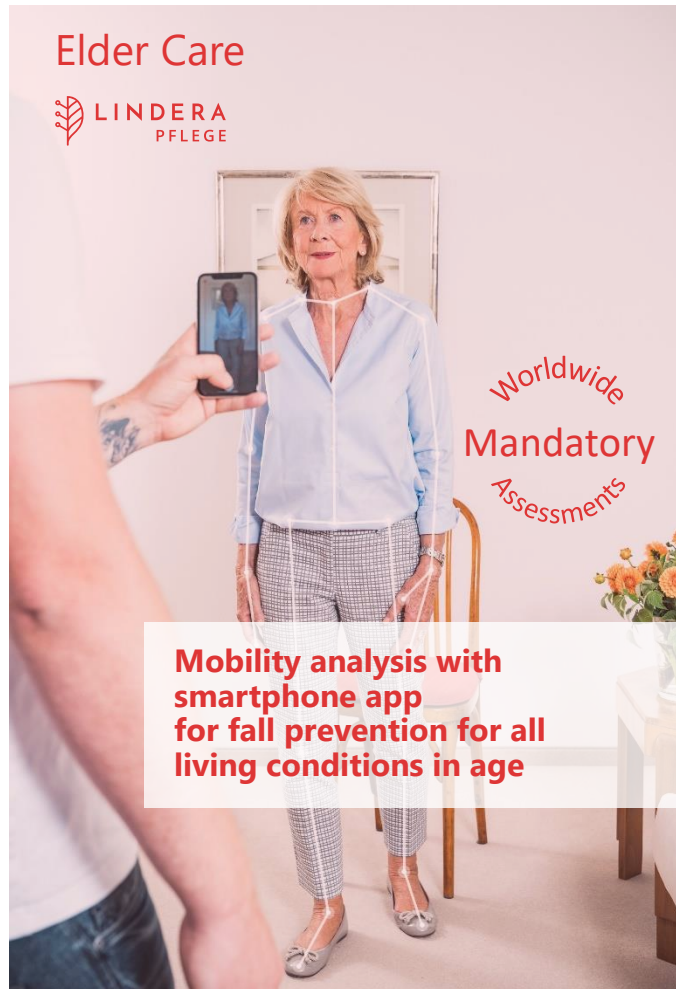


Our Areas

We solve some of the biggest challenges in elderly care, health care and digital therapies

Our three major areas

Evidence-based, patented and modular AI to perform all kinds of 3D-motion tracking for medical assessments and exercises



Elder Care / Fall Prevention Analysis

Solving one of the most complex and cost intensive problems in every health care system



Falls in age

>6% of health care costs in every developed country

Value

- Lower cost than traditional methods
- Objective, individual fall prevention programs
- Automated documentation for health care professionals



Health Care – in Pilot Phase

Reducing the amount of unnecessary hip/knee surgeries and objectively help patients recover fast



Clinic Situation

- 75% of all knee/hip surgeries are unnecessary
- Budget constraints and the increasing lack of skilled therapists hinder the individual recovery process

Value

- Low costs by avoiding unnecessary surgeries
- Objectively measurable patient-outcomes to fasten the recovery process

Digital Therapies – in Development Phase

Be at least as good as the stationary therapist: track changes, correct exercises and report outcomes



