

Table 1. Description of Physical Activity Measures Administered to English and Spanish Speaking Latino Populations and Population Demographics

Name of Measure	Reference	PA Items	Sample Characteristics (n=, M/F, ethnicity)	Education/Literacy	PA Questionnaire Items	Method of Adoption	Survey Time
<i>English PA Measures used among English-Speaking Latinos</i>							
Rapid Assessment of Physical Activity (RAPA - English)	Topolski et al., 2006	Walking, stretching, yard work or vacuuming, aerobics, strength training swimming, stairs jog/run, tennis, racquetball	<b>Focus Groups</b> 24% Latino, 20% Vietnamese, 26% Chinese American, 26% white, and 4% black Male and Female 51-92 yo	6 <sup>th</sup> grade reading level	15 items	Self-report, self-administered (exception of 2 participant assisted)	NS*
National Health Interview Survey (NHIS) Walking Supplement	Castro et al., 1999	Walking, PA psychosocial correlates (i.e., barriers, enjoyment, self-efficacy, social support)	<b>Self-Report Survey</b> N=128 100% Females 58 Hispanic 24-55 yo	6 <sup>th</sup> gr. reading level; English Speaking	2 items	Self-Report; Trained interviewers	NS
	Rauh et al., 1992	Moderate and vigorous PA, flights of stairs, walking, sports and leisure time PA	<b>Rauh et al.</b> N=45 Bicultural Latinos 18-55yo 53% Male, 47% Female Mean age 33 yo	High School	2 Items	Structured interview	NS
Physical Activity Social Support (PASS)	Eyler et al., 1999	Leisure time, lifestyle/household chores, exercise, sports and social support for PA	N=2912 100% Females 660 Hispanic 40-70+ yo	NS	5 items	Telephone Survey	NS
7-Day PAR	Poston et al., 2001		N= 379 100% Hispanic Female 42% English Interviews Mean age 40 yo 57% less than high school	NS		Interview	NS
<i>Spanish PA measures used among Spanish-Speaking Latinos</i>							
International Physical Activity Questionnaire (IPAQ)	Craig et al., 2003	Occupational, transport, Yard, household, leisure, sitting	N= 155 77 Female, 78 Male 27 yo (sd= 5.3) 81% employed	6.4-15.9	7 items (Short) 27 items (Long)	Telephone Survey (however piloted in Guatemala by personal interview)	NS
Modified Physical Activity Questionnaire (MPAQ)	Laffrey et al., 2000	Cleaning, cooking, shopping, leisure/sports	N=71 60-87yo	NS	10 items	Mexican-American interviewer	NS

EPIC Physical Activity Questionnaire 2 (EPAQ2)	Marquez & McAuley, 2006	Home activities, activity at work, recreation	N=173 86 Female, 69 Male 18-60yo 29yo (sd=7.9) \$15,000/ less (61%)	40% 1-3 yr college or less	23 items (if 1 job) 46 items (if 2 jobs) + 1 matrix	Self-administered/ Interview assisted	15-25min
Minnesota Leisure Time Physical Activity Questionnaire (MLTPAQ)	Elosua et al., 2000; 1994	Dancing, walking, surfing, bowling, martial arts, household activities	N=250 18-40y Middle-class	NS	63 items	Interview	10-20min
Lifestyle Behaviors Questionnaire (Modified HPLPII)	Kim et al., 2004	Walking, parking far from destination, exercising, gardening, aerobics, jogging, swimming	N=256 6 Males, 250 Females Latino community	9±3yrs	7 items	Lay health advisors	30-60min
Rapid Assessment of Physical Activity (RAPA Spanish)	LoGerfo, J., personal communication	Light, moderate, vigorous PA (walking, stretching, yard work or vacuuming, aerobics, strength training swimming, stairs jog/run, tennis, racquetball)	13 Latino seniors	Low	9 items	Assisted Survey by Mexican interviewer	3-5 min
National Health and Nutrition Examination Survey III (NHANES III)	Crespo et al., 2001	Walking, running, small motor movements (exercising, gardening), heavy housework, heavy playing/exercise, organized sports/PE	N= 4893 2467 Male, 2426 Female Mexican-American	<12y 3066 12y 1023 >12y 742	8 items (4 open-ended)	Trained bilingual interviewers	NS
Health-Promoting Lifestyle Profile II (HPLPII)	Hulme et al., 2003	Walking, parking far from destination, exercising, gardening, aerobics, jogging, swimming	N=540 228 Male, 312 Female 18-81yo	NS	7 items	Translator assisted	NS
7-Day PAR	Poston et al., 2001		N= 379 100% Hispanic Female 58% Spanish/Bilingual Interviews Mean age 40 yo 57% less than high school	NS		Interview	NS

