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Compendium of Physical Activities: an update of activity codes and MET intensities

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Department of Epidemiology and Biostatistics, Department of Exercise Science, School of Public Health, University of South Carolina, Columbia, SC 29208; Stanford Center for Research in Disease Prevention, School of Medicine, Stanford University, Palo Alto, CA 94304; Division of Kinesiology, School of Kinesiology and Leisure Studies, University of Minnesota, Minneapolis, MN 55454; Division of Epidemiology, School of Public Health, University of Minnesota, Minneapolis, MN 55455; Department of Exercise Science and Sport Management, University of Tennessee, Knoxville, TN 37996; Department of Human Performance, University of Alabama, Tuscaloosa, AL 35487

ABSTRACT

AINSWORTH, B. E., W. L. HASKELL, M. C. WHITT, M. L. IRWIN, A. M. SWARTZ, S. J. STRATH, W. L. O'BRIEN, D. R. BASSETT, JR., K. H. SCHMITZ, P. O. EMPLAINCOURT, D. R. JACOBS, JR., and A. S. LEON. Compendium of physical activities: an update of activity codes and MET intensities. *Med. Sci. Sports Exerc.*, Vol. 32, No. 9, Suppl., pp. S498–S516, 2000. We provide an updated version of the Compendium of Physical Activities, a coding scheme that classifies specific physical activity (PA) by rate of energy expenditure. It was developed to enhance the comparability of results across studies using self-reports of PA. The Compendium coding scheme links a five-digit code that describes physical activities by major headings (e.g., occupation, transportation, etc.) and specific activities within each major heading with its intensity, defined as the ratio of work metabolic rate to a standard resting metabolic rate (MET). Energy expenditure in MET-minutes, MET-hours, kcal, or kcal per kilogram body weight can be estimated for specific activities by type or MET intensity. Additions to the Compendium were obtained from studies describing daily PA patterns of adults and studies measuring the energy cost of specific physical activities in field settings. The updated version includes two new major headings of volunteer and religious activities, extends the number of specific activities from 477 to 605, and provides updated MET intensity levels for selected activities. **Key Words:** EXERCISE, EXERTION, ENERGY EXPENDITURE

The Compendium of Physical Activities was developed to facilitate the coding of physical activities (PAs) obtained from PA records, logs, and surveys and to promote comparison of coded physical activity intensity levels across observational studies (1). The Compendium provides a coding scheme that links a five-digit code, representing the specific activities performed in various settings, with their respective metabolic equivalent (MET) intensity levels. Using the definition for a MET as the ratio of work metabolic rate to a standard resting metabolic rate of 1.0 ($4.184 \text{ kJ} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$), 1 MET is considered a resting metabolic rate obtained during quiet sitting. Activities are listed in the Compendium as multiples of the resting MET level and range from 0.9 (sleeping) to 18 METs (running at 10.9 mph).

We provide an update of the initial Compendium of Physical Activities, developed in 1989 and published in 1993. The updated Compendium reflects additional activities identified by researchers in the past 10 years and pre-

sents measured MET intensities for some activities in which METs were estimated from similar activities. The updated Compendium also reflects public health interests in evaluating the contributions of various types of physical activity to daily energy expenditure by providing additional categories for activities done during the day.

The initial Compendium has received widespread acceptance among PA specialists in the exercise science and public health fields. For example, in the United States, the coding scheme has been used to identify MET intensities for PAs in the third National Health and Nutrition Examination Survey (6), the 1991 National Health Interview Survey (11), the Paffenbarger College Alumni Study (15), and to evaluate the accuracy of the Minnesota Leisure Time Physical Activity Questionnaire (MN-LTPA) (26). Internationally, the Compendium has been used to identify MET intensities for activities listed in the MONICA Optional Survey of Physical Activity (MOSPA) (12). The coding scheme and MET intensities for activities listed in the Compendium of Physical Activities also have been published as an appendix or abstracted as a chart in several books (18–20,34).

In their landmark 1995 paper that presents the recommendation of the Centers for Disease Control and Prevention

(CDC) and the American College of Sports Medicine (ACSM) for adults to accumulate at least 30 min of regular, moderate-intensity physical activity on most days of the week, Pate et al. (23) cite the Compendium as a reference that researchers, clinicians, and practitioners can use to identify examples of moderate intensity physical activities.

The updated Compendium includes two additional major headings and 129 new specific activities. It also provides modifications of 94 codes in the 1993 Compendium, adding or deleting specific activities or providing updated MET levels. The new major headings and most of the specific activities were identified from studies using PA records to identify daily PA habits among adults (2,3) and from personal communications from other investigators who reported activities omitted from the initial Compendium. Updated MET levels were obtained from laboratory and field studies designed to measure the energy cost for specific PAs (4,7-9,16,17,21,22,24,27-30,32,35,37). We have also clarified the meaning of the letter T followed by three numbers (i.e., T010) as activities and their associated MET levels defined by Dr. Henry Taylor for the MN-LTPA (31). The letter T is now replaced by the words Taylor Code and followed by the MN-LTPA survey item number (e.g., Taylor Code 010). In this paper we present the updated Compendium of Physical Activities (Appendix 1) and recommendations for its implementation to identify PA habits using PA records.

CODING SCHEME

Activity coding. The reader is referred to the 1993 published version of the Compendium (1) for a detailed description of the coding scheme, organization, and methods used to calculate the energy cost of PAs. Briefly, the Compendium is organized to maximize flexibility in coding, data entry, and interpretation of energy cost for each class and type of PA. The coding scheme employs a five-digit code to categorize activities by their major purpose or heading (first two digits), specific activity (last three digits), and intensity (separate two- or three-digit column). For example, the five-digit code, 06100, is defined as follows:

Major Heading	Specific Activity	MET intensity
06	100	5.0
Home Repair	Cleaning Gutters	

Based on the model proposed by Pate et al. (23) for classifying the MET intensity of PAs (light, < 3 METs; moderate, 3-6 METs; vigorous, > 6 METs), the activity code 06100 is classified as moderate intensity.

Major headings. Two additional major headings were added to the updated Compendium of Physical Activities for a total of 21 major types of PAs (Table 1).

The two new categories, religious activities and volunteer activities, were identified from the use of PA records in the Cross-Cultural Activity Participation Study (CAPS) (2). CAPS was an observational study of PA habits among African American, Native American, and Caucasian

TABLE 1. Major types of activities in Version 2 of the Compendium of Physical Activities; new major headings are italicized.

01-Bicycling	08-Lawn and Garden	15-Sports
02-Conditioning Exercises	09-Miscellaneous	16-Transportation
03-Dancing	10-Music Playing	17-Walking
04-Fishing and Hunting	11-Occupation	18-Water Activities
05-Home Activities	12-Running	19-Winter Activities
06-Home Repair	13-Self Care	20-Religious Activities
07-Inactivity	14-Sexual Activity	21-Volunteer Activities

women, ages 40 yr and older. The new categories include 43 specific activities that are culturally and socially relevant among ethnic minorities and/or older adults. Religious and ceremonial activities play a central role in the lives of many older adults, especially among ethnic minority groups (5). Among retired people and others not employed in occupational settings, volunteer activities also commonly represent an important contribution to daily energy expenditure.

Specific activities. The updated Compendium contains 605 specific activities, including 129 new activities added to the 1993 Compendium. Modifications were also made to 94 PAs listed in the 1993 Compendium, which involved adding or deleting specific activities associated with each code. For example, for the code 08030, lawn and garden activities, the phrase "wheelbarrow chores" was added to the 1993 Compendium's specifications of clearing land and hauling branches. In other cases, activities were removed from existing codes and new codes were developed if the removed activities had a different MET level or were qualitatively different from other specific activities listed for the code. For example, the 1993 Compendium listed mopping as a specific activity in code 05020, home activities. However, Emplainscourt (7) measured the MET intensity for mopping as 3.5 METs and the MET intensity for the other activities in the code was listed as 3.0 METs. Thus, mopping was deleted from code 05020 and a new code, 05021, was created. Another example is watching television. In 1993, watching television was coded as 07010 (reclining) or 07020 (sitting) and was grouped with other specific activities that involved sitting quietly (i.e., riding in a car, listening to a lecture or to music) or reclining and doing nothing. Because watching television is a sedentary but modifiable leisure time activity that may be related to the increased prevalence of physical inactivity (36), overweight, and obesity in the United States (13,14), the authors felt that watching television should have a separate code to monitor time spent in this activity. In the updated Compendium, the codes 07010 and 07020 refer to watching television only. New codes have been added for the remaining inactive reclining (07011) and sitting (07021) activities. Table 2 presents the new five-digit codes, and Table 3 presents the modifications for existing codes as incorporated in the updated Compendium.

