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# Differences in the Amounts and Types of Physical Activity by Obesity Status in US Adults

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## Abstract

**Objectives—**To describe the physical activity patterns across levels of obesity among US adults.

**Methods—**The frequency, intensity and duration of physical activities were compared across obesity status in 7695 adults from NHANES, 1999–2006.

**Results—**Significantly more normal weight adults engaged in moderate and vigorous intensity activities and for a longer duration than their overweight or obese counterparts. Lower intensity, longer duration walking contributed to nearly half of all moderate activity among obese subjects.

**Conclusions—**Significant differences exist in intensity, frequency and duration of physical activity by weight status. This information suggests a targeted approach to current physical activity interventions be explored.

### Keywords

obesity; BMI; waist circumference; physical activity; NHANES

## INTRODUCTION

In the US, obesity has become a significant health problem, reaching epidemic proportions[1] and resulting in a significant increase in morbidity and mortality from numerous chronic diseases.[2–4] Current criteria define overweight and obesity by a body mass index (BMI) of greater than 25 and 30 kg/m$^2$, respectively. US obesity (OB) rates are currently 32.2%,[3] and it is estimated that 86.3% of US adults will be overweight or obese by the year 2030.[1] National surveillance data demonstrate a concomitant increase in both the prevalence in obesity and a general decline in rates of physical activity.[5,6] Both obesity and inactivity are powerful predictors of chronic disease and premature death.[7,8] Because lifestyle behaviors and physical inactivity contribute to the development and progression of obesity and several resultant comorbidities, clinical guidelines for the treatment of obesity often include dietary modifications in conjunction with recommendations for increased levels of physical activity (PA).[9,10–12] The metabolic cost of exercise contributes to weight loss by enhancing caloric expenditure, leading to reductions in body weight as a cumulative result of caloric

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expenditure exceeding caloric intake. Because obesity-related comorbidities are highly prevalent, the importance of focused efforts to prevent and treat obesity, rather than just treat its related comorbidities, is warranted.[13] However, popular weight loss strategies are often based upon lower intensity, longer duration exercise bouts in an attempt to encourage free fatty acid (FFA) substrate utilization[14] and thus, body fat loss.

The most widely accepted PA recommendations are based upon 2 major publications: The 2008 Physical Activity Guidelines for Americans (HA)[15] and The 2007 American College of Sports Medicine Recommendations for Adults (ACSM)[16] Such epidemiologically-based recommendations can be further categorized according to the FITT (Frequency, Intensity, Time, Type) Principle (Table 1), which emphasize the frequency, intensity, time or duration and type of activities performed.[17] Despite the support for the many health benefits conferred by regular PA,[18,19] epidemiological studies report that many Americans continue to fall short of the HA and ACSM recommendations.[20–23] Data from 2005 indicated that more than half (50.9%) of US adults did not met the AHA/ACSM PA recommendations of at least 30 minutes of moderate-intensity activity on all or most days of the week,[6] while another study reported that less than one-quarter (23.7%) of adults reported no leisure-time activity.[5,6]

These data present an overall picture of PA in the US; however, a paucity of data exists describing the PA patterns of US adults by weight status. Similarly, these data do not regularly account for differences in intensity. Previous research has demonstrated that, in the absence of dietary alterations, greater and more widespread health benefits were observed when participants engaged in vigorous physical activity (VPA) as compared to moderate physical activity (MPA).[24] Epidemiological[19,25] reviews consistently report greater health benefits and reductions in both mortality and morbidity in those meeting PA recommendations, as well as those with greater engagement in VPA versus MPA. Little is known about the specific differences in rates of PA and the activities performed, including intensity, that comprise the PA patterns across weight status categories. These data would provide valuable formative data to inform future weight maintenance efforts. To better understand the patterns of MPA and VPA across levels of obesity, the purpose of this investigation was to identify the proportion of adults meeting PA recommendations by weight status, describe differences in PA patterns by frequency and duration and determine the most common activities performed by weight status.

