

PIN Physical Activity Questionnaire Scoring:  
September 15, 2009

Table 1: Summary of the 1 week recall designed to capture physical activity among pregnant women, PIN3

"Now I am going to ask you some questions about physical activities you might do at work, at home, for recreation, and about activities involving child or adult care. I want you to tell me about activities you did that "caused at least some increase in breathing and heart rate". The questions ask about the past week, meaning the last 7 days not including today. So that would mean from last \_\_\_\_\_ <day> to yesterday or \_\_\_\_\_ <day>."

*[All questions are framed "in the past week". If a respondent is having difficulty adding up the time, such as in the occupational section, then reframe the question 'per day' and calculate based on the past 7 days.]*

	<b>Main question</b>	<b>Type</b>	<b>Frequency</b>	<b>Duration</b>	<b>Intensity</b>
Recreational	In the past week, did you participate in any non-work recreational activity or exercise, such as walking for exercise, swimming, or dancing, that caused at least some increase in breathing and heart rate?	What type of recreational activities did you do during the past week?  For certain activities: on average, how far did you usually (activity)?	How many times in the past week did you (activity)?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Outdoor household activities	In the past week, did you participate in any outdoor household activities such as gardening, mowing, or raking that caused at least some increase in breathing and heart rate?	What type of outdoor household activities did you do during the past week?  For lifting, carrying, or shoveling: On average, how much did the objects weigh that you (activity)?	How many times in the past week did you (activity)?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Indoor household activities	In the past week, did you participate in any indoor household activities such as scrubbing floors, mopping, or vacuuming that caused at least some increase in breathing and heart rate?	What type of indoor household activities did you do during the past week?  For lifting or carrying: On average, how much did the objects weigh that you (activity)?	How many times in the past week did you (activity)?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Child and adult care – lifting	Child and adult care activities ... would be activities such as playing with children, pushing a stroller or wheelchair, carrying, or lifting a child or adult that you may do in your home or as a volunteer. In the past week, did you participate in any child or adult care activities that caused at least some increase in breathing and heart rate?	What type of child or adult care activities did you do during the past week?  For lifting or carrying: On average, how much did the objects weigh that you (activity)?	How many times in the past week did you (activity)?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Transportation - walk	In the past week, did you walk for transportation, such as to work or to the store, which caused at least some increase in breathing and heart rate?	WALK  On average, how far did you usually walk one-way?	How many one-way trips did you walk in the past week?	On average, for how many minutes or hours did a one-way walking trip usually take?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Transportation - bike	In the past week, did you bike for transportation, such as to work or to the store, which caused at least	BIKE  On average, how far did	How many one-way trips did you bike in the past week?	On average, for how many minutes or hours did a one-way biking trip	Thinking about your breathing and heart rate, how hard did this usually feel to you?

	some increase in breathing and heart rate?	you usually bike one-way?		usually take?	Fairly light / Somewhat hard / Hard or very hard
Work and school activities	In the past week, did you participate in any work activities such as walking, lifting, or carrying objects, that caused at least some increase in breathing and heart rate?	What type of work activities did you do during the past week?  For carrying or shoveling: On average, how much did the objects weigh that you (activity)?	How many times in the past week did you (activity)?  For walking: On average, how far did you usually walk?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard
Other activity	Before we move on to another section, I want to be sure you had a chance to tell me about all the activities you did in the past week that caused at least some increase in breathing and heart rate. Can you think of any other activities, including lifting, you did in the past week that we have not talked about?	What other activities did you do during the past week?  For some activities: On average, how far did you usually (activity)?	How many times in the past week did you (activity) at a time?  For lifting, carrying, or shoveling: On average, how much did the objects weigh that you (activity)?	On average, for how many minutes or hours did you usually (activity) at a time?	Thinking about your breathing and heart rate, how hard did this usually feel to you? Fairly light / Somewhat hard / Hard or very hard

not hard = did not feel any increase in breathing or heart rate  
fairly light = at least some increase in breathing and heart rate  
somewhat hard = moderate increase in breathing and heart rate  
hard or very hard = large increase in breathing and heart rate

Table 2: Scoring the questionnaire using perceived intensity. Provides a measure of PA at FL (fairly light), SH (somewhat hard), and H (hard or very hard) intensities, (SH+H) (moderate and vigorous), as well as total time in these activities.

