

Table 57. Participation in leisure-time aerobic and muscle-strengthening activities that meet the federal 2008 Physical Activity Guidelines for Americans among adults aged 18 and over, by selected characteristics: United States, selected years 1998–2016

Excel version (with more data years and standard errors when available): <https://www.cdc.gov/nchs/hus/contents2017.htm#057>.

[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

Characteristic	2008 Physical Activity Guidelines for Americans ¹									
	Met both aerobic-activity and muscle-strengthening guidelines					Met neither aerobic-activity nor muscle-strengthening guidelines				
	1998	2000	2010	2015	2016	1998	2000	2010	2015	2016
	Percent									
18 years and over, age-adjusted ^{2,3}	14.3	15.0	20.7	21.6	22.7	56.6	54.7	49.1	46.8	43.8
18 years and over, crude ³	14.5	15.1	20.4	20.9	21.9	56.3	54.6	49.5	47.5	44.6
Age										
18–44 years	18.9	18.9	25.7	26.4	28.0	50.7	49.1	43.1	40.7	37.9
18–24 years	23.8	23.8	29.6	29.8	30.7	46.5	44.5	39.4	37.8	34.5
25–44 years	17.4	17.3	24.3	25.2	27.0	51.9	50.6	44.4	41.7	39.1
45–64 years	11.4	12.8	17.7	18.1	19.0	58.8	57.6	51.0	50.5	46.6
45–54 years	13.2	14.5	19.2	19.3	20.8	56.9	55.4	48.9	49.0	45.5
55–64 years	8.6	10.1	15.9	16.9	17.1	61.8	61.0	53.7	52.2	47.8
65 years and over	5.5	6.8	10.4	12.7	12.7	71.0	67.0	64.6	58.8	56.7
65–74 years	7.0	8.4	13.6	15.5	15.7	65.6	60.3	59.9	52.4	50.8
75 years and over	3.5	4.9	6.4	8.7	8.4	77.8	75.0	70.3	67.8	65.4
Sex ²										
Male	17.5	17.9	25.1	25.3	26.6	50.8	49.6	43.8	43.5	39.7
Female	11.4	12.3	16.5	18.0	18.9	61.9	59.4	54.0	49.9	47.7
Sex and age										
Male:										
18–44 years	23.0	23.0	31.8	32.1	33.5	44.3	43.0	37.1	36.8	33.1
45–54 years	16.1	16.0	20.9	21.6	22.6	52.9	52.7	45.2	47.5	42.8
55–64 years	9.4	11.3	19.1	18.9	18.7	58.2	58.7	50.1	50.3	46.0
65–74 years	9.5	9.4	16.6	15.7	19.0	58.9	55.3	55.6	48.4	46.7
75 years and over	4.9	7.1	9.1	9.4	11.0	69.5	66.7	62.8	63.2	59.7
Female:										
18–44 years	14.9	15.0	19.6	20.9	22.6	56.9	55.0	49.0	44.5	42.7
45–54 years	10.5	13.1	17.5	17.1	19.0	60.8	57.9	52.4	50.4	48.1
55–64 years	7.8	9.0	13.1	15.0	15.7	65.0	63.1	57.0	53.9	49.5
65–74 years	5.1	7.7	11.0	15.3	12.8	70.9	64.3	63.6	55.9	54.3
75 years and over	2.6	3.6	4.6	8.2	6.6	83.0	80.0	75.3	71.1	69.5
Race ^{2,4}										
White only	14.8	15.7	21.4	22.0	23.5	55.2	53.1	47.6	45.7	42.6
Black or African American only	11.7	12.2	17.2	19.8	20.9	65.7	64.6	58.5	54.5	51.7
American Indian or Alaska Native only	16.0	*10.6	*12.7	18.8	15.0	57.6	67.1	54.0	47.0	55.2
Asian only	13.5	14.1	17.8	19.1	16.9	59.1	55.0	51.7	45.1	44.1
Native Hawaiian or Other Pacific Islander only	---	*	*	*	24.0	---	*	*	*	46.4
2 or more races	---	19.0	25.9	22.7	24.7	---	52.8	45.0	47.8	38.2
Hispanic origin and race ^{2,4}										
Hispanic or Latino	9.4	9.2	14.4	16.8	17.0	67.7	66.5	60.2	53.5	52.5
Mexican	8.7	8.1	13.2	16.4	15.6	69.5	67.0	60.7	55.0	52.8
Not Hispanic or Latino	14.9	15.8	21.9	22.6	23.9	55.3	53.2	47.2	45.4	42.0
White only	15.5	16.5	22.9	23.5	25.2	53.6	51.4	45.0	43.6	39.9
Black or African American only	11.7	12.2	17.4	19.9	20.9	65.8	64.6	58.4	54.3	51.9