Intensity of activities. All activities are assigned an intensity level based on the rate of energy expenditure expressed as METs. Intensity of activities in the Compendium is classified as multiples of 1 MET or as the ratio of the associated metabolic rate for the specific activity divided

TABLE 2. New codes in Version 2 of the Compendium of Physical Activities.

Major Heading	Code Number	METs	Example
Bicycling	01015	8.0	Bicycling, general
Conditioning Exercises	02101	2.5	Mild stretching
Dancing	03016	8.5	Aerobic, step, with 6–8 inch step
	03017	10.0	Aerobic, step, with 10–12 inch step
	03031	4.5	Disco, folk, square, line dancing, Irish step dancing, polka, contra, and country dancing.
	03050	5.5	Anishinaabe Jingle Dancing or other traditional American Indian dancing
Home Activities	05021	3.5	Mopping
	05025	2.5	Multiple household tasks all at once, light effort
	05026	3.5	Multiple household tasks all at once, moderate effort
	05027	4.0	Multiple household tasks all at once, vigorous effort
	05043	3.5	Vacuuming
	05045	6.0	Butchering animals
	05053	2.5	Feeding animals
	05148	2.5	Watering plants
	05149	2.5	Building a fire inside
	05181	3.0	Carrying small children
	05187	4.0	Elder care, disabled adults, only active periods
	05188	1.5	Reclining with baby
	05190	2.5	Sitting, playing with animals, light, only active periods
	05191	2.8	Standing, playing with animals, light, only active periods
	05192	2.8	Walk/run, playing with animals, light, only active periods
	05193	4.0	Walk/run, playing with animals, moderate, only active periods
	05194	5.0	Walk/run, playing with animals, vigorous, only active periods
	05195	3.5	Standing—bathing dog
Lawn and Garden:	06165	4.5	Painting (Taylor Code 630)
Inactivity	07011	1.0	Lying quietly, done nothing, lying in bed awake, listening to music (not talking or reading)
	07021	1.0	Sitting quietly, sitting smoking, listening to music (not talking or reading), watching a movie in a theater
Lawn and Garden:	08125	4.5	Mowing lawn, power mower (Taylor Code 590)
	08165	4.0	Raking lawn (Taylor Code 600)
	04246	3.0	Picking fruit off trees, picking fruits/vegetables, moderate effort
Miscellaneous	09071	2.0	Standing—miscellaneous
	09075	1.5	Sitting—arts and crafts, light effort
	09080	2.0	Sitting—arts and crafts, moderate effort
	09085	1.8	Standing—arts and crafts, light effort
	09090	3.0	Standing—arts and crafts, moderate effort
	09095	3.5	Standing—arts and crafts, vigorous effort
	09100	1.5	Retreat/family reunion activities involving sitting, relaxing, talking, eating
	09105	2.0	Tourist/traveling/vacation involving walking and riding
	09110	2.5	Camping involving standing, walking, sitting, light-to-moderate effort
	09115	1.5	Sitting at a sporting event, spectator
Occupation	11015	2.5	Bakery, light effort
	11121	3.0	Custodial, buffing the floor with an electric buffer
	11122	2.5	Custodial, cleaning sink and toilet, light effort
	11123	2.5	Custodial, dusting, light effort
	11124	4.0	Custodial, feathering arena floor, moderate effort
	11125	3.5	Custodial, general cleaning, moderate effort
	11126	3.5	Custodial, mopping, moderate effort
	11127	3.0	Custodial, take out trash, moderate effort
	11128	2.5	Custodial, vacuuming, light effort
	11129	3.0	Custodial, vacuuming, moderate effort
	11151	4.0	Farming, chasing cattle or other livestock on horseback, moderate effort
	11152	2.0	Farming, chasing cattle or other livestock, driving, light effort
	11191	6.0	Farming, taking care of animals (grooming, brushing, shearing sheep, assisting with birthing, medical care, branding)
	11495	12.0	Skin diving or SCUBA diving as a frogman (Navy Seal)
	11615	4.0	Lifting items continuously, 10–20 lbs, with limited walking or resting
	11765	3.5	Tailoring, weaving
	11796	3.0	Walking, gathering things at work, ready to leave
	11805	4.0	Walking, pushing a wheelchair
Running	12027	4.5	Jogging on a mini-trampoline
Self Care	13036	1.0	Taking medication, sitting or standing
	13045	2.5	Hairstyling
	13046	1.0	Having hair or nails done by someone else, sitting
Sports	15265	4.5	Golf, walking and carrying clubs
	15285	4.3	Golf, walking and pulling clubs
	15591	12.5	Roller blading (in-line skating)
	15685	5.0	Tennis, doubles play
	15711	8.0	Volleyball, competitive play in a gymnasium
	15732	4.0	Track and field (shot, discus, hammer throw)
	15733	6.0	Track and field (high jump, long jump, triple jump, javelin, pole vault)
	15734	10.0	Track and field (steeplechase, hurdles)
Transportation	16015	1.0	Riding in a car or truck
	16016	1.0	Riding in a bus
Walking	17031	3.0	Loading/unloading a car
	17085	2.5	Bird watching
	17105	4.0	Pushing a wheelchair, non occupational setting
	17151	2.0	Walking, less than 2.0 mph, level: ground, strolling, very slow
	17152	2.5	Walking, 2.0 mph, level, slow pace, firm surface
	17161	2.5	Walking from house to car or bus, from car or bus to go places, from car or bus to and from the work site
	17162	2.5	Walking to neighbor's house or family's house for social reasons
	17165	3.0	Walking the dog
	17231	8.0	Walking, 5.0 mph
	17280	2.5	Walking to and from an outhouse
Water Activities	18025	3.3	Canoeing, harvesting wild rice, knocking rice off the stalks
	18355	4.0	Water aerobics, water calisthenics
	18366	8.0	Water jogging
Religious Activities	20000–20100		Addition of 24 new codes and description of activities
Volunteer Activities	21000–21070		Addition of 19 new codes and description of activities

TABLE 3. Modified codes in Version 2 of the Compendium of Physical Activities.