<sup>a</sup>Not Stated

Table 2. Scoring Method for Culturally Appropriate Measures

IPAQ Guidelines	Completed (Yes=1/ No= 0 points)
1. Forward translation into Spanish.	
2. Forward translation performed by two native Spanish speakers similar to the intended users to maintain the same meanings.	
3. Backward translation from Spanish back into parallel English to maintain conceptual and cultural equivalence.	
4. Backward translation performed by two different translators.	
5. Review of the final version by all translators to achieve consensus and comparability in both versions [for cultural appropriateness].	
6. Pilot testing in a sample of the target [Latino] community, including low and middle education levels or social class. Based on pilot testing, other changes to the instrument can be considered if necessary as long as they have the same interpretation.	

Table 3. Evaluating cultural appropriate measures (CAMs) in English and Spanish for English or Spanish-speaking Latinos

Name of Measure	Forward Translation (1 point)	Backward Translation (1 point)	Translators: Forward (1 point) Back (1 point)		Reviewed in Spanish/English (1 point)	Pilot Tested (1 point)	Cultural appropriateness methods (1 point)	CAM Score (English: Total = 2) (Spanish: Total = 7)
<i>English Measures used among English-Speaking Latinos</i>								
Rapid Assessment of Physical Activity (RAPA)	N/A	N/A	N/A	N/A	N/A	Yes (Validity Study: N=115; 71% white, 20% black)	Yes (Part of focus groups)	2
Physical Activity Social Support (PASS)	N/A	N/A	N/A	N/A	N/A	Yes (N= 40; 100% female; 10 Latinas)	No Structured personal interviews	1
National Health Institute Survey (NHIS) Walking Supplement in Self-Report Survey	N/A	N/A	N/A	N/A	N/A	No	No	0
7-Day PAR	N/A	N/A	N/A	N/A	N/A	No	No	0
<i>Spanish measures of PA used among Spanish-Speaking Latinos</i>								
IPAQ (Spanish)	Yes	Yes	Forward	Back	Spanish	Yes	None	6
			Yes	Yes				
Modified Physical Activity Questionnaire (PAQ)	Yes	Yes	Yes	Yes	Spanish	NS *	Reviewed for cultural sensitivity via U.S.-Mexican women	6
EPIC PAQ2 (EPAQ2) (Includes items from MTLPAQ and Tecumseh OPAQ)	Yes	Yes	Yes	Yes	Spanish	No	None	5
Minnesota Leisure Time Physical Activity Questionnaire (MLTPAQ)	Yes	No	Yes	No	Spanish	Yes	Inclusion/Exclusion of items not culturally appropriate	5

Lifestyle Behaviors Questionnaire (Modified HPLPII)	Yes	No	Yes	No	Spanish	NS	None	3
Rapid Assessment of Physical Activity (RAPA)	Yes	No	Yes	No	Spanish	Yes	None	3
7-Day PAR	Yes	Yes	Yes	NS	NS	NS	None	3
National Health and Nutrition Exam. Survey III (NHANES III)	Yes	No	Yes	No	NS	NS	None	2
Health-Promoting Lifestyle Profile II (HPLPII)	Yes	Yes	NS	NS	NS	NS	None	2

\*Not Stated; N/A = Not applicable

Table 4. Validity and reliability of Physical Activity CAMs for English and Spanish-Speaking Latinos

