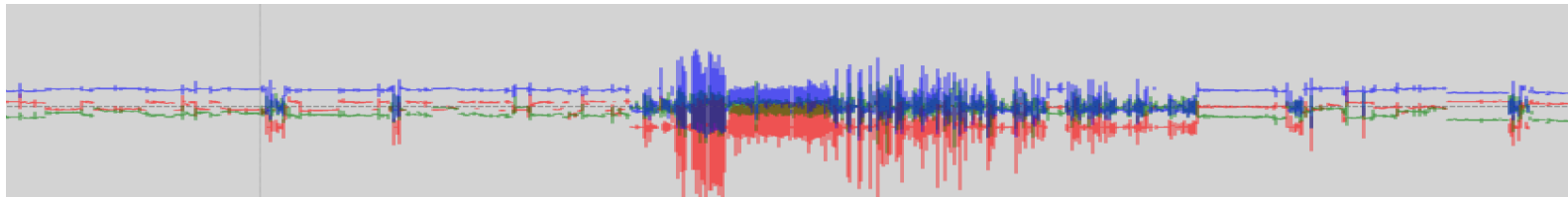




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ProPASS

Thigh Accelerometer Data Processing Software



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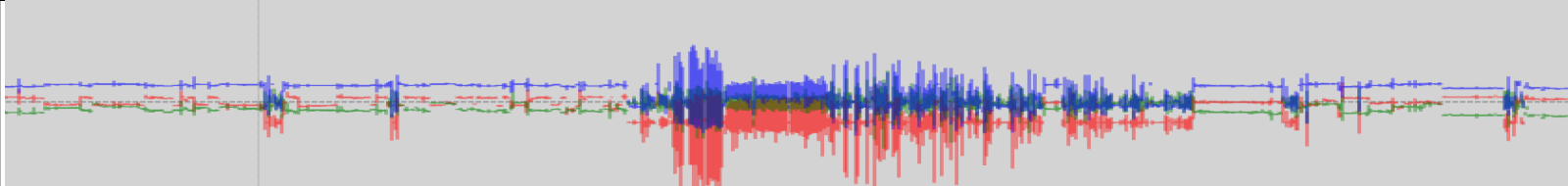
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Raw data



ProPASS dataprocessing software

Biological state

Sleep

Awake

Domain

Sleep

Work

Leisure/Other

Time Pattern

Short

Moderate

Long

Physical activity posture types

Lying down

Sit

Stand

Walk

Run

Cycle

Stair climb

Intensity

Sedentary

LIPA

MVPA

VPA

Profiles of 24 h physical behaviour

← 24 h →





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Journal of Physical Activity and Health, 2014, 11, 76-84
<http://dx.doi.org/10.1123/jpah.2011-0347>
© 2014 Human Kinetics, Inc.

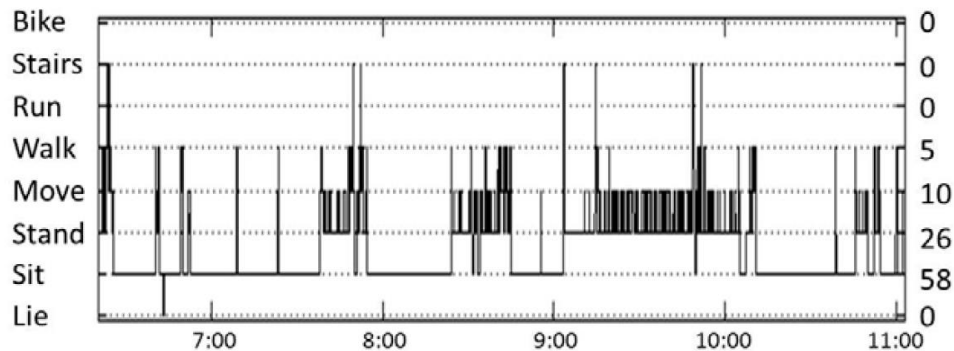
JOURNAL OF
Physical Activity & Health

Official Journal of ISPAH
www.JPAH-Journal.com
ORIGINAL RESEARCH

Detection of Physical Activity Types Using Triaxial Accelerometers

Jørgen Skotte, Mette Korshøj, Jesper Kristiansen,
Christiana Hanisch, and Andreas Holtermann