Mode	Activity	# Times and How Long (convert minutes to hours)	How Hard	Derived Variables Related to Total Score	Pregnancy phone 1	Pregnancy phone 2	3 months PP	12 months PP
Work Activity	Ignore	For each activity, multiply: (# times) * (hours) = total hours/week in each work activity reported.	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL work PA # hours/week in SH work PA # hours/week in H work PA total # hours/week in work PA # hours/week in (SH+H) work PA	PH1_WK1 PH1_WK2 PH1_WK3 PH1_WK4 PH1_WK5	PH2_WK1 PH2_WK2 PH2_WK3 PH2_WK4 PH2_WK5	PP3_WK1 PP3_WK2 PP3_WK3 PP3_WK4 PP3_WK5	PP12_WK1 PP12_WK2 PP12_WK3 PP12_WK4 PP12_WK5
Recreational Activity	Ignore	For each activity, multiply: (# times) * (hours) = total hours/week in each recreational activity reported.	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL recr PA # hours/week in SH recr PA # hours/week in H recr PA total # hours/week in recr PA # hours/week in (SH+H) recr PA	PH1_RC1 PH1_RC2 PH1_RC3 PH1_RC4 PH1_RC5	PH2_RC1 PH2_RC2 PH2_RC3 PH2_RC4 PH2_RC5	PP3_RC1 PP3_RC2 PP3_RC3 PP3_RC4 PP3_RC5	PP12_RC1 PP12_RC2 PP12_RC3 PP12_RC4 PP12_RC5
Outdoor HH Activity	Ignore	For each activity, multiply: (# times) * (hours) = total hours/week in each outdoor activity reported.	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL outdoor PA # hours/week in SH outdoor PA # hours/week in H outdoor PA total # hours/week in outdoor PA # hours/week in (SH+H) outdoor PA	PH1_OT1 PH1_OT2 PH1_OT3 PH1_OT4 PH1_OT5	PH2_OT1 PH2_OT2 PH2_OT3 PH2_OT4 PH2_OT5	PP3_OT1 PP3_OT2 PP3_OT3 PP3_OT4 PP3_OT5	PP12_OT1 PP12_OT2 PP12_OT3 PP12_OT4 PP12_OT5
Indoor HH Activity	Ignore	For each activity, multiply: (# times) * (hours) = total hours/week in each indoor activity reported.	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL indoor PA # hours/week in SH indoor PA # hours/week in H indoor PA total # hours/week in indoor PA # hours/week in (SH+H) indoor PA	PH1_IN1 PH1_IN2 PH1_IN3 PH1_IN4 PH1_IN5	PH2_IN1 PH2_IN2 PH2_IN3 PH2_IN4 PH2_IN5	PP3_IN1 PP3_IN2 PP3_IN3 PP3_IN4 PP3_IN5	PP12_IN1 PP12_IN2 PP12_IN3 PP12_IN4 PP12_IN5
Child and Adult Care	Ignore	For each activity, multiply: (# times) * (hours) = total hours/week in each child/ adult care activity reported.	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL care PA # hours/week in SH care PA # hours/week in H care PA total # hours/week in care PA # hours/week in (SH+H) care PA	PH1_CA1 PH1_CA2 PH1_CA3 PH1_CA4 PH1_CA5	PH2_CA1 PH2_CA2 PH2_CA3 PH2_CA4 PH2_CA5	PP3_CA1 PP3_CA2 PP3_CA3 PP3_CA4 PP3_CA5	PP12_CA1 PP12_CA2 PP12_CA3 PP12_CA4 PP12_CA5
Transportation	N/A	For walking, multiply: (# trips) * (hours) = total hours/week in walking. For biking, multiply: (# trips) * (hours) = total hours/week in biking.	Total the hours/week spent walking and biking separately FL, SH, or H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL tran # hours/week in SH tran # hours/week in H tran total # hours/week in tran # hours/week in (SH+H) tran	PH1_TN1 PH1_TN2 PH1_TN3 PH1_TN4 PH1_TN5	PH2_TN1 PH2_TN2 PH2_TN3 PH2_TN4 PH2_TN5	PP3_TN1 PP3_TN2 PP3_TN3 PP3_TN4 PP3_TN5	PP12_TN1 PP12_TN2 PP12_TN3 PP12_TN4 PP12_TN5

Other Activity	Ignore	NOTE: These activities are recoded into other domains.						
TOTAL				# hours/week in FL PA # hours/week in SH PA # hours/week in H PA # hours/week in total PA # hours/week in (SH+H) PA	PH1_TL1 PH1_TL2 PH1_TL3 PH1_TL4 PH1_TL5	PH2_TL1 PH2_TL2 PH2_TL3 PH2_TL4 PH2_TL5	PP3_TL1 PP3_TL2 PP3_TL3 PP3_TL4 PP3_TL5	PP12_TL1 PP12_TL2 PP12_TL3 PP12_TL4 PP12_TL5

Table 3: Scoring the questionnaire done using compendium based intensity (Ainsworth). Provides a sum of MET-hours/week of physical activity on MV (moderate and vigorous), total.