## METHODS

To describe the PA habits of US adults by weight status, we examined data from the 1999–2006 National Health and Nutrition Examination Survey (NHANES). This survey was a stratified, multi-staged, nationally-representative survey conducted by the Centers for Disease Control and Prevention to assess the health and nutritional status of the non-institutionalized US population. Oversampling of low-income individuals, adolescents, elderly, pregnant women, racial and ethnic minorities (African and Mexican Americans) was employed to improve representation of difficult to reach groups and obtain more reliable prevalence estimates for subgroup analyses. In-home screening interviews were conducted to recruit participants and collect sociodemographic data. Following this visit, participants scheduled an appointment for further assessments performed at the Mobile Examination Center (MEC). More information about the design and data collection of NHANES can be found elsewhere.[26]

Data for the present study included 4, 2-year cycles (1999–2000, 2001–2002, 2003–2004 and 2005–2006). Variables were compared for consistency in collection procedures and

coding across the 8 years of data collection; consistency in procedures and data allowed for the aggregation of the data into one 8-year data set.

## Subjects

The public-use data files were downloaded from the National Center for Health Statistics website and imported into PASW Statistics (version 17.3, IBM/SPSS Inc, Chicago, IL) for preparation (Table 2). Participants were included if they provided complete leisure time PA, height, weight and waist circumference data. Women were excluded from the analyses if they were pregnant at the time of the examination. Furthermore, outliers were excluded if self-reported PA data exceeded >3 SD from the mean. A final sample of 7695 adults (18–50 years old) was included in this study.

## Data Collection and Preparation

Sociodemographic variables, which included age, race/ethnicity, gender, income and education, were collected during the in-home visit by trained interviewers. Weight status was determined using measured height, weight, body mass index (BMI) and waist circumference (WC) data collected during the MEC visit. BMI data were stratified into 4 obesity categories based federal guidelines:[27] underweight (<18.5 kg/m$^2$); normal (18.5–24.9 kg/m$^2$); overweight (25–29.9 kg/m$^2$); and obese (> 30 kg/m$^2$). To assess central adiposity, WC was measured at the uppermost lateral border of the right iliac crest and recoded to the nearest 0.1 cm. To assess central adiposity while also accounting for differences in gender in threshold values (women >88 cm, men >102 cm), a percent of the threshold value was computed as follows:[27]

$$\text{WC percent} = \text{measured WC} / \text{WC threshold} \times 100.$$

Participants were classified based on being above or below 100% of the threshold levels for waist circumference.

Self-reported PA data were collected during the MEC visit via questionnaire. Participants were asked which vigorous activities from a list of examples they performed over the past 30 days. Vigorous activity was defined as those “that caused heavy sweating, or large increases in breathing or heart rate?” VPA activities were defined as a having corresponding metabolic equivalent level (MET) level of ≥6.0. For each activity reported, the number of times performed over the past 30 days and the average duration in minutes was collected. The same process was used to collect the frequency and duration of moderate activities performed over the past 30 days, defined as activities “that caused light sweating or a slight to moderate increase in your heart rate or breathing.” MPA activity was defined by NHANES as an activity with a corresponding MET level of 3.0–5.9.

Data from the individual activities file were aggregated to compute the frequency (times/wk) and duration (min/wk) of all activities by self-reported intensity. For example, the frequency of each moderate activity performed was summed for each individual (frequency of moderate activity over the past 30 days) and transformed to frequency of activity (times/wk). Duration of activities (min/wk) were computed by summing the product of the frequency of each activity by the average duration and was converted to minutes per week. The frequency (times/wk) and duration (min/wk) of total physical activity (TPA) were computed as a sum of moderate and vigorous frequencies and durations, respectively.

To assess the proportion of individuals meeting the aforementioned PA recommendation data were re-coded to identify individuals meeting the HA and ACSM guidelines using the frequency and duration recommendations (Table 1).