Name of Measure	Validity (Type)	Reliability (Type) or Other
<i>English Measures used among English-Speaking Latinos</i>		
Rapid Assessment of Physical Activity (RAPA)	<b>English:</b> Criterion (Spearman) with Community Healthy Activities Model Program for Seniors ( $r=.54$ , $p<.001$ ); Construct with Behavioral Risk Factor Surveillance System (BRFSS) and Patient-centered Assessment and Counseling for Exercise (PACE) ( $.52$ , $p<.001$ );	Sensitivity: RAPA (84), BRFSS (73), PACE (81) PPV, NPV <sup>a</sup> : RAPA (73, 77), BRFSS (76,67), PACE (69, 70)
Physical Activity Social Support (PASS)	<b>English:</b> Construct and concurrent criterion-related (Sallis et al., 1987)	Test-Retest ( $r= 0.55-0.86$ ); Internal consistency ( $\alpha= 0.61-0.91$ ); Eigenvalues $< 2$ (Sallis et al., 1987)
National Health Institute Survey (NHIS) Walking Supplement	<b>English:</b> Criterion with Caltrac monitor and 'significant other' interview; Construct with self-efficacy and barriers concepts	Test-retest by Rauh et al. (1992) Pearson: NHIS ( $r=0.31$ )
<i>Spanish measures of PA used among Spanish-Speaking Latinos</i>		
IPAQ (Spanish)	<b>Spanish/English:</b> Concurrent (compared same day administered short and long forms); Criterion (CSA)	<b>Spanish (short form):</b> Test-retest: Spearman, 0.88 (urban); 0.25 (rural) <b>Spanish (long form):</b> Spearman, 0.85 (urban); 0.52 (rural)
Modified Physical Activity Questionnaire (PAQ)	<b>English:</b> Concurrent (Blair 7d Recall); Construct (Stages of Change) <b>Spanish:</b> Content via U.S.-Mexican women	<b>English:</b> Test-Retest, $r=0.89$ ; Spearman, 0.78; Pearson, 0.72
EPIC PAQ2 (EPAQ2) - Includes items from MTLPAQ and Tecumseh OPAQ	<b>Spanish:</b> Criterion (CSA); MLTPAQ items validated by Elosua et al. (2000 & 1994)	Not stated
Minnesota Leisure Time Physical Activity Questionnaire (MLTPAQ)	<b>Spanish:</b> Criterion (maximal treadmill exercise test, electrocardiogram and systolic blood pressure)	<b>Pearson:</b> (exercise duration) Total EEPA (0.47) Heavy EEPA (0.43) Mod EEPA (0.14) Light EEPA (0.27) House EEPA (0.14) <b>Spearman:</b> (Fitness) Total EEPA (0.39) Heavy PA (0.51) Mod EEPA (0.13) Light EEPA (-0.02) House EEPA (-0.30)
Lifestyle Behaviors Questionnaire (Modified HPLPII)	<b>Spanish:</b> Content (Expert)	<b>Spanish:</b> Internal consistency, $\alpha=0.77$
Rapid Assessment of Physical Activity (RAPA)	<b>Spanish:</b> Validation study in underway	Not available
National Health and Nutrition Exam. Survey III (NHANES III)	Not stated	Not stated
Health-Promoting Lifestyle Profile II (HPLPII)	<b>English:</b> Content (literature review, expert evaluation); Construct (factor analysis); Convergent (Personal Lifestyle Questionnaire); Criterion-related (perceived health status and quality of life)	<b>English:</b> Test-retest, $r=0.89$ ; Internal consistency, $\alpha=0.94$ , 0.79-0.87 <b>Spanish:</b> Internal consistency, $\alpha=.94$

<sup>a</sup> PPV= Positive Predictive Value, NPV= Negative Predictive Value

Table 5. Guidelines for making measures culturally appropriate

Recommended Steps for Translation (Palloni & Morenoff, 2001)	Completed (Yes/No)
1. "Translate all materials from the original English version."	
2. Use at least two independent forward translators to improve the quality of the instrument <sup>1</sup> . <ul style="list-style-type: none"> <li>• Have translators, including those who speak different dialects if necessary, translate the survey and agree on the best translation.</li> </ul>	
3. Review the translated measure in a group of bilingual people who are similar to the target population.	
4. "Have two different translators translate the new version back into English" (back-translation). <sup>39</sup> <ul style="list-style-type: none"> <li>• There should be a back-translator for each forward translation.</li> <li>• The back-translators should reach a consensus on one translation and then consider revising after pilot testing.</li> </ul>	
5. Have a group of bilingual people meet again to review the back-translation and decide on the final version.	
<b>Cognitive Interviews Recommended Steps for Pilot Testing<sup>a</sup></b>	
<i>For each item perform the following:</i>	
1. Assess comprehension <ul style="list-style-type: none"> <li>• Did you understand all of the words?</li> </ul>	
2. Ask them to explain how they would answer the question <ul style="list-style-type: none"> <li>• Talk out loud as you answer the question</li> <li>• Describe what you were thinking as you answer the question</li> </ul>	
3. Assess clarity of question <ul style="list-style-type: none"> <li>• What do you think is being asked?</li> <li>• What does this question mean to you?</li> <li>• Tell in your own words what you thought the question was asking</li> </ul>	
4. Determine whether they need additional help in answering the questions such as definitions, examples, etc. <ul style="list-style-type: none"> <li>• What types of examples might help other people understand this question?</li> </ul>	
5. Ask them to describe how they would have asked this question to a sister or a friend <ul style="list-style-type: none"> <li>• If you were asking this question to a friend or family member, how would you ask it?</li> </ul>	
<i>At the end of the survey, ask more general questions such as these:</i>	
6. Did any of the questions make you feel uncomfortable? <ul style="list-style-type: none"> <li>• Indicate whether the question is upsetting</li> </ul>	
7. Were there activities that we missed?	
8. Would you prefer to have answers to pick from or do you prefer open answers?	

<sup>a</sup>Based on the information collected in the pilot testing, consider if other changes to the instrument are necessary. Make only changes that do not change the meaning of the instrument.