BCS70
1970 British Cohort Study

UCL

Assessment of free-living sedentary behaviour in BCS70 (age 46)

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Acknowledgements

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Natalie Pearson (Loughborough)
Manos Stamatakis (Univ Sydney)
Seb Chastin (GCU)

Funders:
British Heart Foundation
ESRC
MRC

Wearable technology

Huge potential for collecting rich objective data in large scale population studies.

Why ?

- Concerns over recall bias from self report
- Capture non-structured/ incidental movement patterns
- 24 hr wear provides information over entire day

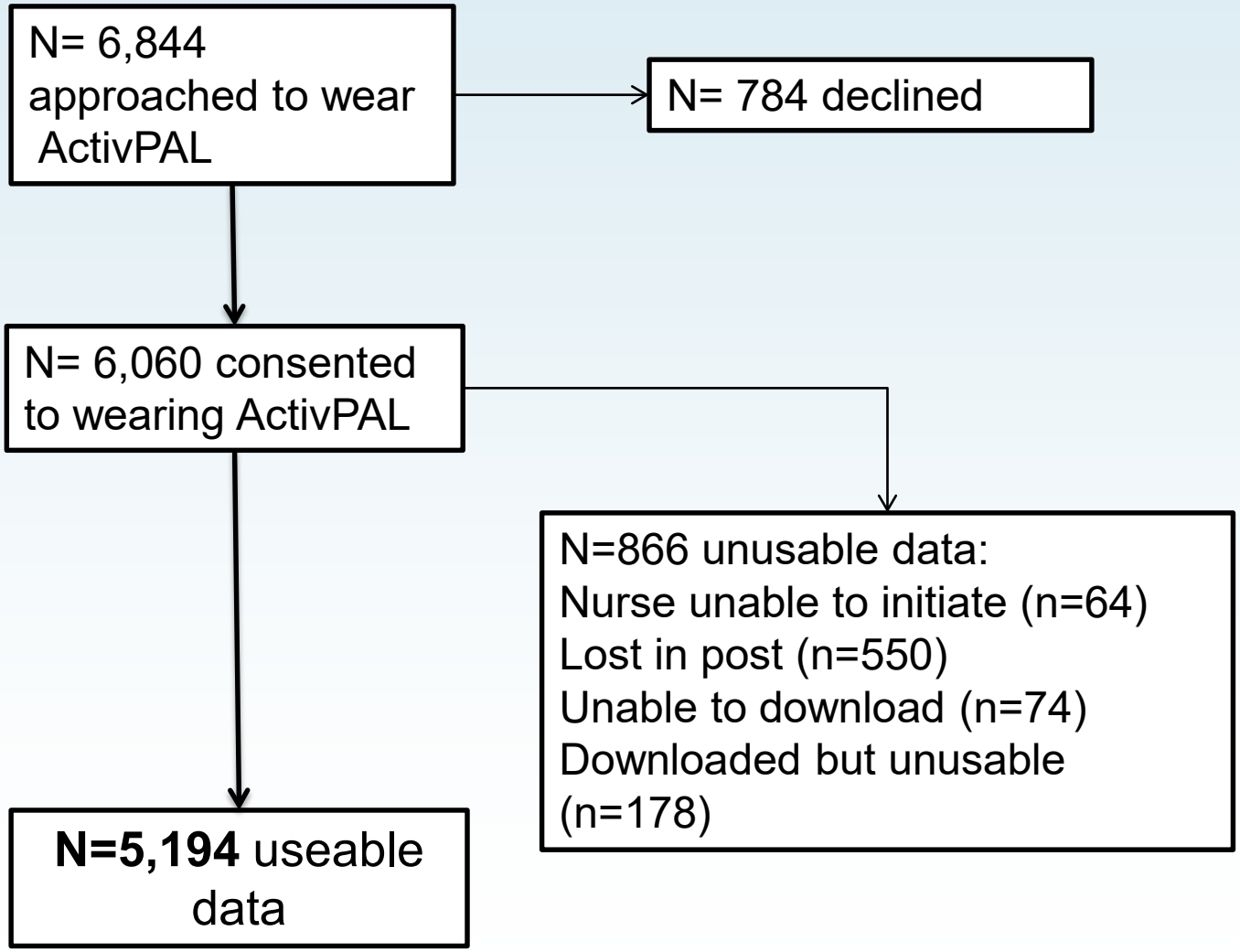
Which device?