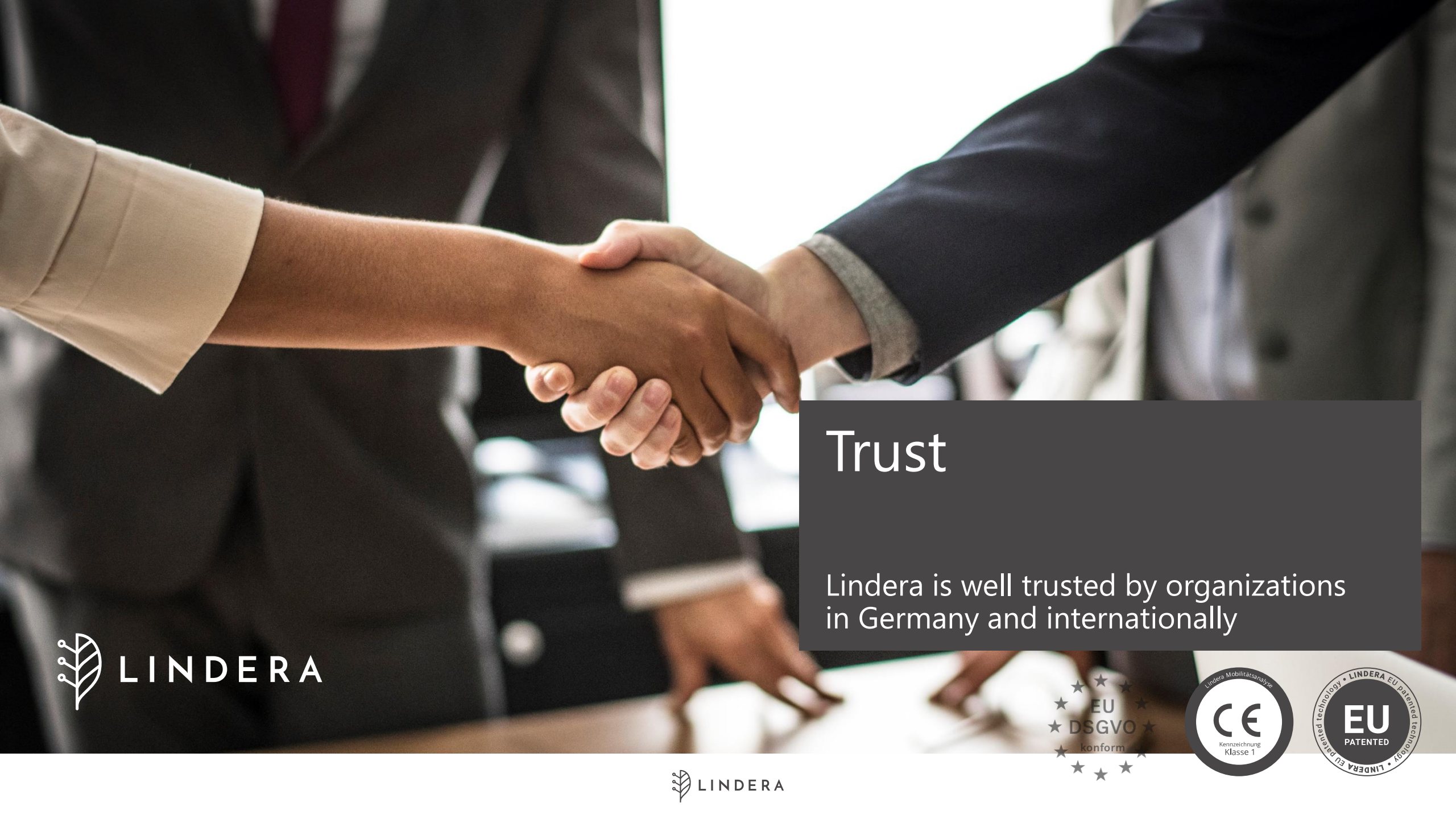
At Home

- >1bn people perform digital therapies or workouts at home
- The new mass market: 42% of all Health- and Fitness Apps are Workout Apps

Value

- Our multi-awarded, scientifically proven and patented AI can be used by all kinds of existing providers of online workouts
- Automatically count and correct online exercises and see progress over time





Trust

Lindera is well trusted by organizations in Germany and internationally



Trusted collaboration with insurances

From the beginning insurances partner with us – we are live in more than 200 care facilities