Major Heading	Code Number	Modification Made	
Bicycling	01010	Removed word "general" from the description of activities	
Conditioning Exercises	02010	Changed MET level from 5.0 to 7.0	
	02020	Added "jumping jacks" to the description of activities	
	02030	Changed MET level from 4.5 to 3.5	
	02040	Added "including some aerobic movement with minimal rest" to the description of activities	
	02065	Changed MET level from 6.0 to 9.0	
	02070	Changed MET level from 9.5 to 7.0	
	02080	Changed MET level from 9.5 to 7.0	
	02090	Added "jazzercise" to the description of activities	
	02100	Changed MET level from 4.0 to 2.5	
	Dancing	03010	Changed MET level from 6.0 to 4.8; Added "jazz, tap, jitterbug" to the description of activities
03015		Changed MET level from 6.0 to 6.5	
03025		Added "Greek, Middle Eastern, hula, flamenco, belly, and swing dancing" to the description of activities	
03030		Changed description of activities to "ballroom dancing fast (Taylor Code 125)"	
03040		Added "samba, tango, 19 th Century, mambo, chacha" to the description of activities	
Fishing and Hunting	04001	Changed MET level from 4.0 to 3.0	
	04020	Changed MET level from 5.0 to 4.0	
Home Activities	05010	Changed MET level from 2.5 to 3.3	
	05020	Changed MET level from 4.5 to 3.0; Removed "mopping" from the description of activities	
	05030	Changed MET level from 3.5 to 3.0	
	05040	Removed "vacuuming" and "moderate effort" from the description of activities	
	05042	Changed MET level from 2.3 to 2.5	
	05050	Changed MET level from 2.5 to 2.0; Added "manual appliances" to the description of activities	
	05055	Added "carrying groceries" to the description of activities	
	05056	Changed MET level from 8.0 to 7.5	
	05060	Changed MET level from 3.5 to 2.3; Changed description of activities to "food shopping with or without a grocery cart, standing or walking"	
	05066	Deleted this category for "Walking-shopping (non-grocery) shopping"	
	05120	Added, "carrying boxes"	
	05130	Changed MET level from 5.5 to 3.8; Added activities "scrubbing bathroom, bathtub" to description of activities	
	05145	Deleted this category for "moving household items, carrying boxes"	
	05160	Changed MET level from 2.5 to 2.0	
	05170	Added "only active periods" to the description of activities	
	05171	Added "only active periods" to the description of activities	
	05175	Added "only active periods" to the description of activities	
05180	Added "only active periods" to the description of activities		
05185	Changed MET level from 3.0 to 2.5; Added "general" to the description of activities		
05186	Changed MET level from 3.5 to 3.0		
Home Repair	06020	Changed MET level from 4.5 to 4.0	
	06050	Added "building a fence" to the description of activities	
	06140	Added "repairing appliances" to the description of activities	
	06230	Added "painting fence" to the description of activities	
	07010	Changed MET level from 0.9 to 1.0; Change description of activities to "lying quietly, watching television"	
Inactivity	07020	Changed description of activities to "Sitting quietly and watching television"	
	08030	Added "wheelbarrow chores" to the description of activities	
Lawn and Garden	08050	Added "composting" to the description of activities	
	08060	Removed "(see occupation, shoveling)" and added "chain saw"	
	08120	Changed MET level from 4.5 to 5.5; Removed "(Taylor Code 610)"	
	08140	Changed MET level from 4.0 to 4.5	
	08160	Changed MET level from 4.0 to 4.3; Removed "(Taylor Code 600)"	
	08215	Added "Using leaf blower, edger" to description of activities	
	08245	Changed MET level from 5.0 to 4.0	
	08250	Added "picking flowers or vegetables" to description of activities	
	09020	Change MET level from 2.0 to 2.3; Add "duplicating machine" to description of activities	
	09040	Added "typing" to description of activities	
Occupation	11010	Added "moderate effort" to the description of activities	
	11070	Added "making bed (nursing)" to the description of activities	
	11140	Added "vigorous effort" to the description of activities	
	11150	Added "(walking), moderate effort" to the description of activities	
	11160	Added "cutting hay, irrigation work" to the description of activities	
	11190	Added "horses" to the description of activities	
	11200	Added "cleaning corral or barn, vigorous effort" to the description of activities	
	11220	Added "light effort" to the description of activities	
	11230	Added "moderate effort" to the description of activities	
	11528	Changed MET level from 8.0 to 4.0	
	11580	Added "sitting, reading, driving at work" to the description of activities	
	11585	Added "eating at a business meeting" to the description of activities	
	11590	Added "teaching stretching or yoga"	
	11600	Changed MET level from 2.5 to 2.3; Changed the description of activities to read "standing, light (bartending, store clerk, assembling, filing, duplicating, putting up a Christmas tree), standing and talking at work, changing clothes when teaching physical education"	
	11620	Added "intermittent" to the description of activities	
	Running	12160	Replaced "running" with "jogging"; Changed to code 12025
		12190	Removed "wheelchair wheeling"
Self Care	13050	Changed MET level from 4.0 to 2.0	
	15250	Changed MET level from 3.5 to 8.0	
	15260	Deleted this code for the Taylor Code 090 for "golf, carrying clubs"	
	15280	Deleted this code for the Taylor Code 080 for "golf, pulling clubs"	
	15380	Added "grooming horse" to the description of activities	
	15680	Represents Taylor Code 430 intensity level for doubles tennis	
	15710	Represents Taylor Code 400 intensity level for competitive volleyball	
	17010	Removed "general" from the description of activities	
Walking	17100	Added "or walk with children" to the description of activities	
	17140	Changed the MET level from 4.0 to 5.0	
	17150	Changed description of activities to "household walking"	
	17160	Changed the MET level from 2.5 to 3.5 and changed description of activities to "walking for pleasure (Taylor Code 010)"	
	17180	Changed the MET level from 3.0 to 2.8	
	17190	Changed the MET level from 3.5 to 3.3	
	17200	Changed the MET level from 4.0 to 3.8; Added "walking for exercise" to the description of activities	
	17220	Changed MET level from 4.0 to 5.0	
	17230	Changed MET level from 4.5 to 6.3	
	17250	Removed "walking the dog" from the description of activities	
	Water Activities	18170	Changed code number to Occupational, 11495
		18240	Changed MET level from 8.0 to 7.0
18250		Changed MET level from 8.0 to 7.0	

by a standard RMR. In the 1993 Compendium, MET values were assigned to each activity based on the "best representation" of an intensity level from published lists and selected unpublished data (1). For activities not in original lists or in other unpublished reports of the energy cost of physical activities, data were obtained from published literature and assigned a measured MET value or was estimated from similar activities with a known MET value (1).

MET levels for 42 activities in the updated Compendium were changed based on published and unpublished studies that measured the energy cost of PAs (4,7-9,16,17, 21,22,24,27-30,32,35,37). Since the publication of the 1995 Pate et al. (23) moderate activity recommendation, there has been widespread interest among health educators, clinicians, public health specialists, and fitness professionals to recommend types of activities that are classified as moderate intensity. There was some concern, however, that the MET levels for many household, lawn and garden, walking, and some occupational activities frequently performed by older adults, people of color, and women of all ages had not been objectively measured, but had been assigned estimated MET intensities. Thus, in 1997-1998, a series of studies were funded by the International Life Sciences Institute Research Foundation to measure the energy cost of selected household, lawn and garden, walking, recreational, and occupational activities using indirect calorimetry methods in laboratory and field settings (4,9,29,30,35). Doctoral dissertations and other research studies have also focused on measuring the MET intensities of household, lawn and garden, cultural, and custodial activities (8,9,27,28).

Because changes in MET intensities for selected activities may change the energy cost of PA, investigators using the 1993 Compendium in cohort studies may wish to continue using the 1993 Compendium to compute the energy cost of activities. However, for newer activities, codes in the 2000 Compendium are appropriate for use.

As in the 1993 Compendium of Physical Activities, the updated Compendium provides data for adults without handicaps or other conditions that would significantly alter their mechanical or metabolic efficiency. Also, a study is underway at the University of North Carolina at Chapel Hill to measure the energy cost of individual and group PAs among youth, ages 8-18 yr (J. A. Harrell, School of Nursing, University of North Carolina at Chapel Hill, 1999). Another study is underway at the Edward Hines Jr. VA Hospital to measure the energy costs of physical activities in adults with spinal cord injuries (W. E. Langbein and E. Collins, Hine Hospital, Maywood, IL, 1999). When completed, the projects will provide compendiums of the PAs measured in the studies.

Calculation of energy cost. Methods used to calculate the energy cost of activities in the 1993 Compendium were explained in detail by Ainsworth et al. (1). There has been concern that the absolute MET intensities presented in the Compendium may be inaccurate for people of different body mass and body fat percentage (10,27). For weight-bearing activities, Schmitz et al. (27) and Howell et al. (10) showed that the energy cost of activity was higher among

heavier individuals than indicated by the Compendium's MET intensities. For these individuals, use of the MET intensities in the Compendium would underestimate the actual energy cost of weight bearing activity. The opposite pattern would be observed for non-weight-bearing activities. Schmitz (27) discusses these concerns in relation to energy expended during household chores among obese and lean women. Similar observations may apply to individuals who differ in age, cardiorespiratory fitness levels, and mechanical efficiency and when activities are performed in varied geographic and environmental conditions (33). It should be emphasized that the Compendium was developed to facilitate the coding of PAs and to compare coding across studies. It does not take into account individual differences that may alter the energy cost of movement. Thus, a correction factor may be needed to adjust for individual differences when estimating the energy cost of PA in individuals; but no such general correction is available at this time.

Use of the Compendium in PA validation studies.

The Compendium facilitates the use of PA records to record the type, intensity, and duration of activities in a systematic manner. PA records and the Compendium have been used to validate PA surveys commonly used in observational and clinical studies (25). In 1993, we presented a sample PA record for use with the Compendium (1). We have since developed an updated PA record that is easy to use and code and provides a detailed explanation for the use of PA records and the Compendium in PA validation studies.

DISCUSSION AND LIMITATIONS

The value and limitations of using the Compendium of Physical Activities to determine the energy cost of PA in adults was previously discussed in the 1993 publication (1). Because the MET levels presented in the Compendium are based on the energy cost of actual movement, investigators should remind participants to recall only the time spent in movement when using the Compendium to estimate the energy cost of activities. It should also be stressed that the Compendium was not developed to determine the precise energy cost of PA within individuals, but instead to provide an activity classification system that standardizes the MET intensities of PAs used in survey research. This limits the use of the Compendium in estimating the energy cost of PA in individuals in ways that account for differences in body mass, adiposity, age, sex, efficiency of movement, geographic and environmental conditions in which the activities are performed. Thus, individual differences in energy expenditure for the same activity can be large and the true energy cost for a person may or may not be close to the stated mean MET level as presented in the Compendium.

As was true with the original Compendium, the updated version contains specific activities in which the MET values were not derived from indirect calorimetry; however, many codes have been updated using measured MET values. The updated Compendium still has some codes in which MET values were estimated from activities having similar

movement patterns. Therefore, these estimates may have ill-defined confidence limits around the mean MET values.