- Body position – may influence accuracy of measurement ?
- Compliance/comfort ?
- 24 hr wear ?
- Ease of analysis, data volume ?

activPAL wear protocol in BCS70

- The device was waterproofed and fitted by a trained nurse on the midline anterior aspect of the upper thigh.
- Participants were requested to wear the device continuously for 7 days.
- If the device fell off or was removed before the stated end date, participants were requested not to re-attach.
- Devices were returned via post.
- Data were processed using freely available software (Winkler et al., Physiol Meas. 2016;37:1653-1668)

Flow of participants into BCS70 activPAL study



Comparison of respondents willing to wear monitor with those that refused

	Consented to wear device	Non-consent
N	6060	784
Men (%)	47.7	55.0
Smokers (%)	14.6	18.2
Degree educated (%)	22.8	19.3
Poor self-rated health (%)	4.8	6.6
Disability* (%)	5.6	9.3
Obese (% ≥ 30 kg/m^2)	31.6	32.5

*Disability classification EU-SILC, severely hampered

Reasons for refusal to wear device

Reason	N
Inconvenient	320
Going on holiday	108
Job related issues	91
Medical procedures	67
7 days too long	23
Concerns with wearing device on skin	47
Interfere with active lifestyle	33
Does not do any activity	15
Other specific answer / vague response	49

Comparison of respondents in relation to wear period

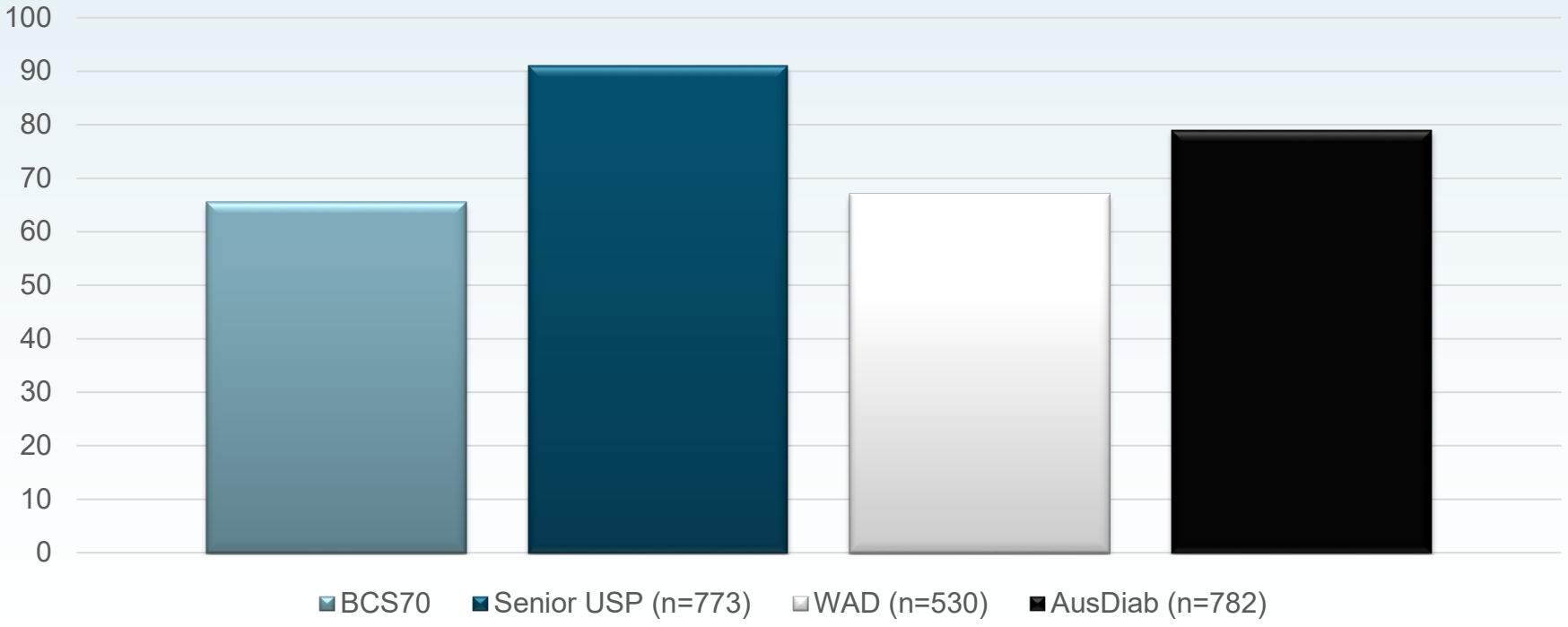
	< 3 full days (n=483)	≥3 full days (n=4711)
Men (%)	51.3	46.8
Smokers (%)	15.4	13.5
Degree educated (%)	20.1	24.2
Poor self-rated health (%)	7.0	3.6
Disability* (%)	8.0	4.6
Obese (% ≥ 30 kg/m^2)	40.2	29.7
Sitting time (hr/d)	9.3± 2.5	9.2± 1.9
Activity time (hr/d)	2.0± 0.9	2.0± 0.7
Waking wear time (hr/d)	15.7± 1.9	15.9± 1.1
Season		
Winter	31.4	38.3
Spring	20.5	26.2
Summer	26.4	17.9
Autumn	21.7	17.6