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[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

Characteristic	2008 Physical Activity Guidelines for Americans ¹									
	Met both aerobic-activity and muscle-strengthening guidelines					Met neither aerobic-activity nor muscle-strengthening guidelines				
	1998	2000	2010	2015	2016	1998	2000	2010	2015	2016
Education ^{5,6}	Percent									
No high school diploma or GED	4.6	4.3	7.7	8.1	9.0	76.3	74.0	69.8	67.0	63.6
High school diploma or GED	8.6	9.5	12.7	13.2	13.4	64.6	61.7	59.0	58.1	55.6
Some college or more	18.2	18.9	25.0	25.2	26.7	48.0	47.1	42.1	40.7	37.9
Percent of poverty level ^{2,7}										
Below 100%	8.0	9.3	12.0	13.1	13.9	71.3	68.0	63.9	60.1	56.7
100%–199%	9.0	9.0	12.7	12.7	14.8	67.1	65.5	60.6	58.3	56.0
200%–399%	12.6	13.2	19.2	20.1	20.3	58.0	56.8	50.6	49.2	46.1
400% or more	20.2	20.5	29.1	29.7	30.6	46.2	45.0	36.9	35.8	33.4
Hispanic origin and race and percent of poverty level ^{2,4,7}										
Hispanic or Latino:										
Below 100%	4.6	4.4	8.9	10.3	11.5	78.0	75.2	68.6	64.2	59.8
100%–199%	7.0	5.0	9.3	11.8	13.4	71.2	72.2	66.7	58.9	60.9
200%–399%	11.1	10.2	15.7	18.9	18.3	63.8	63.1	57.6	50.6	51.4
400% or more	17.4	19.6	28.1	28.4	25.2	55.6	52.8	42.5	38.7	37.0
Not Hispanic or Latino:										
White only:										
Below 100%	9.9	11.7	13.7	15.0	17.0	66.9	63.5	60.5	55.1	53.3
100%–199%	9.6	10.3	14.1	12.5	15.1	65.1	62.6	56.4	58.4	53.2
200%–399%	13.1	13.9	20.0	20.2	21.4	56.1	54.7	48.6	48.6	43.7
400% or more	20.2	21.0	29.9	30.6	32.0	45.2	43.7	35.2	34.1	31.6
Black or African American only:										
Below 100%	7.1	9.5	11.3	13.0	10.8	74.6	72.1	66.9	64.8	63.2
100%–199%	8.8	9.5	11.7	14.6	15.6	69.8	69.2	67.0	59.6	58.8
200%–399%	10.6	11.8	20.8	20.7	21.8	64.5	64.3	53.3	50.8	47.6
400% or more	21.2	17.6	26.1	30.1	33.4	54.2	54.9	47.7	44.9	40.9
Level of difficulty ^{2,8}										
A lot of difficulty or cannot do at all	---	---	*	9.9	9.6	---	---	77.6	69.6	62.2
Some difficulty	---	---	18.4	19.4	18.9	---	---	51.5	48.4	46.7
No difficulty	---	---	23.5	24.4	25.9	---	---	43.8	42.3	39.2
Geographic region ²										
Northeast	14.2	17.0	20.2	22.1	23.9	57.0	51.8	49.1	46.8	44.1
Midwest	15.0	16.4	20.7	21.0	23.4	54.9	53.4	49.7	48.2	42.0
South	11.8	12.1	18.8	20.7	20.1	61.4	59.7	51.8	48.4	48.0
West	18.5	16.7	24.0	23.2	25.1	49.5	50.1	44.5	42.8	39.2
Location of residence ^{2,9}										
Within MSA	14.9	15.7	21.8	22.4	23.8	55.8	54.1	47.8	45.5	42.7
Outside MSA	12.2	12.3	14.5	16.1	15.5	59.7	56.9	56.9	55.1	50.8

