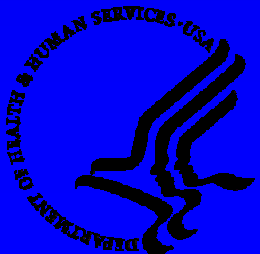


Physical Activity Measured by Accelerometry in the National Health and Nutrition Examination Survey 2003-04

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NHANES

- Large National Survey
- Currently Performed on a 2 year cycle
- Interview, Laboratory, and Take Home Elements
- Serum Analytes, Dietary Behavior, Demographics, Anthropometry etc

PA Monitors in NHANES

- Ages 6 y +
 - Wheelchair-bound/non-ambulatory excluded
- Ask for 7 d of wear while awake
 - Take off for water activities (swim, bathe)
- Mail back monitor

NHANES Physical Activity Monitor Component



ActiGraph AM-7164 (formerly the CSA/MTI AM-7164), ActiGraph of Ft. Walton Beach, FL ***

*** note product update

Component Response Rates

- Number examined 7943
- Data available 7176

- Agreed to component 95%
- Returned device 97%
- Retrievable data 98%

- Data/Eligible 90%

Analytic Sample - 4+ Valid days

<u>Age</u>	<u>n</u>	<u>Group %</u>
Total	4867	71
6-11	597	70
12-19	1181	62
20-39	888	63
40-59	941	79
60+	1260	85

Effect of Sample Restriction

- Compared all eligible respondents to those with 4+ valid days
- Examined gender, age, racial/ethnic composition, and weight status
- No significant differences observed within 3 age strata

Difficult Decisions

- Adequate Instrument performance (by Inspection)
- Non-wear determination
 - 60 consecutive zero counts
 - » Allow 1-2 min of 1-100 counts
- Valid day
 - 10 h of wear
- Valid record for analysis
 - 4 or more valid days
- Bout determination
 - 10 Minute bouts, two minutes below threshold allowed
- Cutpoints for moderate and vigorous activity

Wear Time

Age	Wear Hours
6-11	13.7
12-15	14.2
16-19	14.4
20-29	14.1
30-39	14.2
40-49	14.5
50-59	14.4
60-69	14.1
70+	13.8

Cutpoints for Moderate and Vigorous PA-Adults

Author		Moderate	n		Vigorous	n	
Freedson	Treadmill	1952	50	668.4932	5725	50	1960.616
Yngve	Track	2743	28	526.0548	6403	28	1227.973
	Treadmill	2260	28	433.4247	5896	28	1130.74
Brage	Treadmill	1810	12	148.7671	5850	12	480.8219
Leenders	Treadmill	1267	28	242.9863	6251	28	1198.822
				2019.726			5998.973

Note heterogeneity among studies in cutpoints, especially for moderate activities.

Decision: weighted average of these studies.

Cutpoints for Youth

Age	Moderate	Vigorous
6-11	1703	4252
12-19	2888	6182

Comment: Age-specific thresholds based on Trost equation from Freedson data. These are the age-group averages.

Adult Adherence

- Goal: 30+ min of at least moderate activity on most, if not all days of the week
 - Operationally: “most” = 5 + days/wk
- Adherence estimates
 - BRFSS 2000: 24%
 - NHIS 2000: 32%
- What do objective data say?
 - Bayes estimate based on all with at least one valid day

Youth Adherence

- Goal: 60+ min of at least moderate activity on most, if not all days of the week
 - Operationally: “most” = 5 + days/wk
- Intermittent activity, so count every minute over threshold

Adherence (%) Based on Accelerometry

Age	Total	Males	Females
6-11	42.0	48.9	34.6
12-15	8.0	12.0	3.4
16-19	7.7	10.1	5.4
20-59	3.5	3.8	3.2
60+	2.4	2.5	2.3

Data, Software, More Work

- The data:
http://www.cdc.gov/nchs/about/major/nhanes/nhanes2003-2004/exam03_04.htm
- How to use NHANES
<http://www.cdc.gov/nchs/tutorials/currentnhanes/index.htm>
- Software
 - To format data from Actigraphs
 - To extract summary data from formatted records
- Descriptive Paper Submitted to JAMA
- Ideas for Future Work
 - Misclassification bias
 - Subgroup Analyses
 - Inactivity
 - Associations with Body Composition and Biomarkers

Thank you – Questions?

<http://riskfactor.cancer.gov>

OAD and Risk Factor Monitoring
and Methods Branch, Applied
Research Program, Division of
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Sciences, NCI