BARMER



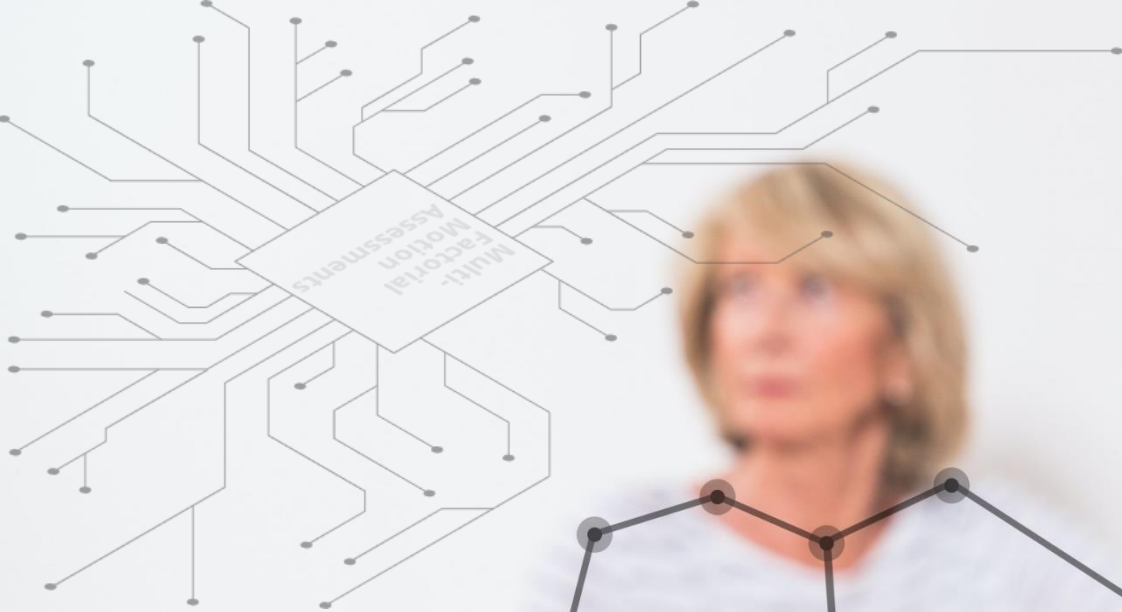
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Gaining traction worldwide

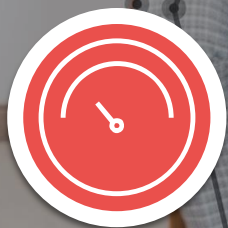
- Live with 11 insurances in Germany
- Completed a successful pilot in Brazil, now: signed for 12.000 analyses
- Upcoming pilots with insurances and the local government in Denmark, France and Switzerland



Our Innovation

Unique precise 3D motion tracking
on smartphones – Scientifically proven

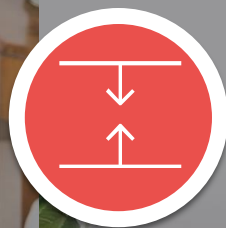
Our AI algorithm for 3D mobility analysis analyzes the movement of a senior. With a simple smartphone camera, it records the most important walking parameters (gait) according to the expert standard for fall prevention – Making precise and objective mobility assessments possible on the spot for the first time.



