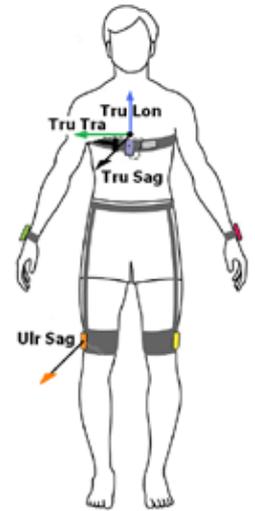


IN GENERAL

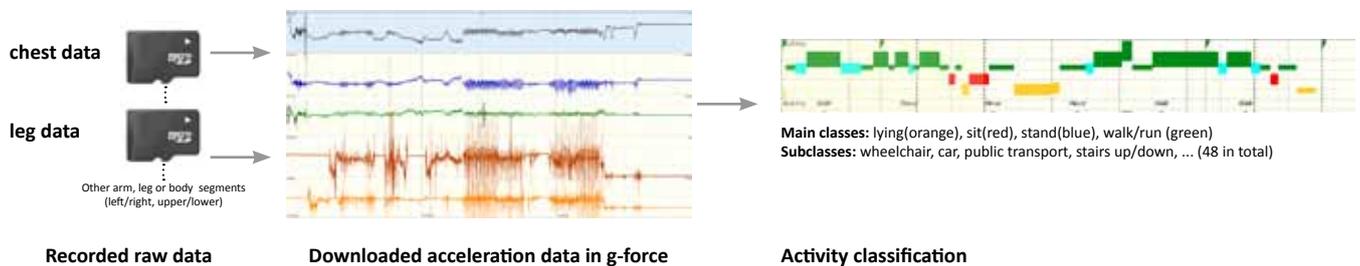
Objective and accurate information concerning the physical activities and postures in a patient's daily life is of fundamental importance for research as well as for clinical practice. Such information can help to gain a clear insight in the working mechanisms of diseases and the effectiveness of intervention programmes. VitaMove also supports the evaluation and optimization of therapy on both an individual and group level. As well as this VitaMove can guide therapists and coaches in their interventions. Furthermore, the results can support treatment and behavioural change programs and facilitate the interpretation, understanding and education of both care provider and patient.



METHOD

VitaMove records both the angle (with respect to the gravitational axis) as well as accelerations using three dimensional accelero sensors. These sensors are integrated into the recorders and placed on strategic body segments. For basic activity analysis (posture and motion classification) a minimal set of two recorders is needed: one recorder on the chest and one recorder on the right upper leg. The orientation of the recorders on the various body-segments is unique for different postures.

First a recording of a subject's physical activity and posture during normal daily life is made using the VitaMove recorders. The subject returns and the recording is downloaded and digital data is analysed and expressed in terms of body posture (such as lying down, sitting, standing up to 48 unique posture and motion classes), locomotion (walking and shuffling) and movement parameters (such as movement duration, intensity and frequency). The high resolution acceleration data lends itself to a pattern recognition approach that uses algorithms for the classification of types of activity. For example sitting can be identified combining the orientations of the chest and right leg recorder. Lying horizontally can also be identified however in this case only by the orientation of the trunk.



OUTCOMES

Type of activity

VitaMove is formed on different types of physical activity and positions. The types of activity are represented in the report as a summary of a multiple day recording, day to day report or as a specific period selection. There are five major activity classes (lying, sit, stand, and move) which are built up from 48 unique subclasses, which include crawling, walking, wheelchair driving, running, bicycling, lying, sitting and standing in various positions, walking stairs up and down, driving a car or public transport etc.

Activity duration, frequency and intensity

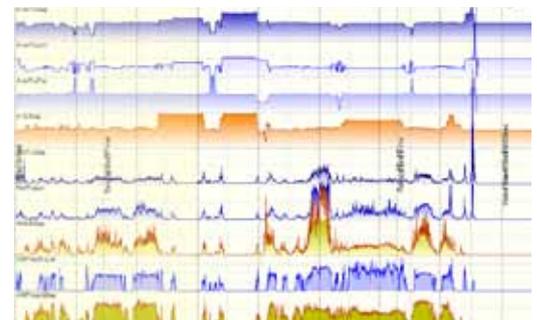
Absolute and relative durations of each type of activity are calculated and presented in the graphical report. If an in-built report is not representing results the way you would prefer you can easily customise reports to your specific needs. The movement intensity provides an insight into the power of the movements.

Transition between type of activity

The number of transitions between all types of activities are calculated and summarized in the reports. VitaMove has the added bonus of automatically detecting a certain transition between two such activities and studying that transition in detail. Therefore studying detailed sit to stand transitions in a daily life situation becomes an easy to perform task.