Summary of activPAL data

	Men	Women
Total awake wear time (hr/d)	16.0±1.3	15.7±1.3
Wear days	6.1 ± 1.6	6.2 ± 1.5
Sitting time (hr/d)	9.5 ± 2.0	9.0 ± 2.0
Prolonged sitting of bouts 60min+ (hr/d)	2.4 ± 1.5	2.2 ± 1.4
Standing time (hr/d)	4.4 ± 1.5	4.7 ± 1.5
Total activity (hr/d)	2.0 ± 0.8	2.0 ± 0.7
Moderate-Vigorous intensity activity (MVPA)ǂ (min/d)	50 ± 24	51 ± 24
Steps/d	4838 ± 1940	4652 ± 1749

Data are mean (SD)
ǂ Step cadence ≥ 100

Comparison of wear compliance (% 7 days wear) with previous studies



Descriptive characteristics in relation to daily sitting time

	Low (<8.4 hr/d)	Medium (8.4-10.1 hr/d)	High (>10.1 hr/d)
N	1583	1525	1526
Men (%)	40.6	46.4	55.3
Smokers (%)	13.1	12.7	15.7
Degree educated (%)	18.7	25.7	26.7
Poor self-rated health (%)	1.8	3.6	6.6
Disability* (%)	2.3	5.4	7.6
Obese (% ≥ 30 kg/m^2)	27.5	30.3	37.6
Diabetes (%)	2.7	2.4	5.7
Hypertension (%)	6.6	6.2	8.9
MVPA (hr/d)	1.0± 0.5	0.8± 0.4	0.7± 0.3
Device wear days	6.1± 1.7	6.3± 1.4	6.1± 1.6

Self-reported sedentary behaviours in relation to objective daily sitting time

	Low (<8.4 hr/d)	Medium (8.4-10.1 hr/d)	High (>10.1 hr/d)
N	1583	1525	1526
TV viewing (% > 2hr/d)	43.0	47.1	55.1
Video games (% > 2hr/d)	2.7	3.3	5.1
Internet (% > 2hr/d)	18.9	25.3	26.0
Reading (% > 2hr/d)	1.7	2.3	3.9
Car use for short journeys <5 miles (%)	75.8	78.1	79.7
Sitting occupation (%)	29.8	60.6	75.9