Walking Speed



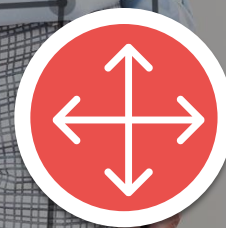
Step Length



Step Height



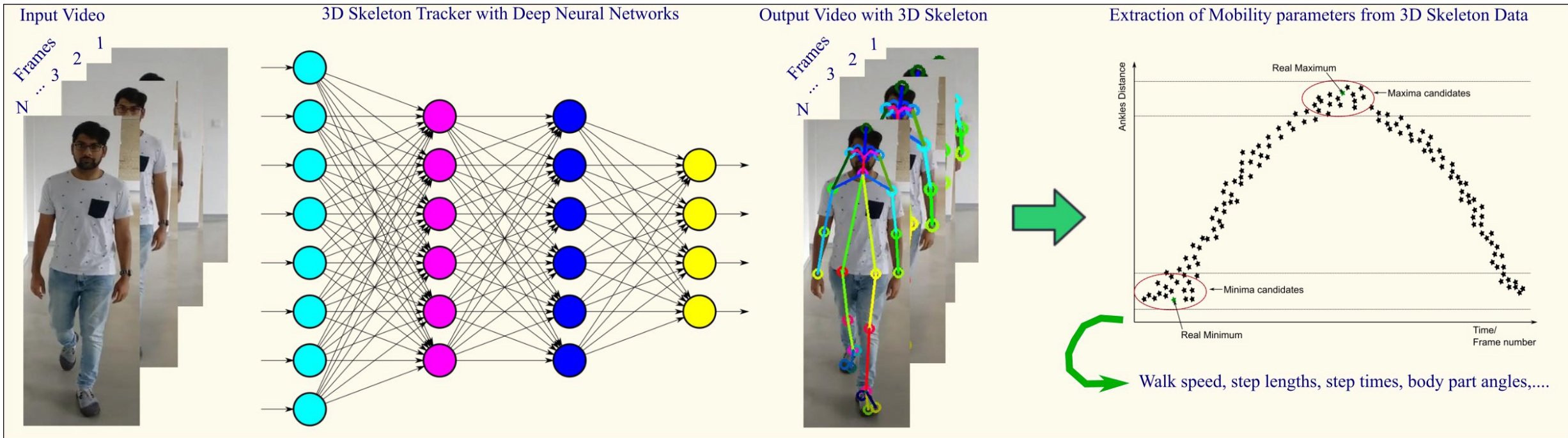
Joint Angles



Postural Control

AI algorithm for 3D skeleton tracking

Image-based convolutional neural networks extract 3D-skeleton joints for all frames of the video and thus allow precise calculation of mobility parameters



How it works

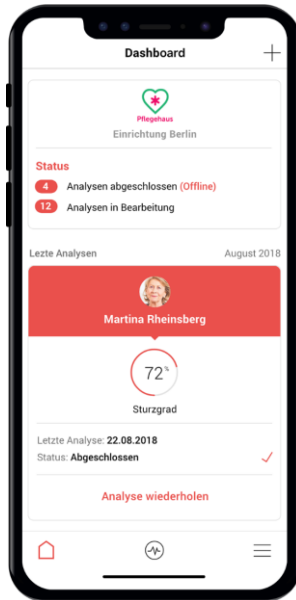
From analysis to needs assessment and development of measures

Gait Analysis



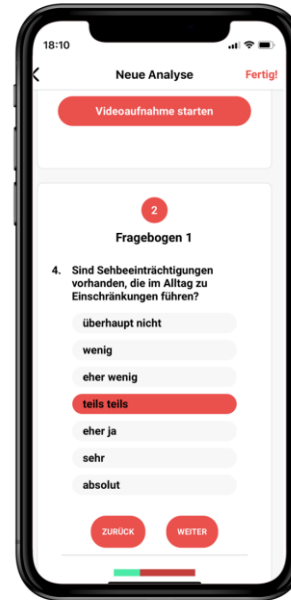
- Record a 30-second video of the senior's gait
- Direct participation of the senior in the analysis

Psycho-Social Analysis



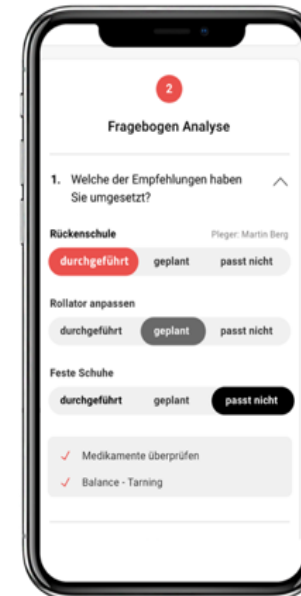
- Fill out the questionnaire on personality, impairments, medication, cognition, walking aid, living conditions

Risk of Falling & Measures



- Detection of individual mobility and risk factors
- Recommendation for personalized measures to minimize risk of falls

Implementation Tracking



- Intelligent connection of measures into group interventions
- Gives coordinating support for intervention planning

An analysis only takes 8 minutes – instead of approx. 45 minutes



- Gain more time for care measures
- Gain higher quality of systematic fall prevention and minimize documentation effort



Our Solution for Portugal

Mobility assessment on smartphones for elderly care – reliable & scientifically proven



Our mobility analysis assesses the risk of falling & suggests preventive measures

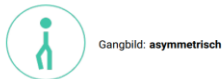
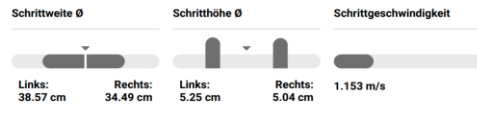
Structured results for everyone involved