SUMMARY

The updated version of the 1993 Compendium of Physical Activities includes new major headings for religious and volunteer activities, new five-digit codes for 129 specific activities, and modifications to codes for 94 specific activities. Despite its known limitations, the Compendium has proven useful in coding physical activity surveys or records and in providing examples of activities within broad intensity ranges for use for PA counseling in research, education, and clinic settings. However, additional methods are needed to account for differences in individual characteristics that may alter the energy costs of physical activities.

NOTES

An unpublished edition of the Compendium was developed in 2000 to track changes from the first edition and to explore possible changes in future editions. The unpublished edition includes a two-digit number that identifies the version of the Compendium. The version number should make it simple to make corrections and additions to activity codes and their intensities while retaining the ability to code questionnaires consistently with questionnaires collected earlier on the same person. A copy of the unpublished tracking

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version of the Compendium may be obtained from Dr. Barbara Ainsworth.

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CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
01009	8.5	bicycling,	bicycling, BMX or mountain
01010	4.0	bicycling,	bicycling, <10 mph, leisure, to work or for pleasure (Taylor Code 115)
01015	8.0	bicycling,	bicycling, general
01020	6.0	bicycling,	bicycling, 10-11.9 mph, leisure, slow, light effort
01030	8.0	bicycling,	bicycling, 12-13.9 mph, leisure, moderate effort
01040	10.0	bicycling,	bicycling, 14-15.9 mph, racing or leisure, fast, vigorous effort
01050	12.0	bicycling,	bicycling, 16-19 mph, racing/not drafting or >19 mph drafting, very fast, racing general
01060	16.0	bicycling,	bicycling, >20 mph, racing, not drafting
01070	5.0	bicycling,	unicycling
02010	7.0	conditioning exercise,	bicycling, stationary, general
02011	3.0	conditioning exercise,	bicycling, stationary, 50 watts, very light effort
02012	5.5	conditioning exercise,	bicycling, stationary, 100 watts, light effort
02013	7.0	conditioning exercise,	bicycling, stationary, 150 watts, moderate effort
02014	10.5	conditioning exercise,	bicycling, stationary, 200 watts, vigorous effort
02015	12.5	conditioning exercise,	bicycling, stationary, 250 watts, very vigorous effort
02020	8.0	conditioning exercise,	calisthenics (e.g. pushups, situps, pullups, jumping jacks), heavy, vigorous effort
02030	3.5	conditioning exercise,	calisthenics, home exercise, light or moderate effort, general (example: back exercises), going up & down from floor (Taylor Code 150)
02040	8.0	conditioning exercise,	circuit training, including some aerobic movement with minimal rest, general
02050	6.0	conditioning exercise,	weight lifting (free weight, nautilus or universal-type), power lifting or body building, vigorous effort (Taylor Code 210)
02060	5.5	conditioning exercise,	health club exercise, general (Taylor Code 160)
02065	9.0	conditioning exercise,	stair-treadmill ergometer, general
02070	7.0	conditioning exercise,	rowing, stationary ergometer, general
02071	3.5	conditioning exercise,	rowing, stationary, 50 watts, light effort
02072	7.0	conditioning exercise,	rowing, stationary, 100 watts, moderate effort
02073	8.5	conditioning exercise,	rowing, stationary, 150 watts, vigorous effort
02074	12.0	conditioning exercise,	rowing, stationary, 200 watts, very vigorous effort
02080	7.0	conditioning exercise,	ski machine, general
02090	6.0	conditioning exercise,	slimnastics, jazzercise
02100	2.5	conditioning exercise,	stretching, hatha yoga
02101	2.5	conditioning exercise,	mild stretching
02110	6.0	conditioning exercise,	teaching aerobic exercise class
02120	4.0	conditioning exercise,	water aerobics, water calisthenics
02130	3.0	conditioning exercise,	weight lifting (free, nautilus or universal-type), light or moderate effort, light workout, general
02135	1.0	conditioning exercise,	whirlpool, sitting
03010	4.8	dancing,	ballet or modern, twist, jazz, tap, jitterbug
03015	6.5	dancing,	aerobic, general
03016	8.5	dancing,	aerobic, step, with 6 – 8 inch step
03017	10.0	dancing,	aerobic, step, with 10 – 12 inch step
03020	5.0	dancing,	aerobic, low impact
03021	7.0	dancing,	aerobic, high impact
03025	4.5	dancing,	general, Greek, Middle Eastern, hula, flamenco, belly, swing
03030	5.5	dancing,	ballroom, fast (Taylor Code 125)
03031	4.5	dancing,	ballroom, fast (disco, folk, square), line dancing, Irish step dancing, polka, contra, country
03040	3.0	dancing,	ballroom, slow (e.g. waltz, foxtrot, slow dancing), samba, tango, 19th C, mambo, chacha
03050	5.5	dancing,	Anishinaabe Jingle Dancing or other traditional American Indian dancing
04001	3.0	fishing and hunting,	fishing, general

Figure 1—Appendix 1. Updated Compendium of Physical Activities.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
04010	4.0	fishing and hunting,	digging worms, with shovel
04020	4.0	fishing and hunting,	fishing from river bank and walking
04030	2.5	fishing and hunting,	fishing from boat, sitting
04040	3.5	fishing and hunting,	fishing from river bank, standing (Taylor Code 660)
04050	6.0	fishing and hunting,	fishing in stream, in waders (Taylor Code 670)
04060	2.0	fishing and hunting,	fishing, ice, sitting
04070	2.5	fishing and hunting,	hunting, bow and arrow or crossbow
04080	6.0	fishing and hunting,	hunting, deer, elk, large game (Taylor Code 170)
04090	2.5	fishing and hunting,	hunting, duck, wading
04100	5.0	fishing and hunting,	hunting, general
04110	6.0	fishing and hunting,	hunting, pheasants or grouse (Taylor Code 680)
04120	5.0	fishing and hunting,	hunting, rabbit, squirrel, prairie chick, raccoon, small game (Taylor Code 690)
04130	2.5	fishing and hunting,	pistol shooting or trap shooting, standing
05010	3.3	home activities,	carpet sweeping, sweeping floors
05020	3.0	home activities,	cleaning, heavy or major (e.g. wash car, wash windows, clean garage), vigorous effort
05021	3.5	home activities,	mopping
05025	2.5	home activities,	multiple household tasks all at once, light effort
05026	3.5	home activities,	multiple household tasks all at once, moderate effort
05027	4.0	home activities,	multiple household tasks all at once, vigorous effort
05030	3.0	home activities,	cleaning, house or cabin, general
05040	2.5	home activities,	cleaning, light (dusting, straightening up, changing linen, carrying out trash)
05041	2.3	home activities,	wash dishes - standing or in general (not broken into stand/walk components)
05042	2.5	home activities,	wash dishes; clearing dishes from table - walking
05043	3.5	home activities,	vacuuming
05045	6.0	home activities,	butchering animals
05050	2.0	home activities,	cooking or food preparation - standing or sitting or in general (not broken into stand/walk components), manual appliances
05051	2.5	home activities,	serving food, setting table - implied walking or standing
05052	2.5	home activities,	cooking or food preparation - walking
05053	2.5	home activities,	feeding animals
05055	2.5	home activities,	putting away groceries (e.g. carrying groceries, shopping without a grocery cart), carrying packages
05056	7.5	home activities,	carrying groceries upstairs
05057	3.0	home activities,	cooking Indian bread on an outside stove
05060	2.3	home activities,	food shopping with or without a grocery cart, standing or walking
05065	2.3	home activities,	non-food shopping, standing or walking
05070	2.3	home activities,	ironing
05080	1.5	home activities,	sitting - knitting, sewing, lt. wrapping (presents)
05090	2.0	home activities,	implied standing - laundry, fold or hang clothes, put clothes in washer or dryer, packing suitcase
05095	2.3	home activities,	implied walking - putting away clothes, gathering clothes to pack, putting away laundry
05100	2.0	home activities,	making bed
05110	5.0	home activities,	maple syruping/sugar bushing (including carrying buckets, carrying wood)
05120	6.0	home activities,	moving furniture, household items, carrying boxes
05130	3.8	home activities,	scrubbing floors, on hands and knees, scrubbing bathroom, bathtub
05140	4.0	home activities,	sweeping garage, sidewalk or outside of house
05146	3.5	home activities,	standing - packing/unpacking boxes, occasional lifting of household items light - moderate effort
05147	3.0	home activities,	implied walking - putting away household items - moderate effort
05148	2.5	home activities,	watering plants
05149	2.5	home activities,	building a fire inside
05150	9.0	home activities,	moving household items upstairs, carrying boxes or furniture
05160	2.0	home activities,	standing - light (pump gas, change light bulb, etc.)
05165	3.0	home activities,	walking - light, non-cleaning (readying to leave, shut/lock doors, close windows, etc.)