Mode	Activity	# Times and How Long (convert minutes to hours)	How Hard	Total	Pregnancy phone 1	Pregnancy phone 2	3 months PP	12 months PP
Work Activity	Connect the code of each activity to a MET value.	For each activity, multiply: (# times) * (hours) = total hours/week in each work activity reported.	Multiply the hours/week in each activity by its MET value = MET-hours/week.	Sum each work activity MET-hours/week to derive: a total sum for work activity, sum for vigorous work activity (METs>=7.2), and sum for MV work activity (METs>=4.8) sum for vigorous work activity (METs>6), and sum for MV work activity (METs>=3)	PM1_WK PM1_WK33  PM1_WK5  PM1_WK33_V2  PM1_WK5_V2	PM2_WK PM2_WK33  PM2_WK5  PM2_WK33_V2  PM2_WK5_V2	PPM3_WK PPM3_WK33  PPM3_WK5  PPM3_WK33_V2  PPM3_WK5_V2	PPM12_WK PPM12_WK33  PPM12_WK5  PPM12_WK33_V2  PPM12_WK5_V2
Recreational Activity	Connect the code of each activity to a MET value.	For each activity, multiply: (# times) * (hours) = total hours/week in each recreational activity reported.	Multiply the hours/week in each activity by its MET value = MET-hours/week.	Sum each recr activity MET-hours/week to derive: a total sum for recr activity, sum for vigorous recr activity (METs>=7.2), and sum for MV recr activity (METs>=4.8) sum for vigorous work activity (METs>6), and sum for MV work activity (METs>=3)	PM1_RC PM1_RC33  PM1_RC5  PM1_RC33_V2  PM1_RC5_V2	PM2_RC PM2_RC33  PM2_RC5  PM2_RC33_V2  PM2_RC5_V2	PPM3_RC PPM3_RC33  PPM3_RC5  PPM3_RC33_V2  PPM3_RC5_V2	PPM12_RC PPM12_RC33  PPM12_RC5  PPM12_RC33_V2  PPM12_RC5_V2
Outdoor HH Activity	Connect the code of each activity to a MET value.	For each activity, multiply: (# times) * (hours) = total hours/week in each outdoor activity reported.	Multiply the hours/week in each activity by its MET value = MET-hours/week.	Sum each outdoor activity MET-hours/week to derive: a total sum for outdoor activity, sum for vigorous outdoor activity (METs>=7.2), and sum for MV outdoor activity (METs>=4.8) sum for vigorous outdoor activity (METs>6), and sum for MV outdoor activity (METs>=3)	PM1_OT PM1_OT33  PM1_OT5  PM1_OT33_V2  PM1_OT5_V2	PM2_OT PM2_OT33  PM2_OT5  PM2_OT33_V2  PM2_OT5_V2	PPM3_OT PPM3_OT33  PPM3_OT5  PPM3_OT33_V2  PPM3_OT5_V2	PPM12_OT PPM12_OT33  PPM12_OT5  PPM12_OT33_V2  PPM12_OT5_V2
Indoor HH Activity	Connect the code of each activity to a MET value.	For each activity, multiply: (# times) * (hours) = total hours/week in each indoor activity reported.	Multiply the hours/week in each activity by its MET value = MET-hours/week.	Sum each indoor activity MET-hours/week to derive: a total sum for indoor activity, sum for vigorous indoor activity (METs>=7.2), and sum for MV indoor activity (METs>=4.8) sum for vigorous indoor activity (METs>6), and sum for MV indoor activity (METs>=3)	PM1_IN PM1_IN33  PM1_IN5  PM1_IN33_V2  PM1_IN5_V2	PM2_IN PM2_IN33  PM2_IN5  PM2_IN33_V2  PM2_IN5_V2	PPM3_IN PPM3_IN33  PPM3_IN5  PPM3_IN33_V2  PPM3_IN5_V2	PPM12_IN PPM12_IN33  PPM12_IN5  PPM12_IN33_V2  PPM12_IN5_V2

Child and Adult Care	Connect the code of each activity to a MET value.	For each activity, multiply: (# times) * (hours) = total hours/week in each child/ adult care activity reported.	Multiply the hours/week in each activity by its MET value = MET-hours/week.	Sum each child/adult care activity MET-hours/week to derive: a total sum for child/adult care activity, sum for vigorous child/adult care activity (METs>=7.2), and sum for MV child/adult care activity (METs>=4.8) sum for vigorous child/adult care activity (METs>6), and sum for MV child/adult care activity (METs>=3)	PM1_CA PM1_CA33 PM1_CA5 PM1_CA33_V2 PM1_CA5_V2	PM2_CA PM2_CA33 PM2_CA5 PM2_CA33_V2 PM2_CA5_V2	PPM3_CA PPM3_CA33 PPM3_CA5 PPM3_CA33_V2 PPM3_CA5_V2	PPM12_CA PPM12_CA33 PPM12_CA5 PPM12_CA33_V2 PPM12_CA5_V2
Transportation	Assign 4.0 METS walking (#17270) and 4.0 METS biking (#01010).	For walking, multiply: (# trips) * (hours) = total hours/week in walking. For biking, multiply: (# trips) * (hours) = total hours/week in biking.	Multiply the hours/week separately for biking and walking by its MET value = MET-hours/week.	Sum each transportation activity MET-hours/week to derive: a total sum for transportation activity, sum for vigorous transportation activity (METs>=7.2), and sum for MV transportation activity (METs>=4.8) sum for vigorous transportation activity (METs>6), and sum for MV transportation activity (METs>=3)	PM1_TN PM1_TN33 PM1_TN5 PM1_TN33_V2 PM1_TN5_V2	PM2_TN PM2_TN33 PM2_TN5 PM2_TN33_V2 PM2_TN5_V2	PPM3_TN PPM3_TN33 PPM3_TN5 PPM3_TN33_V2 PPM3_TN5_V2	PPM12_TN PPM12_TN33 PPM12_TN5 PPM12_TN33_V2 PPM12_TN5_V2
Other Activity		NOTE: These activities are recoded into other domains.						
TOTAL				Sum the MET-hours/week in each activity domain to get: a total sum for total PA, sum for total vigorous PA (METs>=7.2), and sum for total MVPA (METs>=4.8) sum for vigorous total activity (METs>6), and sum for MV total activity (METs>=3)	PM1_TL PM1_TL33 PM1_TL5 PM1_TL33_V2 PM1_TL5_V2	PM2_TL PM2_TL33 PM2_TL5 PM2_TL33_V2 PM2_TL5_V2	PPM3_TL PPM3_TL33 PPM3_TL5 PPM3_TL33_V2 PPM3_TL5_V2	PPM12_TL PPM12_TL33 PPM12_TL5 PPM12_TL33_V2 PPM12_TL5_V2

Table 4: Scoring the questionnaire done using "exercise" variable's perceived intensity. Provides a measure of PA that is exercise in nature at FL (fairly light), SH (somewhat hard), and H (hard or very hard) intensities, (SH+H) (moderate and vigorous) and total time in these activities, as well as total sum of MET-hours/week.