Walking distance, walking stability

Walking distance, step length and walking stability are also standard available parameters.



REPORT

Objective of the physical body activities report is to obtain accurate and objective information about the physical activities in a patient's daily life. Not only the occurrence, but also the characteristics of physical activities is quantified as walking speed and distance, stability of rate- and symmetry of walking, the angle of the trunk during sitting, occurrence of tremor.

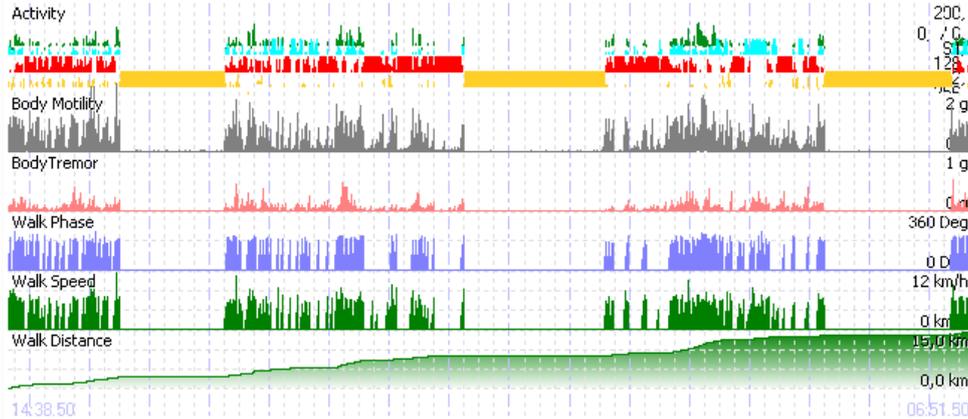
Report Header

Body Activity Analysis Report

Patient Information

Last Name	VM_32Hz	Subject ID	VM_32HZ	Date / Time	13-7-2010 / 14:38:50
Date of Birth	20-2-1968 (42)	Gender	Male	Weight / Height (BMI)	64 / 172 (21.6)

Recording Overview



'Walking / Running Periods' tables

Walking Periods	#	Dur (Min)	EE (Kcal)	Speed (km/hr)	Distance (km)	Rate-Stabil.	Sym.	BodyMot (g*100)
0 - 10 Sec	250	28	128	4.5	2.12	66	94	53
10 - 60 Sec	280	101	478	4.6	7.81	66	93	56
1 - 5 Min	27	65	356	5	5.4	76	97	73
5 - 30 Min	2	15	81	5.3	1.28	86	97	75
30 - .. Min	0	0	0		0			
Running								
0 - 60 Sec	0	0	0		0			
1 - 5 Min	0	0	0		0			
5 - 30 Min	0	0	0		0			
30 - .. Min	0	0	0		0			

Sitting Periods	#	Dur (Min)	EE (Kcal)	Trunk Angle	B-Trem. (g*100)
0 - 10 Sec	38	5	8	26	6
10 - 60 Sec	93	45	73	25	4
1 - 5 Min	75	183	249	23	7.1
5 - 30 Min	56	722	917	41	5.8
30 - .. Min	7	412	496	67	3.7

'Sitting / Standing Periods' tables

Standing Periods	#	Dur (Min)	EE (Kcal)	Trunk Angle	B-Trem. (g*100)
0 - 10 Sec	224	25	61	3	2.7
10 - 60 Sec	350	145	302	6	4
1 - 5 Min	53	94	168	9	4.7
5 - 30 Min	22	230	354	18	5.4
30 - .. Min	0	0	0		

Total Body Posture Transitions table

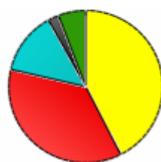
BodyP Transitions	#
Total	381
Total - Lying Transitions	381

Comments

Diagnosis:

Activity distribution

(In)Activity distribution



0	Run/Cycle
5.7	Walk/Wheel
13.1	Standing
35.6	Sitting
41.8	Supine
0	Side/Prone
2.3	Movement
0	?

Duration	Min.	%
Lying	1613.2	41.9
Sitting	1371.9	35.6
Standing	504.5	13.1
Walking	218.3	5.7
Running	0	0
Bi-cycling	0.4	0
Movement	86.8	2.3
..Standing..(% Mov.)	4	4.6
..Sitting....(% Mov.)	82.4	94.9
..Lying.....(% Mov.)	0.5	0.5

'Duration' table

VALIDITY

The posture and movement classifications have been validated in cooperation with the Erasmus Medical Centre's rehabilitation department in Rotterdam. A detailed publication list of 65 publication to date have been built up over the last 20 years and are available on request. Validity and extensions to other populations or user groups are fully supported in the VitaMove software and requires only a minor adjustment in settings.



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