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
05170	2.5	home activities,	sitting - playing with child(ren) - light, only active periods
05171	2.8	home activities,	standing - playing with child(ren) - light, only active periods
05175	4.0	home activities,	walk/run - playing with child(ren) - moderate, only active periods
05180	5.0	home activities,	walk/run - playing with child(ren) - vigorous, only active periods
05181	3.0	home activities,	carrying small children
05185	2.5	home activities,	child care: sitting/kneeling - dressing, bathing, grooming, feeding, occasional lifting of child-light effort, general
05186	3.0	home activities,	child care: standing - dressing, bathing, grooming, feeding, occasional lifting of child-light effort
05187	4.0	home activities,	elder care, disabled adult, only active periods
05188	1.5	home activities,	reclining with baby
05190	2.5	home activities,	sit, playing with animals, light, only active periods
05191	2.8	home activities,	stand, playing with animals, light, only active periods
05192	2.8	home activities,	walk/run, playing with animals, light, only active periods
05193	4.0	home activities,	walk/run, playing with animals, moderate, only active periods
05194	5.0	home activities,	walk/run, playing with animals, vigorous, only active periods
05195	3.5	home activities,	standing - bathing dog
06010	3.0	home repair,	airplane repair
06020	4.0	home repair,	automobile body work
06030	3.0	home repair,	automobile repair
06040	3.0	home repair,	carpentry, general, workshop (Taylor Code 620)
06050	6.0	home repair,	carpentry, outside house, installing rain gutters, building a fence, (Taylor Code 640)
06060	4.5	home repair,	carpentry, finishing or refinishing cabinets or furniture
06070	7.5	home repair,	carpentry, sawing hardwood
06080	5.0	home repair,	caulking, chinking log cabin
06090	4.5	home repair,	caulking, except log cabin
06100	5.0	home repair,	cleaning gutters
06110	5.0	home repair,	excavating garage
06120	5.0	home repair,	hanging storm windows
06130	4.5	home repair,	laying or removing carpet
06140	4.5	home repair,	laying tile or linoleum, repairing appliances
06150	5.0	home repair,	painting, outside home (Taylor Code 650)
06160	3.0	home repair,	painting, papering, plastering, scraping, inside house, hanging sheet rock, remodeling
06165	4.5	home repair,	painting, (Taylor Code 630)
06170	3.0	home repair,	put on and removal of tarp - sailboat
06180	6.0	home repair,	roofing
06190	4.5	home repair,	sanding floors with a power sander
06200	4.5	home repair,	scraping and painting sailboat or powerboat
06210	5.0	home repair,	spreading dirt with a shovel
06220	4.5	home repair,	washing and waxing hull of sailboat, car, powerboat, airplane
06230	4.5	home repair,	washing fence, painting fence
06240	3.0	home repair,	wiring, plumbing
07010	1.0	inactivity, quiet	lying quietly and watching television
07011	1.0	inactivity, quiet	lying quietly, doing nothing, lying in bed awake, listening to music (not talking or reading)
07020	1.0	inactivity, quiet	sitting quietly and watching television
07021	1.0	inactivity, quiet	sitting quietly, sitting smoking, listening to music (not talking or reading), watching a movie in a theater
07030	0.9	inactivity, quiet	sleeping
07040	1.2	inactivity, quiet	standing quietly (standing in a line)
07050	1.0	inactivity, light	reclining - writing
07060	1.0	inactivity, light	reclining - talking or talking on phone
07070	1.0	inactivity, light	reclining - reading
07075	1.0	inactivity, light	meditating
08010	5.0	lawn and garden,	carrying, loading or stacking wood, loading/unloading or carrying lumber

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
08020	6.0	lawn and garden,	chopping wood, splitting logs
08030	5.0	lawn and garden,	clearing land, hauling branches, wheelbarrow chores
08040	5.0	lawn and garden,	digging sandbox
08050	5.0	lawn and garden,	digging, spading, filling garden, composting, (Taylor Code 590)
08060	6.0	lawn and garden,	gardening with heavy power tools, tilling a garden, chain saw
08080	5.0	lawn and garden,	laying crushed rock
08090	5.0	lawn and garden,	laying sod
08095	5.5	lawn and garden,	mowing lawn, general
08100	2.5	lawn and garden,	mowing lawn, riding mower (Taylor Code 550)
08110	6.0	lawn and garden,	mowing lawn, walk, hand mower (Taylor Code 570)
08120	5.5	lawn and garden,	mowing lawn, walk, power mower
08125	4.5	lawn and garden,	mowing lawn, power mower (Taylor Code 590)
08130	4.5	lawn and garden,	operating snow blower, walking
08140	4.5	lawn and garden,	planting seedlings, shrubs
08150	4.5	lawn and garden,	planting trees
08160	4.3	lawn and garden,	raking lawn
08165	4.0	lawn and garden,	raking lawn (Taylor Code 600)
08170	4.0	lawn and garden,	raking roof with snow rake
08180	3.0	lawn and garden,	riding snow blower
08190	4.0	lawn and garden,	sacking grass, leaves
08200	6.0	lawn and garden,	shoveling snow, by hand (Taylor Code 610)
08210	4.5	lawn and garden,	trimming shrubs or trees, manual cutter
08215	3.5	lawn and garden,	trimming shrubs or trees, power cutter, using leaf blower, edger
08220	2.5	lawn and garden,	walking, applying fertilizer or seeding a lawn
08230	1.5	lawn and garden,	watering lawn or garden, standing or walking
08240	4.5	lawn and garden,	weeding, cultivating garden (Taylor Code 580)
08245	4.0	lawn and garden,	gardening, general
08246	3.0	lawn and garden,	picking fruit off trees, picking fruits/vegetables, moderate effort
08250	3.0	lawn and garden,	implied walking/standing - picking up yard, light, picking flowers or vegetables
08251	3.0	lawn and garden,	walking, gathering gardening tools
09010	1.5	miscellaneous,	sitting - card playing, playing board games
09020	2.3	miscellaneous,	standing - drawing (writing), casino gambling, duplicating machine
09030	1.3	miscellaneous,	sitting - reading, book, newspaper, etc.
09040	1.8	miscellaneous,	sitting - writing, desk work, typing
09050	1.8	miscellaneous,	standing - talking or talking on the phone
09055	1.5	miscellaneous,	sitting - talking or talking on the phone
09060	1.8	miscellaneous,	sitting - studying, general, including reading and/or writing
09065	1.8	miscellaneous,	sitting - in class, general, including note-taking or class discussion
09070	1.8	miscellaneous,	standing - reading
09071	2.0	miscellaneous,	standing - miscellaneous
09075	1.5	miscellaneous,	sitting - arts and crafts, light effort
09080	2.0	miscellaneous,	standing - arts and crafts, moderate effort
09085	1.8	miscellaneous,	standing - arts and crafts, light effort
09090	3.0	miscellaneous,	standing - arts and crafts, moderate effort
09095	3.5	miscellaneous,	standing - arts and crafts, vigorous effort
09100	1.5	miscellaneous,	retreat/family reunion activities involving sitting, relaxing, talking, eating
09105	2.0	miscellaneous,	touring/traveling/vacation involving walking and riding
09110	2.5	miscellaneous,	camping involving standing, walking, sitting, light-to-moderate effort
09115	1.5	miscellaneous,	sitting at a sporting event, spectator
10010	1.8	music playing,	accordion
10020	2.0	music playing,	cello