Mode	Activity	# Times and How Long (convert minutes to hours)	How Hard	Total	Pregnancy phone 1	Pregnancy phone 2	3 months PP	12 months PP
Exercise activity	Exercise	For each exercise activity, multiply: (# times) * (hours) = total hours/week	Total the hours/week separately for FL, SH, and H. Also create a total sum: (SH+H), and (FL+SH+H).	# hours/week in FL exercise # hours/week in SH exercise # hours/week in H exercise total # hours/week in exercise # hours/week in (SH+H) exercise	PH1_EX1 PH1_EX2 PH1_EX3 PH1_EX4 PH1_EX5	PH2_EX1 PH2_EX2 PH2_EX3 PH2_EX4 PH2_EX5	PP3_EX1 PP3_EX2 PP3_EX3 PP3_EX4 PP3_EX5	PP12_EX1 PP12_EX2 PP12_EX3 PP12_EX4 PP12_EX5
	Connect the code of each activity to a MET value.	For each exercise activity, multiply: (# times) * (hours) = total hours/week	Multiply the hours/week in each exercise activity by its MET value = MET-hours/week.	Sum each exercise activity MET-hours/week to derive: a total sum for exercise activity, sum for vigorous exercise activity (METs>=7.2), and sum for MV exercise activity (METs>=4.8) sum for vigorous exercise activity (METs>6), and sum for MV exercise activity (METs>=3)	PM1_EX PM1_EX33  PM1_EX5  PM1_EX33_V2  PM1_EX5_V2	PM2_EX PM2_EX33  PM2_EX5  PM2_EX33_V2  PM2_EX5_V2	PPM3_EX PPM3_EX33  PPM3_EX5  PPM3_EX33_V2  PPM3_EX5_V2	PPM12_EX PPM12_EX33  PPM12_EX5  PPM12_EX33_V2  PPM12_EX5_V2

Table 5: Scoring the questionnaire done on walking activities (based on subcategory of "exercise" variable and compendium code). Provides measures of walking PA that is 1) exercise in nature and subcategory=16; 2) compendium code=17270, total time in these activities, as well as total sum of MET-hours/week.

Mode	Activity	# Times and How Long (convert minutes to hours)	How Hard	Total	Pregnancy phone 1	Pregnancy phone 2	3 months PP	12 months PP
Recreational walking activity	Activity with subcategory code of exercise activity =16	For each recreational walking (subcategory code of exercise activity =16), multiply: $(\# \text{ times}) * (\text{hours}) = \text{total hours/week}$	Total the hours/week on recreational walking	total # hours/week in recreational walking	PH1_RW4	PH2_RW4	PP3_RW4	PP12_RW4
	Connect the code of each activity to a MET value.	For each recreational walking, multiply: $(\# \text{ times}) * (\text{hours}) = \text{total hours/week}$	Multiply the hours/week in each recreational walking by its MET value = MET-hours/week.	Sum each recreational activity MET-hours/week to derive a total sum for exercise activity.	PM1_RW	PM2_RW	PPM3_RW	PPM12_RW
Transportation walking activity	activity with compendium code=17270	For each transportation walking activity (compendium code=17270), multiply: $(\# \text{ times}) * (\text{hours}) = \text{total hours/week}$	Total the hours/week on transportation walking	total # hours/week in transportation walking	PH1_TW4	PH2_TW4	PP3_TW4	PP12_TW4
	Connect the code of each activity to a MET value.	For each transportation walking, multiply: $(\# \text{ times}) * (\text{hours}) = \text{total hours/week}$	Multiply the hours/week in each transportation walking by its MET value = MET-hours/week.	Sum each transportation activity MET-hours/week to derive a total sum for exercise activity.	PM1_TW	PM2_TW	PPM3_TW	PPM12_TW

Table 6: Scoring the questionnaire done on "Stairs" activity. Provides a measure of PA that is exercise in nature at FL (fairly light), SH (somewhat hard), and H (hard or very hard) intensities, total time in these activities, as well as total sum of MET-hours/week.

Mode	Activity	# Times and How Long (convert minutes to hours)	How Hard	Total	Pregnancy phone 1	Pregnancy phone 2	3 months PP	12 months PP
Stairs	N/A	Multiply: $(\# \text{ flights of stairs}) * (15 \text{ seconds}) * (1 \text{ minute} / 60 \text{ seconds}) * (60 \text{ minutes} / 1 \text{ hour}) = \text{total hours/week in stairs.}$	Total the hours/week separately for NH, FL, SH, and H. Also create a total sum: (FL+SH+H).	# hours/week in FL stairs # hours/week in SH stairs # hours/week in H stairs total # hours/week in stairs PA	PH1_ST1 PH1_ST2 PH1_ST3 PH1_ST4	PH2_ST1 PH2_ST2 PH2_ST3 PH2_ST4	PP3_ST1 PP3_ST2 PP3_ST3 PP3_ST4	PP12_ST1 PP12_ST2 PP12_ST3 PP12_ST4
Stairs	Assign 8.0 METS for going up stairs (#17130).	Multiply: $(\# \text{ flights of stairs}) * (15 \text{ seconds}) * (1 \text{ minute} / 60 \text{ seconds}) * (60 \text{ minutes} / 1 \text{ hour}) = \text{total hours/week in stairs.}$	Multiply the hours/week for stairs by its MET value = MET-hours/week.	MET hours/week in stairs	PM1_ST	PM2_ST	PPM3_ST	PPM12_ST

Note that this stair question is not integrated into any total PA measure, since women also reported stairs under other domains.