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Characteristic	2008 Physical Activity Guidelines for Americans ¹									
	Met aerobic-activity guidelines					Met muscle-strengthening guidelines				
	1998	2000	2010	2015	2016	1998	2000	2010	2015	2016
	Percent									
18 years and over, age-adjusted ^{2,3}	40.0	42.2	47.3	49.8	52.7	17.7	18.0	24.4	25.0	26.2
18 years and over, crude ³	40.3	42.4	46.9	49.0	51.9	17.9	18.1	24.0	24.4	25.5
Age										
18–44 years	45.7	47.7	53.8	56.4	59.1	22.5	22.1	28.8	29.3	30.9
18–24 years	49.3	52.2	57.2	59.0	62.2	28.0	27.2	32.8	32.9	34.3
25–44 years	44.6	46.3	52.5	55.5	58.1	20.8	20.5	27.4	27.9	29.8
45–64 years	38.2	39.7	45.2	45.9	49.8	14.4	15.5	21.5	21.8	22.7
45–54 years	40.1	42.1	47.6	47.9	51.2	16.2	17.0	22.6	22.5	24.3
55–64 years	35.3	36.1	42.1	43.8	48.3	11.5	13.1	20.1	21.0	21.1
65 years and over	26.0	30.1	30.5	36.6	38.5	8.6	9.8	15.4	17.3	17.5
65–74 years	31.7	36.8	35.9	43.3	44.7	9.7	11.3	17.9	19.8	20.1
75 years and over	18.7	22.1	23.9	27.2	29.5	7.2	8.0	12.3	13.8	13.6
Sex ²										
Male	45.4	47.4	52.1	53.0	56.3	21.2	20.8	29.1	28.8	30.6
Female	35.1	37.6	42.7	46.9	49.4	14.4	15.4	19.8	21.2	22.0
Sex and age										
Male:										
18–44 years	51.5	53.6	59.0	60.0	63.2	27.2	26.3	35.6	35.2	37.2
45–54 years	44.3	45.2	50.7	49.3	53.6	18.8	18.0	24.8	25.0	26.4
55–64 years	38.3	38.9	46.0	46.5	49.8	12.9	13.8	22.9	22.1	22.9
65–74 years	38.5	41.8	40.7	47.2	49.0	12.0	12.2	20.6	20.1	23.2
75 years and over	26.1	30.7	32.3	31.1	35.3	9.5	10.1	14.5	15.0	15.8
Female:										
18–44 years	40.0	42.0	48.5	52.9	55.2	17.9	17.9	22.1	23.5	24.8
45–54 years	36.1	39.1	44.7	46.6	48.9	13.7	16.1	20.4	20.1	22.3
55–64 years	32.5	33.5	38.6	41.2	46.9	10.3	12.4	17.5	19.9	19.5
65–74 years	26.2	32.6	31.8	39.9	41.0	7.8	10.5	15.6	19.5	17.5
75 years and over	14.0	16.8	18.3	24.4	25.3	5.7	6.7	10.8	12.9	11.9
Race ^{2,4}										
White only	41.5	44.1	48.9	51.0	54.1	18.0	18.5	24.8	25.3	26.8
Black or African American only	30.4	31.7	37.3	42.0	44.6	15.6	16.0	21.4	23.5	24.6
American Indian or Alaska Native only	39.7	29.7	42.0	46.9	41.8	18.2	13.9	16.7	24.4	18.2
Asian only	37.1	41.7	44.2	51.4	52.1	17.2	17.2	21.9	22.6	20.7
Native Hawaiian or Other Pacific Islander only	---	*	*	*	50.3	---	*	*	*	27.1
2 or more races	---	43.9	50.2	49.0	55.3	---	22.2	30.4	26.3	31.1
Hispanic origin and race ^{2,4}										
Hispanic or Latino	29.1	30.8	36.2	43.3	44.5	12.7	11.9	18.1	20.0	20.1
Mexican	27.4	30.0	35.9	42.3	44.5	11.9	11.3	16.7	19.2	18.4
Not Hispanic or Latino	41.3	43.7	49.1	51.2	54.5	18.3	18.8	25.5	26.0	27.4
White only	43.1	45.7	51.5	53.1	56.7	18.7	19.3	26.3	26.7	28.6
Black or African American only	30.4	31.7	37.3	42.1	44.4	15.6	16.0	21.6	23.7	24.8

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[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