For Seniors



Lindera Mobilitätsanalyse

Faktor: Gangbild und Funktion



Gangbild: asymmetrisch



Schwerpunkt: nach vorn verlagert 7.5°



Schwerpunkt: nach rechts verlagert 1.1°

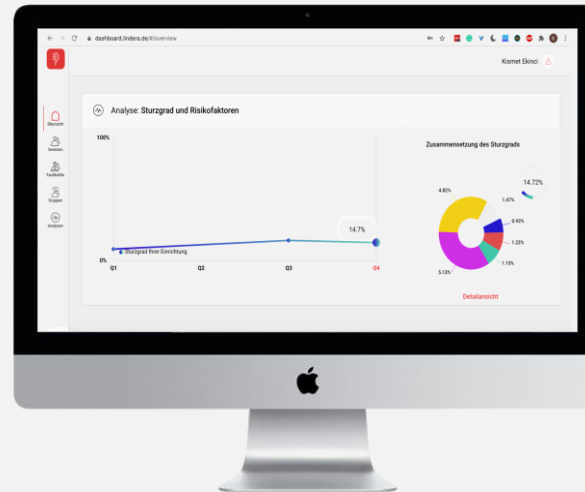


Empfehlungen:

- Regelmäßige fachärztliche, präventive Diagnostik und Therapieplanung der Erkrankung Arthritis
- Regelmäßige Teilnahme an gruppenbasierten Bewegungsangeboten (z.B. Kraft- und Gleichgewichtstraining, Otago Übungsprogramm, Bewegungsspiele)

Extract from an analysis

For Care Professionals



See changes of each risk factor over time and the effectiveness of the tailored prevention plan – standardized, digital and objective in one dashboard solution

For Documentation and Quality Assurance

C 1.2 - Mobilität und Bewegung

RESSOURCE

Herr Mustermann bewegt sich frei und hat eher keine Angst zu stürzen.
In den vergangenen zwölf Monaten kam es zu keinem Sturzgeschehen.
Herr Mustermann läuft mit Rollator.

PROBLEM

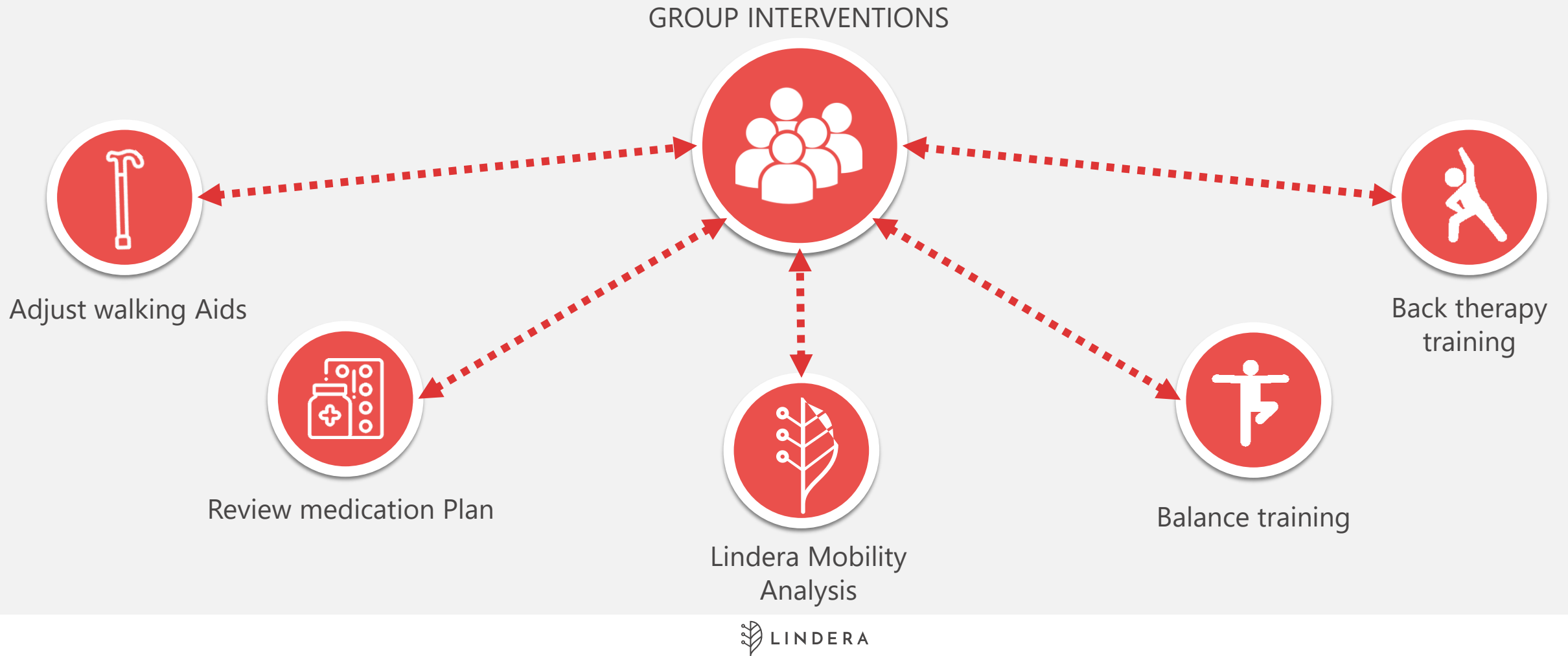
Herr Mustermann hat oft Schwindelattacken.
Weiter gibt Herr Mustermann an, häufig Rückenschmerzen zu haben.