Table 7: Physical activity clusters for PIN pregnant women. Provides robust and intuitively meaningful collection of PA groups

Source	Mode	Activity	variables used to develop clusters	Analysis	Derived variable	Values
(1)	TOTAL	all activities	log-transformed MET-hours/week physical activity measures for six PA domains/modes at PIN3 second phone interview (recreational, indoor and outdoor household, child/adult care giving, occupational, and transportation activity)	Multiple non-hierarchical cluster analysis	CLUSTER_N	PA clusters: 1='Inactive' 2='Recreational' 3='Mixed' 4='Care giving' 5='Recreational-indoor' 6='Transportation' 7='Recreational-care giving'

Reference:

1. Borodulin K, Evenson, KE, et. al. Physical activity and sleep among pregnant women. *Paediatric and Perinatal Epidemiology*. In press.

## PIN3 Recommended Physical Activity Definitions

### RPE Definitions

<u>PIN3 Perceived Intensity</u>	<u>ACSM 1998</u> (1)	<u>US Surgeon General's Report</u> (2)	<u>Borg</u> (3)
Fairly light	10-11	9-10	11
Somewhat hard	12-13	11-12	13
Hard or very hard	14+	13-16	15 hard 17 very hard

### MET Definitions

<u>PIN3 Perceived Intensity</u>	<u>ACSM 1998: for a 20-39 year old</u> (1)	<u>US Surgeon General's Report</u> (2)
Fairly light		<3
Somewhat hard	4.8-7.1	3-6
Hard or very hard	7.2+	>6

Notes: Dr. Russ Pate agreed that we should use the MET values from the ACSM 1998 publication that is age specific.

#### (1) US Surgeon General's Recommendations (2) and Public Health Recommendations from CDC/ACSM for Moderate Intensity Physical Activity (4):

The recommendation is that "every US adult should accumulate 30 minutes or more of moderate intensity physical activity on most, preferably all days of the week."

How to define for PIN3 and PIN Postpartum?

- (i) Using Perceived Intensity: Recreational, work, outdoor, indoor, child/adult care, or transport activity in sum needs to occur at least 5 times per week for at least 30 minutes per day. This will be derived from the summary total variable of # hours per week in "somewhat hard" activity. The total time should be  $\geq 150$  minutes/week.
- (ii) Using Absolute Intensity: Choose any activity that is assigned a MET value of 4.8-7.1 METS. Calculate the hours per week of activities in this MET range. The total time should be  $\geq 150$  minutes/week.

#### (2) ACSM vigorous activity recommendation (1):

The recommendation is for vigorous activity 3 or more times per week, 20-60 minutes of continuous or intermittent (at least 10 minute bouts) of aerobic activity (see page 975).

How to define for PIN3 and PIN Postpartum?

- (iii) Using Perceived Intensity: Recreational, work, outdoor, indoor, child/adult care, or transport activity in sum needs to occur at least 3 times per week for at least 20 minutes per day. This will be derived from the summary total variable of # hours per week in "hard or very hard" activity. The total time should be  $\geq 60$  minutes/week.
- (iv) Using Absolute Intensity: Choose any activity that is assigned a MET value of  $\geq 7.2$  METS. Calculate the hours per week of activities in this MET range. The total time should be  $\geq 60$  minutes/week.

#### (3) ACOG recommended physical activity definition (5) - Moderate Intensity:

The recommendation is for "an accumulation of 30 minutes of more of moderate exercise a day should occur on most, if not all, days of the week." (pg 1)

How to define in PIN3 and PIN Postpartum?

- (v) Using Perceived Intensity: Activities that are "exercise" in nature were double coded from the compendium. These activities should be summed separately as fairly light, somewhat hard, and hard/very hard. To meet this recommendation, we will count only "somewhat hard" activity with the time  $\geq 150$  minutes/week.
- (vi) Using Absolute Intensity: Use only the activities coded as "exercise" with a MET value of 4.8-7.1 METS. Calculate the hours per week of these activities in this MET range. The total time should be  $\geq 150$  minutes/week.

Notes: It may not have been the intention of the ACOG guidelines to limit the activities to only exercise related activities.

- (4) AHA/ACSM recommendation - Moderate and Vigorous Absolute Intensity: This variable uses the MET values of at least 4.8 to obtain MET-minutes per week.
  - (vii) Alternative Using Absolute Intensity - All PA: Use only the activities coded with a MET value of  $\geq 4.8$  METS. Calculate the hours per week of these activities and multiply by the MET values for the continuous variable. The categorical variable would be  $\geq 720$  MET-minutes/week (yes or no). This is derived from  $4.8 \text{ METS} \times 150 \text{ min/week} = 720 \text{ MET-min/week}$  or  $12 \text{ MET-hr/week}$ . This is similar to what is described in Haskell et al (6).
  - (viii) Alternative Using Absolute Intensity - Exercise Only: Use only the activities coded as "exercise" with a MET value of  $\geq 4.8$  METS. Calculate the hours per week of these activities and multiply by the MET values for the continuous variable. The categorical variable would be  $\geq 720$  MET-minutes/week (yes or no). This is derived from  $4.8 \text{ METS} \times 150 \text{ min/week} = 720 \text{ MET-min/week}$  or  $12 \text{ MET-hr/week}$ . This is similar to what is described in Haskell et al (6).
- (5) Comprehensive meets recommendation - Moderate and Vigorous Intensity:
  - (ix) Perceived intensity all PA: combine ACSM vigorous (#2 iii. perceived intensity) with CDC/ACSM moderate (#1 i. perceived intensity)
  - (x) Absolute intensity all PA: combine AHA/ACSM (#4 vii. absolute intensity) with ACSM vigorous (#2 iv. absolute intensity) with CDC/ACSM moderate (#1 ii. absolute intensity)
- (6) ACOG recommended "exercise" activity - Moderate and Vigorous Intensity:
  - (xi) Using Perceived Intensity: Activities that are "exercise" in nature were double coded from the compendium. These activities should be summed separately as fairly light, somewhat hard, and hard/very hard. To meet this recommendation, we will count only "somewhat hard" and "hard or very hard" activity with the time  $\geq 150$  minutes/week.
  - (xii) Using Absolute Intensity: Use only the activities coded as "exercise" with a MET value of  $\geq 4.8$  METS. Calculate the hours per week of these activities in this MET range. The total time should be  $\geq 150$  minutes/week. This is the same as what is described in AHA/ACSM moderate and vigorous exercise (#4 viii).