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
10030	2.5	music playing,	conducting
10040	4.0	music playing,	drums
10050	2.0	music playing,	flute (sitting)
10060	2.0	music playing,	horn
10070	2.5	music playing,	piano or organ
10080	3.5	music playing,	trombone
10090	2.5	music playing,	trumpet
10100	2.5	music playing,	violin
10110	2.0	music playing,	woodwind
10120	2.0	music playing,	guitar, classical, folk (sitting)
10125	3.0	music playing,	guitar, rock and roll band (standing)
10130	4.0	music playing,	marching band, playing an instrument, baton twirling (walking)
10135	3.5	music playing,	marching band, drum major (walking)
11010	4.0	occupation,	bakery, general, moderate effort
11015	2.5	occupation,	bakery, light effort
11020	2.3	occupation,	bookbinding
11030	6.0	occupation,	building road (including hauling debris, driving heavy machinery)
11035	2.0	occupation,	building road, directing traffic (standing)
11040	3.5	occupation,	carpentry, general
11050	8.0	occupation,	carrying heavy loads, such as bricks
11060	8.0	occupation,	carrying moderate loads up stairs, moving boxes (16-40 pounds)
11070	2.5	occupation,	chambermaid, making bed (nursing)
11080	6.5	occupation,	coal mining, drilling coal, rock
11090	6.5	occupation,	coal mining, erecting supports
11100	6.0	occupation,	coal mining, general
11110	7.0	occupation,	coal mining, shoveling coal
11120	5.5	occupation,	construction, outside, remodeling
11121	3.0	occupation,	custodial work - buffing the floor with electric buffer
11122	2.5	occupation,	custodial work - cleaning sink and toilet, light effort
11123	2.5	occupation,	custodial work - dusting, light effort
11124	4.0	occupation,	custodial work - feathering arena floor, moderate effort
11125	3.5	occupation,	custodial work - general cleaning, moderate effort
11126	3.5	occupation,	custodial work - mopping, moderate effort
11127	3.0	occupation,	custodial work - take out trash, moderate effort
11128	2.5	occupation,	custodial work - vacuuming, light effort
11129	3.0	occupation,	custodial work - vacuuming, moderate effort
11130	3.5	occupation,	electrical work, plumbing
11140	8.0	occupation,	farming, baling hay, cleaning barn, poultry work, vigorous effort
11150	3.5	occupation,	farming, chasing cattle, non-strenuous (walking), moderate effort
11151	4.0	occupation,	farming, chasing cattle or other livestock on horseback, moderate effort
11152	2.0	occupation,	farming, chasing cattle or other livestock, driving, light effort
11160	2.5	occupation,	farming, driving harvester, cutting hay, irrigation work
11170	2.5	occupation,	farming, driving tractor
11180	4.0	occupation,	farming, feeding small animals
11190	4.5	occupation,	farming, feeding cattle, horses
11191	4.5	occupation,	farming, hauling water for animals, general hauling water
11192	6.0	occupation,	farming, taking care of animals (grooming, brushing, shearing sheep, assisting with birthing, medical care, branding)
11200	8.0	occupation,	farming, forking straw bales, cleaning corral or barn, vigorous effort
11210	3.0	occupation,	farming, milking by hand, moderate effort
11220	1.5	occupation,	farming, milking by machine, light effort

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
11230	5.5	occupation,	farming, shoveling grain, moderate effort
11240	12.0	occupation,	fire fighter, general
11245	11.0	occupation,	fire fighter, climbing ladder with full gear
11246	8.0	occupation,	fire fighter, hauling hoses on ground
11250	17.0	occupation,	forestry, ax chopping, fast
11260	5.0	occupation,	forestry, ax chopping, slow
11270	7.0	occupation,	forestry, barking trees
11280	11.0	occupation,	forestry, carrying logs
11290	8.0	occupation,	forestry, felling trees
11300	8.0	occupation,	forestry, general
11310	5.0	occupation,	forestry, hoeing
11320	6.0	occupation,	forestry, planting by hand
11330	7.0	occupation,	forestry, sawing by hand
11340	4.5	occupation,	forestry, sawing, power
11350	9.0	occupation,	forestry, trimming trees
11360	4.0	occupation,	forestry, weeding
11370	4.5	occupation,	furriery
11380	6.0	occupation,	horse grooming
11390	8.0	occupation,	horse racing, galloping
11400	6.5	occupation,	horse racing, trotting
11410	2.6	occupation,	horse racing, walking
11420	3.5	occupation,	locksmith
11430	2.5	occupation,	machine tooling, machining, working sheet metal
11440	3.0	occupation,	machine tooling, operating lathe
11450	5.0	occupation,	machine tooling, operating punch press
11460	4.0	occupation,	machine tooling, tapping and drilling
11470	3.0	occupation,	machine tooling, welding
11480	7.0	occupation,	masonry, concrete
11485	4.0	occupation,	masseur, masseuse (standing)
11490	7.5	occupation,	moving, pushing heavy objects, 75 lbs or more (desks, moving van work)
11495	12.0	occupation,	skindiving or SCUBA diving as a frogman (Navy Seal)
11500	2.5	occupation,	operating heavy duty equipment/automated, not driving
11510	4.5	occupation,	orange grove work
11520	2.3	occupation,	printing (standing)
11525	2.5	occupation,	police, directing traffic (standing)
11526	2.0	occupation,	police, driving a squad car (sitting)
11527	1.3	occupation,	police, riding in a squad car (sitting)
11528	4.0	occupation,	police, making an arrest (standing)
11530	2.5	occupation,	shoe repair, general
11540	8.5	occupation,	shoveling, digging ditches
11550	9.0	occupation,	shoveling, heavy (more than 16 pounds/minute)
11560	6.0	occupation,	shoveling, light (less than 10 pounds/minute)
11570	7.0	occupation,	shoveling, moderate (10 to 15 pounds/minute)
11580	1.5	occupation,	sitting - light office work, general (chemistry lab work, light use of hand tools, watch repair or micro-assembly, light assembly/repair), sitting, reading, driving at work
11585	1.5	occupation,	sitting - meetings, general, and/or with talking involved, eating at a business meeting
11590	2.5	occupation,	sitting; moderate (heavy levers, riding mower/forklift, crane operation), teaching stretching or yoga
11600	2.3	occupation,	standing; light (bartending, store clerk, assembling, filing, duplicating, putting up a Christmas tree), standing and talking at work, changing clothes when teaching physical education
11610	3.0	occupation,	standing; light/moderate (assemble/repair heavy parts, welding, stocking, auto repair, pack boxes for moving, etc.), patient care (as in nursing)

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
11615	4.0	occupation,	lifting items continuously, 10 – 20 lbs, with limited walking or resting
11620	3.5	occupation,	standing; moderate (assembling at fast rate, intermittent, lifting 50 lbs, hitch/twisting ropes)
11630	4.0	occupation,	standing; moderate/heavy (lifting more than 50 lbs, masonry, painting, paper hanging)
11640	5.0	occupation,	steel mill, fettling
11650	5.5	occupation,	steel mill, forging
11660	8.0	occupation,	steel mill, hand rolling
11670	8.0	occupation,	steel mill, merchant mill rolling
11680	11.0	occupation,	steel mill, removing slag
11690	7.5	occupation,	steel mill, tending furnace
11700	5.5	occupation,	steel mill, tipping molds
11710	8.0	occupation,	steel mill, working in general
11720	2.5	occupation,	tailoring, cutting
11730	2.5	occupation,	tailoring, general
11740	2.0	occupation,	tailoring, hand sewing
11750	2.5	occupation,	tailoring, machine sewing
11760	4.0	occupation,	tailoring, pressing
11765	3.5	occupation,	tailoring, weaving
11766	6.5	occupation,	truck driving, loading and unloading truck (standing)
11770	1.5	occupation,	typing, electric, manual or computer
11780	6.0	occupation,	using heavy power tools such as pneumatic tools (jackhammers, drills, etc.)
11790	8.0	occupation,	using heavy tools (not power) such as shovel, pick, tunnel bar, spade
11791	2.0	occupation,	walking on job, less than 2.0 mph (in office or lab area), very slow
11792	3.3	occupation,	walking on job, 3.0 mph, in office, moderate speed, not carrying anything
11793	3.8	occupation,	walking on job, 3.5 mph, in office, brisk speed, not carrying anything
11795	3.0	occupation,	walking, 2.5 mph, slowly and carrying light objects less than 25 pounds
11796	3.0	occupation,	walking, gathering things at work, ready to leave
11800	4.0	occupation,	walking, 3.0 mph, moderately and carrying light objects less than 25 lbs
11805	4.0	occupation,	walking, pushing a wheelchair
11810	4.5	occupation,	walking, 3.5 mph, briskly and carrying objects less than 25 pounds
11820	5.0	occupation,	walking or walk downstairs or standing, carrying objects about 25 to 49 pounds
11830	6.5	occupation,	walking or walk downstairs or standing, carrying objects about 50 to 74 pounds
11840	7.5	occupation,	walking or walk downstairs or standing, carrying objects about 75 to 99 pounds
11850	8.5	occupation,	walking or walk downstairs or standing, carrying objects about 100 pounds or over
11870	3.0	occupation,	working in scene shop, theater actor, backstage employee
11875	4.0	occupation,	teach physical education, exercise, sports classes (non-sport play)
11876	6.5	occupation,	teach physical education, exercise, sports classes (participate in the class)
12010	6.0	running,	jog/walk combination (jogging component of less than 10 minutes) (Taylor Code 180)
12020	7.0	running,	jogging, general
12025	8.0	running,	jogging, in place
12027	4.5	running,	jogging on a mini-tramp
12030	8.0	running,	running, 5 mph (12 min/mile)
12040	9.0	running,	running, 5.2 mph (11.5 min/mile)
12050	10.0	running,	running, 6 mph (10 min/mile)
12060	11.0	running,	running, 6.7 mph (9 min/mile)
12070	11.5	running,	running, 7 mph (8.5 min/mile)
12080	12.5	running,	running, 7.5 mph (8 min/mile)
12090	13.5	running,	running, 8 mph (7.5 min/mile)
12100	14.0	running,	running, 8.6 mph (7 min/mile)
12110	15.0	running,	running, 9 mph (6.5 min/mile)
12120	16.0	running,	running, 10 mph (6 min/mile)
12130	18.0	running,	running, 10.9 mph (5.5 min/mile)