Distribution of activities on a working day



Acti-4


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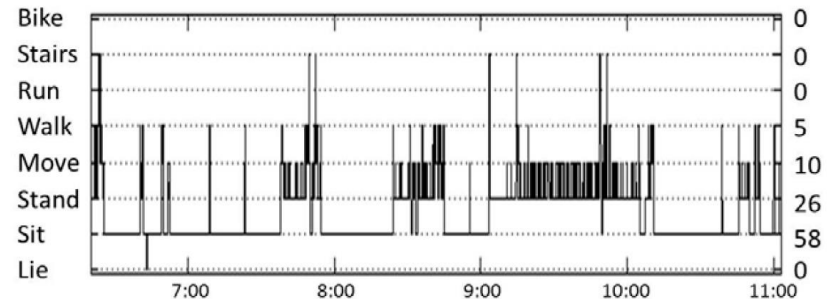
METHODOLOGY

Comparison of physical behavior estimates from three different thigh-worn accelerometers brands: a proof-of-concept for the Prospective Physical Activity, Sitting, and Sleep consortium (ProPASS)

Patrick Crowley^{1*}, Jørgen Skotte¹, Emmanuel Stamatakis², Mark Hamer³, Mette Aadahl⁴, Matthew L. Stevens¹, Vegar Rangul⁵, Paul J. Mork⁶ and Andreas Holtermann^{1,7}

Acti-4

Distribution of activities on a working day



“Conclusions: Physical behaviors were classified with negligible difference between the accelerometer brands.

These results support harmonization of data from different thigh-worn accelerometers across multiple cohorts when analyzed in an identical manner”



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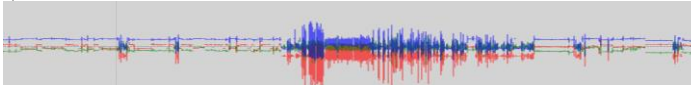


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Input

Raw accelerometer files



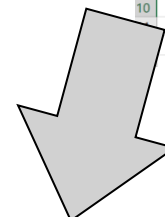
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19461_2013580002	2018-11-13 13:51	CWA-RI	27 486 kB
19461_2018013002	2019-04-03 14:32	CWA-RI	27 490 kB
19470_2012912004	2019-08-26 10:49	CWA-RI	27 643 kB
19470_2013849004	2019-04-03 14:19	CWA-RI	27 648 kB
19470_2019176004	2018-12-13 16:02	CWA-RI	27 658 kB
19485_2014850002	2019-02-26 10:41	CWA-RI	27 201 kB
19485_2014522002	2018-10-22 10:28	CWA-RI	27 215 kB
19493_2015211002	2018-10-24 08:24	CWA-RI	27 707 kB
19493_2017973002	2018-12-14 08:12	CWA-RI	27 668 kB
19720_2015122004	2018-10-22 13:42	CWA-RI	27 035 kB
19720_2015132004	2019-04-03 14:35	CWA-RI	27 015 kB
19731_2014622002	2018-11-13 13:42	CWA-RI	27 154 kB
19756_2014920004	2018-10-24 09:11	CWA-RI	26 662 kB
19784_2014038004	2019-05-13 09:38	CWA-RI	27 641 kB
19785_2015411002	2018-10-22 15:16	CWA-RI	27 916 kB
19785_2018510002	2019-08-26 10:44	CWA-RI	27 892 kB
19922_2013056004	2018-11-13 13:46	CWA-RI	26 516 kB
19922_2013521004	2019-02-26 09:30	CWA-RI	26 512 kB
19928_2014350004	2019-04-03 16:15	CWA-RI	26 633 kB
19928_2015381004	2018-10-22 14:05	CWA-RI	26 674 kB
19946_0920215362	2018-10-22 10:51	CWA-RI	25 891 kB
19946_2015582004	2019-04-04 08:26	CWA-RI	25 928 kB
19964_2018499004	2018-11-13 13:31	CWA-RI	27 652 kB
19972_2015129002	2018-10-22 13:35	CWA-RI	26 155 kB
19981_2013564002	2018-11-12 14:07	CWA-RI	
19981_2017841002	2019-01-18 13:21	CWA-RI	
19989_0000000000	2018-10-22 13:52	CWA-RI	

Optional input

Diary file

Work/Leisure

	A	B	C	D	E	F	G
1	ID	Date	Time	Event	Comments		
2	1000001	2017-06-07	08:25	Start			
3	1000001	2017-06-07	08:27	ref			
4	1000001	2017-06-07	08:25	Work			
5	1000001	2017-06-07	16:30	Leisure			
6	1000001	2017-06-07	22:00	Night			
7	1000001	2017-06-08	06:00	Leisure			
8	1000001	2017-06-08	08:15	Work			
9	1000001	2017-06-08	16:30	Leisure			
10	1000001	2017-06-08	18:00	X	Removed the accelerometer		
	1000001	2017-06-08	18:30	Leisure			
	1000001	2017-06-08	22:00	Night			
	1000001	2017-06-09	06:15	Leisure			