#### Limitations of the PIN3 questionnaire in deriving these measures:

- (1) Women must average minutes per session.
- (2) At the interviews, women were told initially: "Now I am going to ask you some questions about physical activities you might do at work, at home, for recreation, and about activities involving child or adult care. I want you to tell me about activities you did that caused at least some increase in breathing and heart rate". From this, we would have expected at least moderate activity would be reported. However, we gave them the option of reporting activities as fairly light, somewhat hard, hard, or very hard. However, in defining moderate activity we chose to exclude "fairly light".
- (3) Bouts occurring less than 10 minutes per time will be included, even though they should not be.
- (4) It should be noted that the MET range being used is for nonpregnant adults. We decided against any sort of scaling of MET values due to pregnancy.

#### References Cited

- 1 Pollock M, Gaesser G, Butcher J, et al. American College of Sports Medicine Position Stand: The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness, and flexibility in healthy adults. *Medicine and Science in Sports and Exercise* 1998;30:975-91.
- 2 U.S. Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. 1996. U.S. DHHS, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion: Atlanta, GA
- 3 Borg G, Linderholm H. Perceived exertion and pulse rate during graded exercise in various age groups. *Acta Med Scand* 1974;472:194-206.
- 4 Pate R, Pratt M, Blair S, et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 1995;273:402-7.
- 5 ACOG. Exercise during pregnancy and the postpartum period. ACOG Committee Opinion No. 267. *Obstet Gynecol* 2002;99:171-3.
- 6 Haskell W, Lee I, Pate R, et al. Physical activity and public health. Updating recommendations for adults from the American College of Sports Medicine and the American Heart Association. *Circ* 2007;116:1081-93

Table7: Variables for meeting recommendations for physical activity

	Form	Pregnancy 1st phone Interview	Pregnancy 2nd phone Interview	Postpartum 3 months	Postpartum 12 months
CDC/ACSM moderate activity, perceived intensity	continuous (from total 'somewhat hard' PA)	PH1_TL2	PH2_TL2	PP3_TL2	PP12_TL2
	categorical 1=yes, 0=no	PH1_TL2_YN	PH2_TL2_YN	PP3_TL2_YN	PP12_TL2_YN
CDC/ACSM moderate activity, absolute (METs) intensity	continuous	PM1_TL2	PM2_TL2	PPM3_TL2	PPM12_TL2
	categorical 1=yes, 0=no	PM1_TL2_YN	PM2_TL2_YN	PPM3_TL2_YN	PPM12_TL2_YN
ACSM vigorous activity, perceived intensity	continuous (from total 'hard or very hard' PA)	PH1_TL3	PH2_TL3	PP3_TL3	PP12_TL3
	categorical 1=yes, 0=no	PH1_TL3_YN	PH2_TL3_YN	PP3_TL3_YN	PP12_TL3_YN
ACSM vigorous activity, absolute (METs) intensity	continuous	PM1_TL3	PM2_TL3	PPM3_TL3	PPM12_TL3
	categorical 1=yes, 0=no	PM1_TL3_YN	PM2_TL3_YN	PPM3_TL3_YN	PPM12_TL3_YN
ACOG exercise moderate activity, perceived intensity	continuous	PH1_EX2	PH2_EX2	PP3_EX2	PP12_EX2
	categorical 1=yes, 0=no	PH1_EX2_YN	PH2_EX2_YN	PP3_EX2_YN	PP12_EX2_YN
ACOG exercise moderate activity, absolute (METs) intensity	continuous	PM1_EX2	PM2_EX2	PPM3_EX2	PPM12_EX2
	categorical 1=yes, 0=no	PM1_EX2_YN	PM2_EX2_YN	PPM3_EX2_YN	PPM12_EX2_YN
AHA/ACSM moderate and vigorous activity, absolute (METs) Intensity	continuous	PM1_TL5	PM2_TL5	PPM3_TL5	PPM12_TL5
	categorical 1=yes, 0=no	PM1_TL5_YN	PM2_TL5_YN	PPM3_TL5_YN	PPM12_TL5_YN
AHA/ACSM (ACOG) exercise moderate and vigorous activity, absolute (METs) Intensity	continuous	PM1_EX5	PM2_EX5	PPM3_EX5	PPM12_EX5
	categorical 1=yes, 0=no	PM1_EX5_YN	PM2_EX5_YN	PPM3_EX5_YN	PPM12_EX5_YN
Comprehensive moderate and vigorous activity (ACSM vigorous with CDC/ACSM moderate), perceived Intensity	categorical 1=yes, 0=no	PH1_TL55_YN	PH2_TL55_YN	PP3_TL55_YN	PP12_TL55_YN
Comprehensive moderate and vigorous activity (AHA/ACSM MV, with ACSM vigorous with CDC/ACSM moderate), absolute (METs) Intensity	categorical 1=yes, 0=no	PM1_TL55_YN	PM2_TL55_YN	PPM3_TL55_YN	PPM12_TL55_YN
ACOG exercise moderate and vigorous activity, perceived intensity	continuous	PH1_EX5	PH2_EX5	PP3_EX5	PP12_EX5
	categorical 1=yes, 0=no	PH1_EX5_YN	PH2_EX5_YN	PP3_EX5_YN	PP12_EX5_YN