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
12140	9.0	running,	running, cross country
12150	8.0	running,	running (Taylor Code 200)
12170	15.0	running,	running, stairs, up
12180	10.0	running,	running, on a track, team practice
12190	8.0	running,	running, training, pushing a wheelchair
13000	2.0	self care,	standing - getting ready for bed, in general
13009	1.0	self care,	sitting on toilet
13010	1.5	self care,	bathing (sitting)
13020	2.0	self care,	dressing, undressing (standing or sitting)
13030	1.5	self care,	eating (sitting)
13035	2.0	self care,	talking and eating or eating only (standing)
13036	1.0	self care,	taking medication, sitting or standing
13040	2.0	self care,	grooming (washing, shaving, brushing teeth, urinating, washing hands, putting on make-up), sitting or standing
13045	2.5	self care,	hairstyling
13046	1.0	self care,	having hair or nails done by someone else, sitting
13050	2.0	self care,	showering, toweling off (standing)
14010	1.5	sexual activity,	active, vigorous effort
14020	1.3	sexual activity,	general, moderate effort
14030	1.0	sexual activity,	passive, light effort, kissing, hugging
15010	3.5	sports,	archery (non-hunting)
15020	7.0	sports,	badminton, competitive (Taylor Code 450)
15030	4.5	sports,	badminton, social singles and doubles, general
15040	8.0	sports,	basketball, game (Taylor Code 490)
15050	6.0	sports,	basketball, non-game, general (Taylor Code 480)
15060	7.0	sports,	basketball, officiating (Taylor Code 500)
15070	4.5	sports,	basketball, shooting baskets
15075	6.5	sports,	basketball, wheelchair
15080	2.5	sports,	billiards
15090	3.0	sports,	bowling (Taylor Code 390)
15100	12.0	sports,	boxing, in ring, general
15110	6.0	sports,	boxing, punching bag
15120	9.0	sports,	boxing, sparring
15130	7.0	sports,	broomball
15135	5.0	sports,	children's games (hopscotch, 4-square, dodge ball, playground apparatus, t-ball, tetherball, marbles, jacks, acrace games)
15140	4.0	sports,	coaching: football, soccer, basketball, baseball, swimming, etc.
15150	5.0	sports,	cricket (batting, bowling)
15160	2.5	sports,	croquet
15170	4.0	sports,	curling
15180	2.5	sports,	darts, wall or lawn
15190	6.0	sports,	drag racing, pushing or driving a car
15200	6.0	sports,	fencing
15210	9.0	sports,	football, competitive
15230	8.0	sports,	football, touch, flag, general (Taylor Code 510)
15235	2.5	sports,	football or baseball, playing catch
15240	3.0	sports,	frisbee playing, general
15250	8.0	sports,	frisbee, ultimate
15255	4.5	sports,	golf, general
15265	4.5	sports,	golf, walking and carrying clubs (See footnote at end of the Compendium)
15270	3.0	sports,	golf, miniature, driving range
15285	4.3	sports,	golf, walking and pulling clubs (See footnote at end of the Compendium)

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
15290	3.5	sports,	golf, using power cart (Taylor Code 070)
15300	4.0	sports,	gymnastics, general
15310	4.0	sports,	hacky sack
15320	12.0	sports,	handball, general (Taylor Code 520)
15330	8.0	sports,	handball, team
15340	3.5	sports,	hand gliding
15350	8.0	sports,	hockey, field
15360	8.0	sports,	hockey, ice
15370	4.0	sports,	horseback riding, general
15380	3.5	sports,	horseback riding, saddling horse, grooming horse
15390	6.5	sports,	horseback riding, trotting
15400	2.5	sports,	horseback riding, walking
15410	3.0	sports,	horseshoe pitching, quoits
15420	12.0	sports,	jai alai
15430	10.0	sports,	judo, jujitsu, karate, kick boxing, tae kwan do
15440	4.0	sports,	juggling
15450	7.0	sports,	kickball
15460	8.0	sports,	lacrosse
15470	4.0	sports,	motor-cross
15480	9.0	sports,	orienteering
15490	10.0	sports,	paddleball, competitive
15500	6.0	sports,	paddleball, casual, general (Taylor Code 460)
15510	8.0	sports,	polo
15520	10.0	sports,	racquetball, competitive
15530	7.0	sports,	racquetball, casual, general (Taylor Code 470)
15535	11.0	sports,	rock climbing, ascending rock
15540	8.0	sports,	rock climbing, rappelling
15550	12.0	sports,	rope jumping, fast
15551	10.0	sports,	rope jumping, moderate, general
15552	8.0	sports,	rope jumping, slow
15560	10.0	sports,	rugby
15570	3.0	sports,	shuffleboard, lawn bowling
15580	5.0	sports,	skateboarding
15590	7.0	sports,	skating, roller (Taylor Code 360)
15591	12.5	sports,	roller blading (in-line skating)
15600	3.5	sports,	sky diving
15605	10.0	sports,	soccer, competitive
15610	7.0	sports,	soccer, casual, general (Taylor Code 540)
15620	5.0	sports,	softball or baseball, fast or slow pitch, general (Taylor Code 440)
15630	4.0	sports,	softball, officiating
15640	6.0	sports,	softball, pitching
15650	12.0	sports,	squash (Taylor Code 530)
15660	4.0	sports,	table tennis, ping pong (Taylor Code 410)
15670	4.0	sports,	tai chi
15675	7.0	sports,	tennis, general
15680	6.0	sports,	tennis, doubles (Taylor Code 430)
15685	5.0	sports,	tennis, doubles
15690	8.0	sports,	tennis, singles (Taylor Code 420)
15700	3.5	sports,	trampoline
15710	4.0	sports,	volleyball (Taylor Code 400)
15711	8.0	sports,	volleyball, competitive, in gymnasium

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
15720	3.0	sports,	volleyball, non-competitive, 6 - 9 member team, general
15725	8.0	sports,	volleyball, beach
15730	6.0	sports,	wrestling (one match = 5 minutes)
15731	7.0	sports,	wallyball, general
15732	4.0	sports,	track and field (shot, discus, hammer throw)
15733	6.0	sports,	track and field (high jump, long jump, triple jump, javelin, pole vault)
15734	10.0	sports,	track and field (steeplechase, hurdles)
16010	2.0	transportation,	automobile or light truck (not a semi) driving
16015	1.0	transportation,	riding in a car or truck
16016	1.0	transportation,	riding in a bus
16020	2.0	transportation,	flying airplane
16030	2.5	transportation,	motor scooter, motorcycle
16040	6.0	transportation,	pushing plane in and out of hangar
16050	3.0	transportation,	driving heavy truck, tractor, bus
17010	7.0	walking,	backpacking (Taylor Code 050)
17020	3.5	walking,	carrying infant or 15 pound load (e.g. suitcase), level ground or downstairs
17025	9.0	walking,	carrying load upstairs, general
17026	5.0	walking,	carrying 1 to 15 lb load, upstairs
17027	6.0	walking,	carrying 16 to 24 lb load, upstairs
17028	8.0	walking,	carrying 25 to 49 lb load, upstairs
17029	10.0	walking,	carrying 50 to 74 lb load, upstairs
17030	12.0	walking,	carrying 74+ lb load, upstairs
17031	3.0	walking,	loading /unloading a car
17035	7.0	walking,	climbing hills with 0 to 9 pound load
17040	7.5	walking,	climbing hills with 10 to 20 pound load
17050	8.0	walking,	climbing hills with 21 to 42 pound load
17060	9.0	walking,	climbing hills with 42+ pound load
17070	3.0	walking,	downstairs
17080	6.0	walking,	hiking, cross country (Taylor Code 040)
17085	2.5	walking,	bird watching
17090	6.5	walking,	marching, rapidly, military
17100	2.5	walking,	pushing or pulling stroller with child or walking with children
17105	4.0	walking,	pushing a wheelchair, non-occupational setting
17110	6.5	walking,	race walking
17120	8.0	walking,	rock or mountain climbing (Taylor Code 060)
17130	8.0	walking,	up stairs, using or climbing up ladder (Taylor Code 030)
17140	5.0	walking,	using crutches
17150	2.0	walking,	walking, household
17151	2.0	walking,	walking, less than 2.0 mph, level ground, strolling, very slow
17152	2.5	walking,	walking, 2.0 mph, level, slow pace, firm surface
17160	3.5	walking,	walking for pleasure (Taylor Code 010)
17161	2.5	walking,	walking from house to car or bus, from car or bus to go places, from car or bus to and from the worksite
17162	2.5	walking,	walking to neighbor's house or family's house for social reasons
17165	3.0	walking,	walking the dog
17170	3.0	walking,	walking, 2.5 mph, firm surface
17180	2.8	walking,	walking, 2.5 mph, downhill
17190	3.3	walking,	walking, 3.0 mph, level, moderate pace, firm surface
17200	3.8	walking,	walking, 3.5 mph, level, brisk, firm surface, walking for exercise
17210	6.0	walking,	walking, 3.5 mph, uphill
17220	5.0	walking,	walking, 4.0 mph, level, firm surface, very brisk pace
17230	6.3	walking,	walking, 4.5 mph, level, firm surface, very, very brisk