Die Schrittlänge und Schritthöhe können mit einer erhöhten Sturzgefahr einhergehen. Der Oberkörper ist nach vorne gebeugt. Zusätzlich wird der Körperschwerpunkt stark nach rechts verlagert. Der Aufstehprozess bis zur Initiierung des Ganges ist deutlich verlangsamt. Außerdem schaut Herr Mustermann beim Laufen die meiste Zeit auf den Boden und hat die Umgebung nicht im Blick.



Recommendation of scientifically and clinically sound measures

Including all stakeholders in creating adequate fall prevention plans



Benefits for seniors, care facilities and insurances

Knowing the risk factors, falls and consequential damages could be prevented



Prevent falls -
reduce expenses



Involve patients through
easily understandable results
and reports



Innovative care offer for
insured persons and new
customers



Mobility preservation
according to fall
prevention standards



AI-supported implementation
of expert standard fall
prevention & mobility
maintenance



Meeting quality assurance
requirements through precise,
objective assessments



Automated
documentation and
integration into
documentation systems



Can be conducted
independently of time and
place, also by relatives and care
professionals

Portugal's challenge in health and elderly care

Portugal has one of the most rapidly ageing populations in Europe



* 0,85-1,5% of total health expenditures

Low birth rates and high life expectancy of 80 years + lead to a growing elderly population.

2,2m inhabitants over 65

~50% of the elderly population has difficulties or is incapable of performing daily activities

30-40% of the elderly population fall at least once a year, 5% of which suffer a serious injury

215m € estimated fall-related costs per year in all of Portugal*



Long waiting times of up to 219 days until admission for long term care (LTC)



Number of nurses per capita more than 20% below EU-average



Deficits in LTC coverage with big regional asymmetries, low supply in the north



Highest amount of informal care in EU, estimated 2% of GDP, formal care only 0,2%





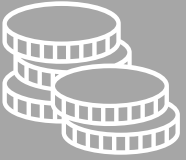



Ageing population

Insufficient healthcare and LTC offerings

Health- and elderly care offering do not match the needs of a growing ageing population

Portugal as attractive Environment for innovative Digital Care Solutions

EU funds support innovation for prevention within RNCCI		ULS, RNCCI provide infrastructure to counter service shortages	
Promising regulative environment and financing options for innovative solutions		Reimbursement of mHealth solutions	
Support of development through subsidies, e.g. COMPETE		Plano Estratégico 2030: digitalization, innovation and support of R&D	

Our goal:

Together with Cuidados Continuados and insurance providers we want to tackle the application with Infarmed and help optimize the elderly care situation.

Why we want to have you on board

We want to work as trusted partners to match the needs of the ageing Portuguese population

- We are looking for insurance companies and care providers partnering for a Lindera pilot in Portugal
- We conduct joint studies - to meet the requirements to be refunded by insurances
- We make our fall prevention App part of the Portuguese standard care
- Together we build a long horizon partnership - to establish our solution for fall prevention nationwide and in every care facility





Thank you

Do you want to shape the future of elderly care together with us?



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