



DYNAMIC METRICS

The application of sensor technology to help people improve their mobility

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AgeingFit

Accelerating innovation for the senior care market

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DYNAMIC METRICS Adding Motion to the Health Baseline

VITAL STATISTICS: DIAGNOSE, TREAT, MONITOR AND PREVENT



LARGE AND GROWING GLOBAL HEALTHCARE CHALLENGES

Elderly Falls

"Estimated cost to health care system: \$50B (USA), £2.3B (UK) per year"

Back Pain

"... the leading cause of disability worldwide, affecting nearly 1 in 10 people and becoming more common with increasing age"

Hip/Knee Osteoarthritis

"6.57 million people suffer from hip or knee osteoarthritis in the UK alone, 21 million in the USA"

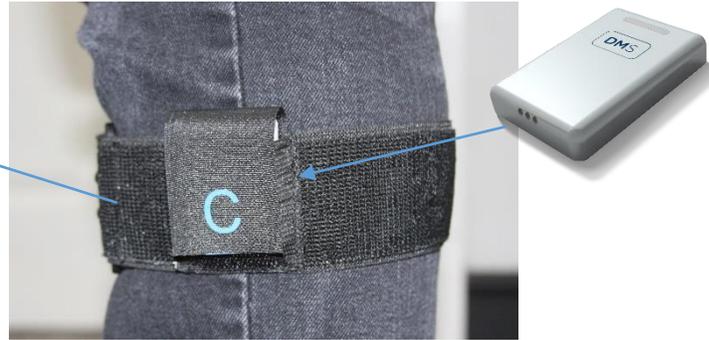
Parkinson's Disease

"... the second most common age-related neurodegenerative disorder after Alzheimer's Disease. An estimated 7 to 10 million people worldwide have Parkinson's Disease."

GAITSMART – A sensor based solution for monitoring gait



GaitSmart uses six small Inertial Measurement Units (IMUs) mounted on the body using custom straps, at the pelvis, thigh and calf.



UI through a Smart App. All data is stored on a secure server via Internet. Sensors communicate with the Smart device via Bluetooth.

GaitSmart calculates gait kinematics. A short walk up and back along a corridor is sufficient to capture the data. Walking aids can be used.

GAITSMART REPORT (with vGym)



Forename Surname's
report on 00.00.0000

Date of Birth: 00.00.0000
Gender: Male
Region Name: Walk

Your Exercises

Assisted

- 1 Assisted Standing Squat
- 2 Assisted Marching
- 3 Assisted Standing Knee Raise
- 4 Assisted Single Leg Toe Taps

Unassisted

- 5 Double Leg Squat
- 6 Marching on the Spot
- 7 Knee Drives
- 8 Single Leg Toe Taps

Best Practice

- 9 Heel Flat Toe
- 10 Look Ahead, Not Down



If you have any other conditions that can affect balance or your ability to perform the exercises, or if you have any questions or concerns, please contact your healthcare specialists. Visit www.gaitsmart.com/exercises for more information.

Reference: ztH00c/T27GekprF37ielouskp6
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GaitSmart Score™ 43.18%

An assessment of stability & strength when walking



GaitSmart Quality Score™ 39.29%



GaitSmart Symmetry Score™ 54.55%



Key to Colours



The GaitSmart Report presents key gait parameters with traffic light coding so that patients and healthcare providers can see both the gait deficiencies and their severity. The user-friendly GaitSmart Scores provide an easy reference to measure and monitor changes.

The GaitSmart Score™

gives an overall indication of how well the lower limbs are moving in the gait cycle.

The GaitSmart Quality Score™X

gives a deeper understanding of whether the lower limbs are moving out of the plane of motion and/or following the optimal gait cycle. A low GaitSmart Quality Score could indicate future potential issues.

The GaitSmart Symmetry Score™

helps to identify the location of joint issues and gives evidence of compensation.

Your Exercises

aids interventions by suggesting personalised exercises matched to individual gait results to improve gait.



GAITSMART – for identifying specific gait parameters for known conditions

GaitSmart has been used in numerous studies to assess gait in large cohorts of people with known conditions. Specific gait parameters that characterised the condition were identified.

GaitSmart data have been supported by published studies using optical gait laboratories.

Orthopaedics

- *Hip replacement – pre and post op*
- *Knee replacement – pre and post op² Early stage knee OA - Monitoring alternative therapy and identifying phenotypes*
- *Ankle fracture*
- *Other knee conditions – ACL*

Gait deficiencies in the elderly

Sports – functional assessment



GAITSMART – for identifying specific gait parameters for known conditions

Falls in the elderly - A big and growing problem

- Scale: One-third of over 65s and half of over 80s fall each year, with almost 5,000 over the age of 65 dying from falls in 2016
- Societal cost: Falls cost the NHS approximately £2.3 billion per year and over 4 million NHS bed days per year
- Human cost: Falling is the number one precipitating factor for a person to lose independence and enter long-term care

The GaitSmart System can reduce the risk of falls

- Gait problems are a major cause of elderly falls with studies showing that up to 39% of falls are caused by gait abnormalities
- GaitSmart can identify and quantify the severity of gait abnormalities and suggest personalised exercises to address those gait abnormalities
- Studies show that an intervention programme with regular GaitSmart testing and personalised exercises improve patient outcomes and reduce the risk of falls

GaitSmart can be used in existing care pathways in GP surgeries, hospitals, falls clinics and in patients' homes



NELFT CASE STUDY

The North East London Foundation Trust (NELFT) used the GaitSmart system with vGym for elderly fallers.

The results presented below are for 87 patients who completed the GaitSmart intervention programme.

Economic Benefits

The University of East Anglia (UEA) developed a Health Economics Model to quantify the economic benefits. Based on the 87 participants who completed the QIP, UEA concluded that the **ROI for the GaitSmart intervention was 85%**.

Clinical Benefits

Speed Increased by 0.17m/s - The average speed increased from 0.45 m/s to 0.62 m/s at the end.

Use of Walking Aids Improved - 43% of the volunteers at the start used a frame and only 18% walked unaided. At the end only 13% required a frame and 43% walking unaided.

Frailty Decreased by 12.1% - The Edmonton Frailty Score (EFS) average was "mildly frail" at the start, EFS score 8.1. At the end this reduced to "vulnerable", EFS score 6.0.

Fear of Falling Decreased by 11.8% - Fear of falling was high at the start, FES-I 15.1 and moderate at the end, FES-I 11.9.

GaitSmart Score Improved by 21% - The average GaitSmart Score, was 23.1% at the start, and increased to 44.1% at the end.

Frailty levels were shown to correlate strongly with the GaitSmart Score.

Take up of technology

Technology such as GaitSmart and vGym has been proven to improve lives, for example in older people.

Technologies reduce the burden on limited resources, such as physiotherapists.

They provide objective data to the individuals, which helps motivate them.

It is often more cost effective than alternative approaches using skilled resources.

Progress can be monitored, so the efficacy of intervention strategies can be quantified.

So why aren't they taken up?

Lack of understanding.

Difficulty of changing a care pathway.

Others???



Any Questions?

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