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
17231	8.0	walking,	walking, 5.0 mph
17250	3.5	walking,	walking, for pleasure, work break
17260	5.0	walking,	walking, grass track
17270	4.0	walking,	walking, to work or class (Taylor Code 015)
17280	2.5	walking,	walking to and from an outhouse
18010	2.5	water activities,	boating, power
18020	4.0	water activities,	canoeing, on camping trip (Taylor Code 270)
18025	3.3	water activities,	canoeing, harvesting wild rice, knocking rice off the stalks
18030	7.0	water activities,	canoeing, portaging
18040	3.0	water activities,	canoeing, rowing, 2.0-3.9 mph, light effort
18050	7.0	water activities,	canoeing, rowing, 4.0-5.9 mph, moderate effort
18060	12.0	water activities,	canoeing, rowing, >6 mph, vigorous effort
18070	3.5	water activities,	canoeing, rowing, for pleasure, general (Taylor Code 250)
18080	12.0	water activities,	canoeing, rowing, in competition, or crew or sculling (Taylor Code 260)
18090	3.0	water activities,	diving, springboard or platform
18100	5.0	water activities,	kayaking
18110	4.0	water activities,	paddle boat
18120	3.0	water activities,	sailing, boat and board sailing, windsurfing, ice sailing, general (Taylor Code 235)
18130	5.0	water activities,	sailing, in competition
18140	3.0	water activities,	sailing, Sunfish/Laser/Hobby Cat, Keel boats, ocean sailing, yachting
18150	6.0	water activities,	skiing, water (Taylor Code 220)
18160	7.0	water activities,	skimobiling
18180	16.0	water activities,	skindiving, fast
18190	12.5	water activities,	skindiving, moderate
18200	7.0	water activities,	skindiving, scuba diving, general (Taylor Code 310)
18210	5.0	water activities,	snorkeling (Taylor Code 320)
18220	3.0	water activities,	surfing, body or board
18230	10.0	water activities,	swimming laps, freestyle, fast, vigorous effort
18240	7.0	water activities,	swimming laps, freestyle, slow, moderate or light effort
18250	7.0	water activities,	swimming, backstroke, general
18260	10.0	water activities,	swimming, breaststroke, general
18270	11.0	water activities,	swimming, butterfly, general
18280	11.0	water activities,	swimming, crawl, fast (75 yards/minute), vigorous effort
18290	8.0	water activities,	swimming, crawl, slow (50 yards/minute), moderate or light effort
18300	6.0	water activities,	swimming, lake, ocean, river (Taylor Codes 280, 295)
18310	6.0	water activities,	swimming, leisurely, not lap swimming, general
18320	8.0	water activities,	swimming, sidestroke, general
18330	8.0	water activities,	swimming, synchronized
18340	10.0	water activities,	swimming, treading water, fast vigorous effort
18350	4.0	water activities,	swimming, treading water, moderate effort, general
18355	4.0	water activities,	water aerobics, water calisthenics
18360	10.0	water activities,	water polo
18365	3.0	water activities,	water volleyball
18366	8.0	water activities,	water jogging
18370	5.0	water activities,	whitewater rafting, kayaking, or canoeing
19010	6.0	winter activities,	moving ice house (set up/drill holes, etc.)
19020	5.5	winter activities,	skating, ice, 9 mph or less
19030	7.0	winter activities,	skating, ice, general (Taylor Code 360)
19040	9.0	winter activities,	skating, ice, rapidly, more than 9 mph
19050	15.0	winter activities,	skating, speed, competitive
19060	7.0	winter activities,	ski jumping (climb up carrying skis)

Figure 1—Continued.

CODE	METS	SPECIFIC ACTIVITY	EXAMPLES
19075	7.0	winter activities,	skiing, general
19080	7.0	winter activities,	skiing, cross country, 2.5 mph, slow or light effort, ski walking
19090	8.0	winter activities,	skiing, cross country, 4.0-4.9 mph, moderate speed and effort, general
19100	9.0	winter activities,	skiing, cross country, 5.0-7.9 mph, brisk speed, vigorous effort
19110	14.0	winter activities,	skiing, cross country, >8.0 mph, racing
19130	16.5	winter activities,	skiing, cross country, hard snow, uphill, maximum, snow mountaineering
19150	5.0	winter activities,	skiing, downhill, light effort
19160	6.0	winter activities,	skiing, downhill, moderate effort, general
19170	8.0	winter activities,	skiing, downhill, vigorous effort, racing
19180	7.0	winter activities,	sledding, tobogganing, bobsledding, luge (Taylor Code 370)
19190	8.0	winter activities,	snow shoeing
19200	3.5	winter activities,	snowmobiling
20000	1.0	religious activities,	sitting in church, in service, attending a ceremony, sitting quietly
20001	2.5	religious activities,	sitting, playing an instrument at church
20005	1.5	religious activities,	sitting in church, talking or singing, attending a ceremony, sitting, active participation
20010	1.3	religious activities,	sitting, reading religious materials at home
20015	1.2	religious activities,	standing in church (quietly), attending a ceremony, standing quietly
20020	2.0	religious activities,	standing, singing in church, attending a ceremony, standing, active participation
20025	1.0	religious activities,	kneeling in church/at home (praying)
20030	1.8	religious activities,	standing, talking in church
20035	2.0	religious activities,	walking in church
20036	2.0	religious activities,	walking, less than 2.0 mph - very slow
20037	3.3	religious activities,	walking, 3.0 mph, moderate speed, not carrying anything
20038	3.8	religious activities,	walking, 3.5 mph, brisk speed, not carrying anything
20039	2.0	religious activities,	walk/stand combination for religious purposes, usher
20040	5.0	religious activities,	praise with dance or run, spiritual dancing in church
20045	2.5	religious activities,	preparing food at church
20046	2.0	religious activities,	preparing food at church
20047	2.3	religious activities,	washing dishes/cleaning kitchen at church
20050	1.5	religious activities,	eating at church
20055	2.0	religious activities,	eating/talking at church or standing eating, American Indian Feast days
20060	3.0	religious activities,	cleaning church
20061	5.0	religious activities,	general yard work at church
20065	2.5	religious activities,	standing - moderate (lifting 50 lbs., assembling at fast rate)
20095	4.0	religious activities,	standing - moderate/heavy work
20100	1.5	religious activities,	typing, electric, manual, or computer
21000	1.5	volunteer activities,	sitting - meeting, general, and/or with talking involved
21005	1.5	volunteer activities,	sitting - light office work, in general
21010	2.5	volunteer activities,	sitting - moderate work
21015	2.3	volunteer activities,	standing - light work (filing, talking, assembling)
21016	2.5	volunteer activities,	sitting, child care, only active periods
21017	3.0	volunteer activities,	standing, child care, only active periods
21018	4.0	volunteer activities,	walk/run play with children, moderate, only active periods
21019	5.0	volunteer activities,	walk/run play with children, vigorous, only active periods
21020	3.0	volunteer activities,	standing - light/moderate work (pack boxes, assemble/repair, set up chairs/furniture)
21025	3.5	volunteer activities,	standing - moderate (lifting 50 lbs., assembling at fast rate)
21030	4.0	volunteer activities,	standing - moderate/heavy work
21035	1.5	volunteer activities,	typing, electric, manual, or computer
21040	2.0	volunteer activities,	walking, less than 2.0 mph, very slow
21045	3.3	volunteer activities,	walking, 3.0 mph, moderate speed, not carrying anything
21050	3.8	volunteer activities,	walking, 3.5 mph, brisk speed, not carrying anything
21055	3.0	volunteer activities,	walking, 2.5 mph slowly and carrying objects less than 25 pounds
21060	4.0	volunteer activities,	walking, 3.0 mph moderately and carrying objects less than 25 pounds, pushing some
21065	4.5	volunteer activities,	walking, 3.5 mph, briskly and carrying objects less than 25 pounds
21070	3.0	volunteer activities,	walk/stand combination, for volunteer purposes

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