\* note: all categorical variables are derived from their continuous version:  
1=Yes, meet recommendation; 0=No, not meet recommendation

Table 8: Variable for changes of activities between visits. Provides measures of changes in (SH+H) MVPA, and total PA

<b>Mode</b>	<b>Form</b>	<b>Derived Variables in changes of PA</b>	<b>Between Pregnancy phone 1 to phone 2</b>	<b>Between Pregnancy phone 2 to 3 months PP</b>	<b>Between 3 months PP to 12 months PP</b>
Work Activity	Continuous	$\Delta$ total # hours/week in work PA $\Delta$ # hours/week in (SH+H) work PA	CNG1_WK4 CNG1_WK5	CNG2_WK4 CNG2_WK5	CNG3_WK4 CNG3_WK5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in work PA $\Delta$ # hours/week in (SH+H) work PA	CCNG1_WK4 CCNG1_WK5	CCNG2_WK4 CCNG2_WK5	CCNG3_WK4 CCNG3_WK5
Recreational Activity	Continuous	$\Delta$ total # hours/week in recr PA $\Delta$ # hours/week in (SH+H) recr PA	CNG1_RC4 CNG1_RC5	CNG2_RC4 CNG2_RC5	CNG3_RC4 CNG3_RC5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in recr PA $\Delta$ # hours/week in (SH+H) recr PA	CCNG1_RC4 CCNG1_RC5	CCNG2_RC4 CCNG2_RC5	CCNG3_RC4 CCNG3_RC5
Outdoor HH Activity	Continuous	$\Delta$ total # hours/week in work PA $\Delta$ # hours/week in (SH+H) recr PA	CNG1_OT4 CNG1_OT5	CNG2_OT4 CNG2_OT5	CNG3_OT4 CNG3_OT5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in outd PA $\Delta$ # hours/week in (SH+H) outd PA	CCNG1_OT4 CCNG1_OT5	CCNG2_OT4 CCNG2_OT5	CCNG3_OT4 CCNG3_OT5
Indoor HH Activity	Continuous	$\Delta$ total # hours/week in indoor PA $\Delta$ # hours/week in (SH+H) indoor PA	CNG1_IN4 CNG1_IN5	CNG2_IN4 CNG2_IN5	CNG3_IN4 CNG3_IN5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in indoor PA $\Delta$ # hours/week in (SH+H) indoor PA	CCNG1_IN4 CCNG1_IN5	CCNG2_IN4 CCNG2_IN5	CCNG3_IN4 CCNG3_IN5
Child and Adult Care	Continuous	$\Delta$ total # hours/week in care PA $\Delta$ # hours/week in (SH+H) care PA	CNG1_CA4 CNG1_CA5	CNG2_CA4 CNG2_CA5	CNG3_CA4 CNG3_CA5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in care PA $\Delta$ # hours/week in (SH+H) care PA	CCNG1_CA4 CCNG1_CA5	CCNG2_CA4 CCNG2_CA5	CCNG3_CA4 CCNG3_CA5
Transportation	Continuous	$\Delta$ total # hours/week in tran PA $\Delta$ # hours/week in (SH+H) tranPA	CNG1_TN4 CNG1_TN5	CNG2_TN4 CNG2_TN5	CNG3_TN4 CNG3_TN5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in tran PA $\Delta$ # hours/week in (SH+H) tran PA	CCNG1_TN4 CCNG1_TN5	CCNG2_TN4 CCNG2_TN5	CCNG3_TN4 CCNG3_TN5

Total without stairs	Continuous	$\Delta$ total # hours/week in PA $\Delta$ # hours/week in (SH+H) PA	CNG1_TL4 CNG1_TL5	CNG2_TL4 CNG2_TL5	CNG3_TL4 CNG3_TL5
	Categorical 1=increase 0=no change -1=decrease	$\Delta$ total # hours/week in PA $\Delta$ # hours/week in (SH+H) PA	CCNG1_TL4 CCNG1_TL5	CCNG2_TL4 CCNG2_TL5	CCNG3_TL4 CCNG3_TL5

## PIN Physical Activity (PA) Questionnaire Cleaning Protocol

### Strategy to clean PIN PA questionnaires:

(1) By modes of activities (i.e., recreational, work, adult care, ect.) pull out and examine if the following observations are possible:

- total hours for a given activity  $\geq 21$  hours in a week
- number of times an activity is performed is  $\geq 140$  hours/week
- data with average hours  $> 1$  hour/time and time  $> 1$  time/week
- MET-hours per week in any domain  $\geq 125$  MET-hours/week

Kelly Evenson reviewed the output for all of these observations. For the ones that seemed questionable during pregnancy, the interview documents for these women were pulled and both Kelly Evenson and Chyrise Bradley reviewed together. Data entry errors were corrected and unreasonable values were set to missing. For the postpartum data, because they were entered using Blaise, we could not check the hard copy interview documents. Unreasonable values were set to missing. The data still contain outliers!