Characteristic	2008 Physical Activity Guidelines for Americans ¹									
	Met aerobic-activity guidelines					Met muscle-strengthening guidelines				
	1998	2000	2010	2015	2016	1998	2000	2010	2015	2016
Education ^{5,6}						Percent				
No high school diploma or GED	21.4	23.9	27.1	30.1	32.6	7.0	6.6	10.9	11.0	12.8
High school diploma or GED	32.6	35.7	37.3	39.0	41.0	11.4	12.1	16.2	16.2	16.9
Some college or more	48.1	49.4	53.9	55.5	58.6	22.1	22.4	28.9	29.0	30.2
Percent of poverty level ^{2,7}										
Below 100%	25.9	29.3	32.2	37.1	40.0	10.8	12.3	15.8	16.0	17.3
100%–199%	29.9	32.0	36.0	38.5	40.5	12.0	11.5	16.1	15.9	18.4
200%–399%	38.8	39.9	45.5	47.4	50.5	15.9	16.5	23.1	23.6	23.8
400% or more	50.0	52.0	59.3	60.7	63.2	24.0	23.4	32.8	33.2	34.1
Hispanic origin and race and percent of poverty level ^{2,4,7}										
Hispanic or Latino:										
Below 100%	19.5	22.1	27.8	33.1	37.2	7.1	7.2	12.4	13.4	14.6
100%–199%	25.6	25.8	30.1	38.9	37.1	10.2	7.1	12.6	14.2	15.4
200%–399%	33.1	33.0	38.8	45.3	46.2	14.6	14.0	19.5	22.8	20.8
400% or more	40.6	45.1	53.4	57.4	57.8	21.1	21.7	32.1	32.2	30.5
Not Hispanic or Latino:										
White only:										
Below 100%	30.2	34.0	35.5	41.8	43.6	12.8	14.7	17.5	18.1	20.0
100%–199%	32.2	34.8	40.6	38.0	43.2	12.5	12.9	17.0	15.9	18.6
200%–399%	40.8	42.3	47.8	48.3	52.8	16.2	16.9	23.6	23.3	25.0
400% or more	51.0	53.4	61.0	62.5	65.1	24.0	23.8	33.5	33.9	35.3
Black or African American only:										
Below 100%	22.7	25.4	29.3	32.9	34.2	10.0	12.1	15.3	15.3	14.1
100%–199%	26.9	28.0	28.5	37.3	36.8	12.1	12.3	16.0	18.0	20.2
200%–399%	30.6	31.4	41.9	45.2	48.2	15.5	16.2	25.7	25.3	26.1
400% or more	41.7	40.3	48.5	50.7	55.6	25.4	22.4	29.8	34.5	36.8
Level of difficulty ^{2,8}										
A lot of difficulty or cannot do at all	---	---	20.0	27.0	30.4	---	---	*8.9	13.2	17.0
Some difficulty	---	---	44.2	47.8	49.4	---	---	22.7	23.4	22.8
No difficulty	---	---	52.4	54.6	57.9	---	---	27.2	27.5	28.9
Geographic region ²										
Northeast	39.6	45.3	46.9	49.8	52.3	17.5	20.0	24.3	25.5	27.6
Midwest	42.0	43.5	46.1	48.3	53.9	18.2	19.3	24.7	24.5	27.4
South	35.3	37.3	45.0	48.1	48.8	15.0	15.1	22.0	24.1	23.5
West	46.7	46.9	52.0	54.2	57.8	22.3	19.7	27.5	26.3	28.0
Location of residence ^{2,9}										
Within MSA	40.8	42.9	48.7	51.2	53.7	18.3	18.6	25.4	25.8	27.4
Outside MSA	37.1	39.9	39.1	41.1	46.4	15.4	15.5	18.5	19.7	18.4

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* Estimates are considered unreliable. Starting with 2016 data, the reliability of survey percentage estimates was assessed using new multistep National Center for Health Statistics data presentation standards for proportions. Prior to 2016 data, the reliability of estimates for earlier years was evaluated based on relative standard errors (RSE). Data preceded by an asterisk have an RSE of 20%–30%. Data not shown have an RSE greater than 30%. For more information, see Appendix II, Data presentation standards for proportions; Relative standard error (RSE).
 --- Data not available.