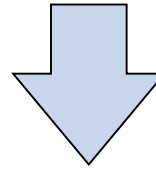
Data processing software
Error checking, Calibration, Reference finding, PA behaviour Algorithm



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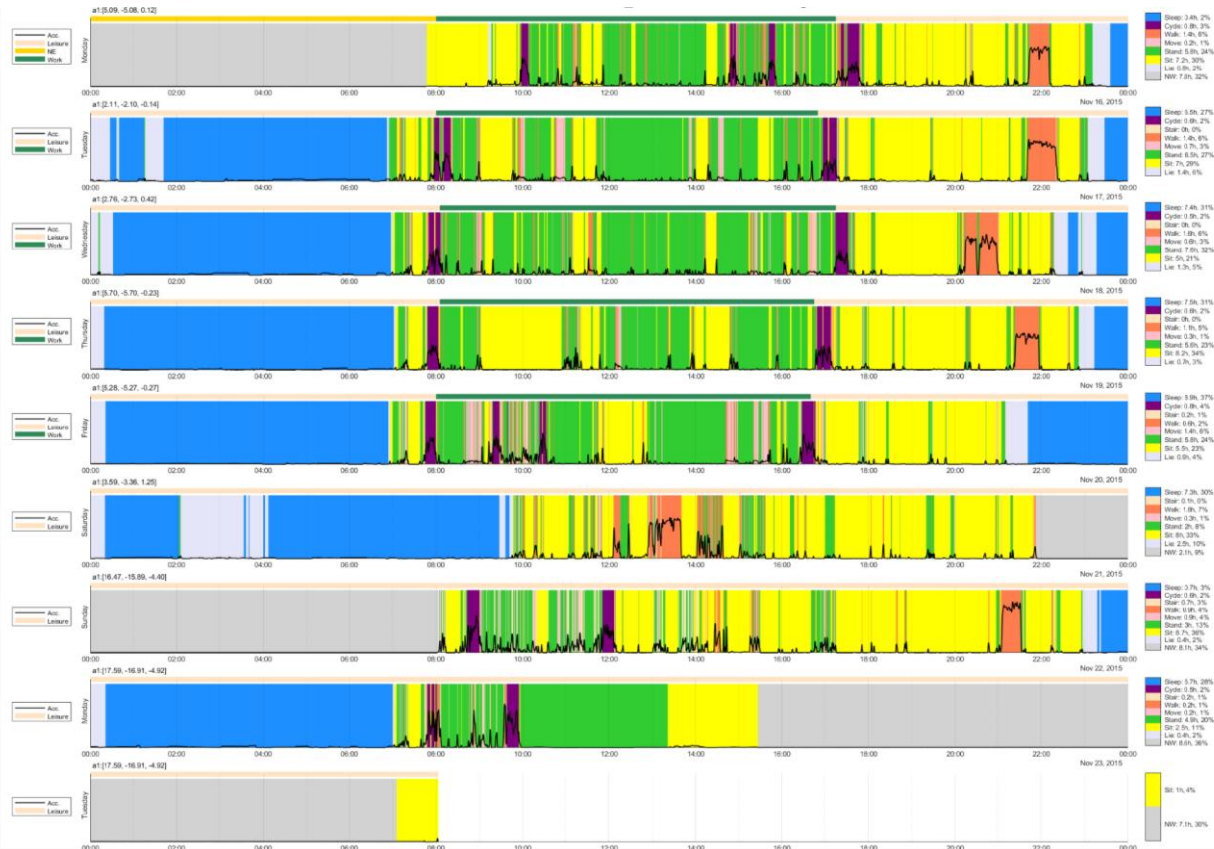