(2) Once the modes of activities (i.e., recreational, work, adult care, ect.) were cleaned, then the overall calculated scores were checked. Pull out and examine to see if the following observations are possible:

- total MET-hours per week  $\geq 300$  MET-hours/week
- total FL or SH or VH hours per week in PA  $> 40$  hours
- total overall hours per week in PA  $\geq 70$  hours

Kelly Evenson reviewed the output for all of these observations. For the ones that seemed questionable during pregnancy, the interview documents for these women were pulled and both Kelly Evenson and Chyrise Bradley reviewed together. Data entry errors were corrected and unreasonable values were set to missing. For the postpartum data, because they were entered using Blaise, we could not check the hard copy interview documents. Impossible values were set to missing (there were very few of these). The data still contain outliers!

### How to treat missing data:

(1) For data with missing intensity levels, if everything else is complete (i.e., time, frequency, type), then set these to "FAIRLY LIGHT". This will be a conservative assignment and we can describe in the methods paper how few women this really affected.

(2) For the other missings (such as frequency and duration), set these to zero and do not use them in the totals.

### Notes

- The interviewers are instructed to not repeat activities when they are conducting the interview, unless they are for distinctly different activities that may have occurred for a different amount of time. In fact, when they are asking the woman for the activities that she did, Blaise will display all of the other activities she has already enumerated precisely so that the interviewers will not repeat an activity. However, for a category like playing with children, it is very broad and could occur multiple times. Perhaps one time she was playing with a kid in the park, another she was playing peek-a-boo, and another she was dancing with the kid. We just don't know. (per Aimee Benson)

- For the PIN3 Phone Interview 1 and 2 as well as the In-hospital Questionnaires, there are 67 activities coded with zero total hours due to "missing/incomplete" activity data. So, these 67 activities are NOT included in the "Total" Score. The 67 activities are out of 18,959 total activities. These 67 activities are for 53 women out of a total of 1813 women. IN ADDITION, there are 29 activities (out of 18,959) that did NOT get scored because the "HOW\_HARD" variable as coded as a 9 (I Don't Know). (per Jim Terry) However, per #1 above under missing data, these observations were set to "FAIRLY LIGHT" if everything else was complete.

- A study of the validity and the reliability of this questionnaire was conducted. The analyses are complete and the manuscript is in progress (Kelly Evenson).

## Explanation of columns in 'PIN METTable allnewcolumnsadded'

### **Compcode**

Compendium code, that is either from the Ainsworth compendium or derived for the PIN study.

### References:

Ainsworth B, Haskell W, Leon A, et al. Compendium of physical activities: Classification of energy costs of human physical activities. *Med Sci Sports Exerc* 1993;25:71-80.

Ainsworth B, Haskell W, Whitt M, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Med Sci Sport Exer* 2000;32:S498-S516.

### **METS**

MET values published from the Ainsworth compendium or derived for the PIN study. For the derived MET values, at least two raters agreed together on the assignment based on similar activities in the compendium with assigned MET values.

Per Aimee Benson: "*The extra activities without METS that you see are activities that I had added when we went to Blaise for the Postpartum study. I tried to anticipate activities that we didn't already have on the list, in case they showed up during the laptop administration. The laptop was different from the PIN admin in that the interviewer would pull up a pre-sorted and coded list of activities from which to choose the response that the respondent was giving. If the response couldn't be fit into a preexisting option, they could then enter it as "other". With PIN, there was a grid into which the interviewer wrote the activity and then we would code these after the fact. I guarantee that there are activities that I had come up with that were never given by the respondents.*"

### **Class**

Type of activity, broadly defined.

### **Descript**

The specific activity described from the Ainsworth compendium or by the PIN participant.

### **Code in compendium**

Defines whether the code for the activity existed in the Ainsworth compendium.

1= existed in the compendium

0= was created as a new code on the basis of what the PIN women reported, the MET assignment was checked by at least two people and agreed upon before entering into spreadsheet

### **Exercise**

Describes whether an activity was categorized as exercise. Exercise is defined as "planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness". (page 21)

1=yes

0=no

### Reference:

U.S. Department of Health and Human Services. Physical Activity and Health: A Report of the Surgeon General. 1996. U.S. DHHS, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion: Atlanta, GA.

### **Recreational subcategory**

Lists all new subcategories for recreational activities. To be used to summarize recreational physical activity into fewer types of activity.

1= Aerobic dance

2= Aerobic gym exercise

3= Bicycling outdoors

4= Calisthenics / conditioning

5= Combat exercise (judo, jujitsu, karate, kick boxing against opponent, tae kwan do, akido)

6= Dancing



- 7= Golf (not including miniature golf)
- 8= Horseback riding
- 9= Pair and team sports (basketball, bowling, etc.)
- 10= Play with children\*
- 11= Pushing a stroller and walking with children
- 12= Roller blading or roller skating or ice skating
- 13= Running
- 14= Swimming and water activities (could be team or individual)
- 15= Trampoline
- 16= Walking and hiking
- 17= Water activities in a boat/canoe/kayak, ect.
- 18= Weight lifting
- 19= Winter activities
- 20= Yoga and stretching
- 21= Water aerobics, water calisthenics

\*All activities listed here were also considered exercise (exercise=1) except for code 10 (playing with children), which was not considered exercise.