¹Starting with *Health, United States, 2010*, measures of physical activity shown in this table changed to reflect the federal 2008 Physical Activity Guidelines for Americans (available from: <https://health.gov/paguidelines/pdf/paguide.pdf>). This table presents four measures of physical activity that are of interest to the public health community: the percentage of adults who met the federal 2008 guidelines for both aerobic activity and muscle strengthening; the percentage who met neither the aerobic -activity guideline s nor the muscle-strengthening guideline s; the percentage who met the aerobic-activity guideline s; and the percentage who met the muscle-strengthening guideline s. Persons who met neither the aerobic-activity nor the muscle-strengthening guideline s were unable to be active, were completely inactive, or had some aerobic or muscle-strengthening activities but amounts were insufficient to meet the guidelines. The percentage of persons who met the aerobic-activity guideline s includes those who may or may not have also met the muscle-strengthening guideline s. Similarly, the percentage of persons who met the muscle-strengthening guideline s includes those who may or may not have also met the aerobic-activity guideline s. The federal 2008 guidelines recommend that for substantial health benefits adults perform at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably should be spread throughout the week. The 2008 guidelines also recommend that adults perform muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on 2 or more days a week, because these activities provide additional health benefits. See Appendix II, Physical activity, leisure-time.

²Estimates are age-adjusted to the year 2000 standard population using five age groups: 18–44 years, 45–54 years, 55–64 years, 65–74 years, and 75 years and over. Age-adjusted estimates in this table may differ from other age-adjusted estimates based on the same data and presented elsewhere if different age groups are used in the adjustment procedure. See Appendix II, Age adjustment.

³Includes all other races not shown separately, unknown education level, and unknown disability status.

⁴The race groups white, black, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and 2 or more races include persons of Hispanic and non-Hispanic origin. Persons of Hispanic origin may be of any race. Starting with 1999 data, race-specific estimates are tabulated according to the 1997 *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity* and are not strictly comparable with estimates for earlier years. The five single-race categories and multiple-race categories shown in the table conform to the 1997 Standards. Starting with 1999 data, race-specific estimates are for persons who reported only one racial group; the category 2 or more races includes persons who reported more than one racial group. Prior to 1999, data were tabulated according to the 1977 Standards with four racial groups, and the Asian only category included Native Hawaiian or Other Pacific Islander. Estimates for single-race categories prior to 1999 included persons who reported one race, or if they reported more than one race, identified one race as best representing their race. Starting with 2003 data (shown in spreadsheet version), race responses of other race and unspecified multiple race were treated as missing, and then race was imputed if these were the only race responses. Almost all persons with a race response of other race were of Hispanic origin. See Appendix II, Hispanic origin; Race.

⁵Estimates are for persons aged 25 and over and are age-adjusted to the year 2000 standard population using five age groups: 25–44 years, 45–54 years, 55–64 years, 65–74 years, and 75 years and over. See Appendix II, Age adjustment.

⁶GED is General Educational Development high school equivalency diploma. See Appendix II, Education.

⁷Percent of poverty level is based on family income and family size and composition using U.S. Census Bureau poverty thresholds. Missing family income data were imputed for 1997 and beyond. See Appendix II, Family income; Poverty; Table VII.

⁸Functional limitation is defined by the reported level of difficulty in six functioning domains: seeing (even if wearing glasses), hearing (even if wearing hearing aids), mobility (walking or climbing stairs), communication (understanding or being understood by others), cognition (remembering or concentrating), and self-care (such as washing all over or dressing). Respondents with answers to one or more of the six questions were included in one of three mutually-exclusive categories. Those responding "A lot of difficulty" or "Cannot do at all/unable to do" to at least one question were classified in the "A lot of difficulty/cannot do" category. Of the remaining, those responding "Some difficulty" to at least one question were classified in the "Some difficulty" category, and those responding "No difficulty" to at least one question were classified in the "No difficulty" category. Those responding "Don't know" or "Refused" to all six questions were excluded. During 2010–2016, 1%–8% of respondents were missing data and excluded. See Appendix II, Functional limitation. Different questions about vision and hearing limitations were used in separate tables on trends in vision limitations (Table 43) and hearing limitations (Table 44), respectively.

⁹MSA is metropolitan statistical area. Starting with 2016 data, MSA status is determined using 2010 Census data and the 2010 standards for defining MSAs. For more information, including the definition prior to 2016, see Appendix II, Metropolitan statistical area (MSA) for the applicable standards.

NOTES: Standard errors are available in the spreadsheet version of this table. Data for additional years are available. See the Excel spreadsheet on the *Health, United States* website at: <https://www.cdc.gov/nchs/hus.htm>.

SOURCE: NCHS, National Health Interview Survey, family core and sample adult questionnaires. See Appendix I, National Health Interview Survey (NHIS).