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Output

SubjectID	Start	End	Event	NonWear(Sit-Lie)(h)	Standing(h)	Moving(h)	SlowWalki(h)	FastWalki(h)	TotWalkin(h)	Running(h)	Stairs(h)	NumSteps	AvgSpeed	Cycling(h)	Other(h)	Sit_Tmax(h)	Sit_P50(h)	Sit_T50(h)	Sit_P10(h)	Sit_P90(h)	Sit_T30mi(h)	N30mi	Sit_NRise	SitLie_Tr	
123158	2020-05-26 06:30	2020-05-26 15:00	Work	0	5.7742	1.6328	0.5811	0.1256	0.3425	0.4681	0	0.0442	3333	108	0	0.8136	0.0833	5.1647	0.0105	0.4564	2.085	3	33	0.8134	
123158	2020-05-26 15:00	2020-05-27 00:00	Leisure	0	4.0878	2.045	0.71	0.215	1.1589	1.3739	0.0011	0.0558	9359	109	0	0.8306	0.0067	3.5531	0.0019	0.2913	2.2433	3	40	0.8300	
123158	2020-05-27 00:00	2020-05-28 00:00	Leisure	0	10.3708	3.4364	1.2478	0.2633	2.0844	2.3478	0.0058	0.0717	16258	112	0.0672	0.0586	2.0356	0.0146	9.5389	0.0019	0.2496	7.0108	5	61	2.0354
123158	2020-05-28 00:00	2020-05-29 00:00	Leisure	0	10.5883	2.4728	0.9792	0.1311	1.1961	1.3272	0.0008	0.2036	10364	113	0.0433	0.0542	1.4517	0.0097	6.4339	0.0019	0.2344	4.7919	5	65	1.4511
123158	2020-05-29 00:00	2020-05-30 00:00	Leisure	0.2375	10.2908	2.1022	0.7642	0.1519	1.9367	2.0886	0	0.0811	14971	115	0	0.9308	0.0206	6.7464	0.0022	0.2979	2.3628	3	71	0.9300	
123158	2020-05-30 00:00	2020-05-31 00:00	Leisure	0.8453	7.2236	4.4342	1.5197	0.2958	0.9356	1.2214	0.0008	0.1394	8810	109	0.0589	0.0394	1.7469	0.0069	6.6128	0.0019	0.1511	3.8692	3	84	1.7466
123158	2020-05-31 00:00	2020-05-31 14:00	Leisure	0	7.8261	1.9242	0.7875	0.1131	0.4272	0.5403	0.0117	0.065	4095	111	0	0.0328	1.2581	0.0114	5.2275	0.0022	0.3134	2.8939	3	51	1.258
123158	2020-05-31 14:00	2020-05-31 23:00	Work	0	6.0197	1.7697	0.4981	0.1275	0.5044	0.6319	0.0008	0.08	4630	108	0	0.6136	0.0828	5.5431	0.0103	0.4753	1.6508	3	35	0.6134	



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Validation Polysomnography Men age 35-65



Biological state

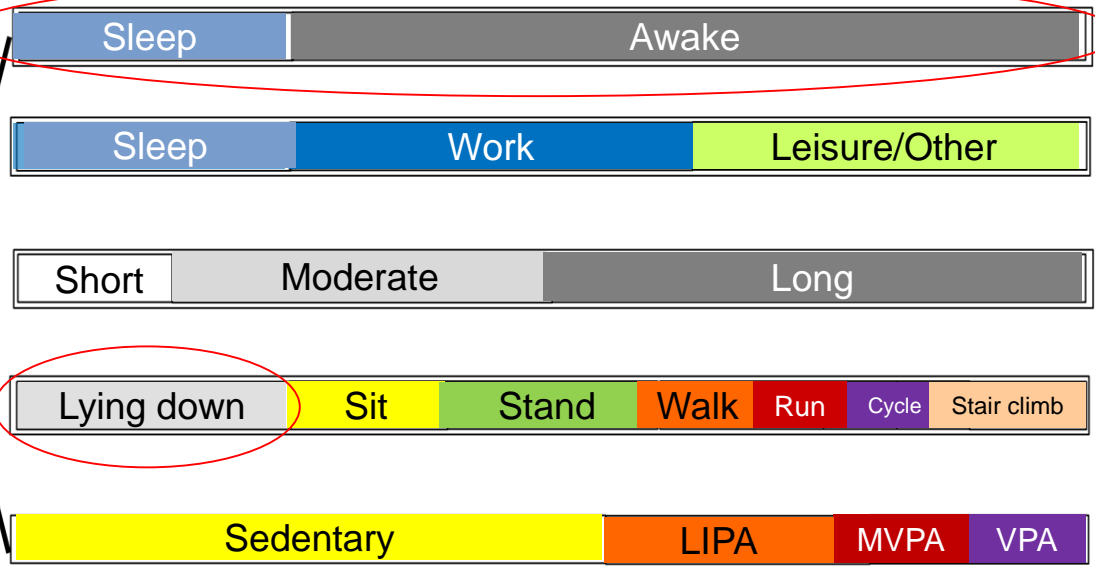
Domain

Time Pattern

Physical activity
posture types

Intensity

Profiles of 24 h physical behaviour

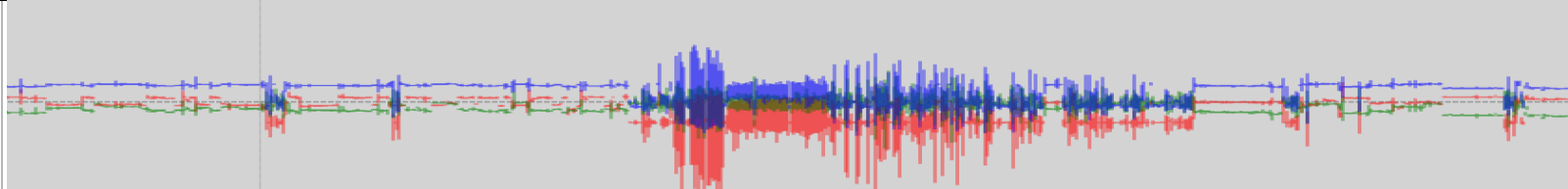




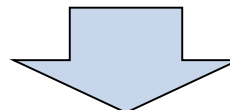
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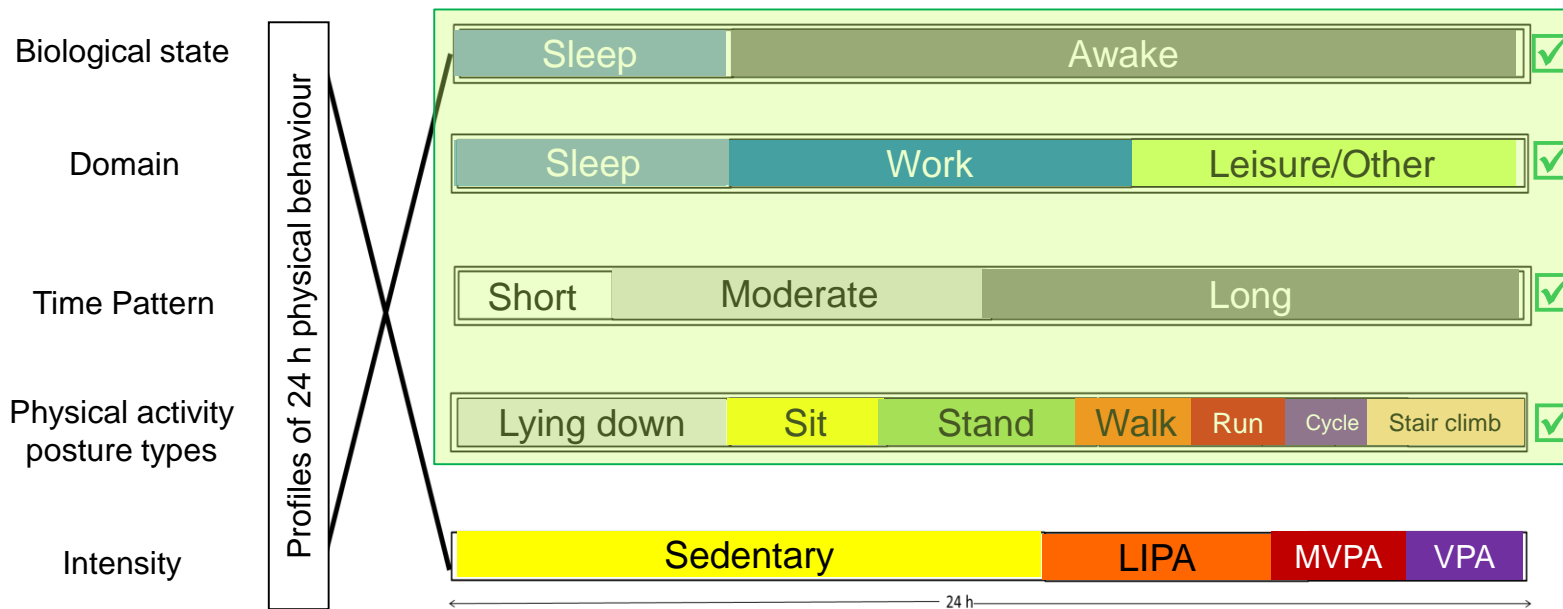
Pasan.Hettiarachchi@medsci.uu.se



Raw data



PROPASS 24H PHYSICAL ACTIVITY CONSTRUCT





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- Compare the results of lying- and sleep time from our software when different accelerometer devices has been used (Prio Axivity- ActivePAL)
- Validation of the sleep algorithm on different populations, right now our final validation with PSG is on adult men only 35-65.
- Validation with a specific focus on bicycling, uphill walking and stair walking



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