### Data Analysis

Chi square analyses were used to identify differences in the proportion of individuals meeting PA and ACSM guidelines by obesity level (BMI categories and central adiposity). Odds ratios were generated to assess the likelihood of meeting HA and ACSM guidelines by weight and central obesity status. Differences in the mean frequencies (times/wk) and durations (min/wk) of moderate, vigorous and total activity by obesity status were tested using an analysis of covariance (ANCOVA) with Bonferoni post hoc comparisons. Likelihood estimates and mean differences were controlled for sociodemographic factors, which included age in years, gender, race/ethnicity, income-to-poverty ratio and educational attainment level. Statistical significance was set *a priori* at alpha < 0.05.

To identify the specific activities contributing to TPA by weight class, we identified the ten most frequently performed leisure-time activities by intensity and weight status. Next, we calculated the activities that contributed the greatest to total duration of activity by intensity and weight status. These data represent a total proportion of all leisure activities obtained from each specific activity related to intensity and weight status.

Data were tabulated and transformed using PASW (version 17.0, IBM SPSS Inc, Chicago, IL). PASW Complex Samples was used to conduct analysis of the NHANES sample using the sample weights provided by CDC, which generates nationally-representative estimates while also providing appropriate standard errors for statistical analyses.

## RESULTS

To assess the PA patterns by intensity across levels of obesity, mean differences in the frequency and duration of MPA, VPA and TPA were compared. No significant differences were evident in the frequency of MPA by obesity status; however, obese individuals engaged in VPA (P<0.001) and TPA (P=0.001) significantly less frequently than normal weight adults (Table 3). Despite performing significantly more minutes of MPA per week among overweight and obese adults (P=0.022), normal weight adults spent significantly more minutes per week participating in VPA (P<0.001) and TPA (P<0.030) activities than overweight or obese adults. Similar patterns were evident in the mean levels of physical activity by central obesity. Adults with a healthy waist circumference performed a significantly greater frequency (P<0.001) and duration (P<0.001) of vigorous and total activities than those with a waist circumference indicative of central obesity (Table 4).

Significant differences were evident in the proportion of individuals meeting the 2 PA recommendations (Table 5). A greater proportion of normal weight individuals meet the HA (57.7%) and ACSM (42.7%) recommendations. After controlling for age, gender and race, overweight and obese individuals were significantly less likely to meet the HA guidelines (82% and 70%, respectively) and the ACSM guidelines (89% and 75%, respectively). Similar trends were evident for individuals presenting with a waist circumference risk factors, as only 47.6% and 34.8% of those with central obesity met the HA and ACSM guidelines, respectively.

The most common specific activities contributing to MPA and TPA are presented in Tables 6 and 7, respectively. Similar patterns existed across activities contributing to MPA by obesity status. Walking accounted for nearly half of the frequency and 40% of the duration of all MPA reported across all levels of obesity status. For all weight classifications, the second most frequently reported moderately intense PA was stretching. Weight lifting and dance were among the top 6 activities for MPA intensity frequency and duration for all levels of obesity status.

Running was the most frequently performed vigorous intensity activity reported in NW individuals; however, it did not rank in the top 5 activities for duration of vigorous activity for obese individuals. Bicycling and walking also represented top activities contributing to vigorous frequency and duration of PA. While NW individuals performed vigorous bouts and greater duration of activities from running and bicycling, OB participants reported vigorous walking and stair climbing as vigorous activity. Overweight and obese adults obtained a greater proportion of VPA from yard work (min/wk) and stair climbing (times/wk) than NW adults.

## DISCUSSION

Numerous studies have shown a direct relationship between higher PA levels and lower prevalence rates of obesity-related health risks.[18,19,25,28] Kruger[29] reported that despite intentions to lose or maintain weight, a significant proportion of adults are not physically active, even at minimum recommended levels, a finding confirmed in this study. Furthermore, current data are lacking that describe the PA habits across weight classifications, which would provide valuable formative data for health promotion programming.

The foundation of successful weight loss involves caloric deficits, where the metabolic cost of exercise exceeds energy intakes, leading to reductions in body weight.[14] Aerobic activity enhances energy expenditure, promoting FFA oxidation by skeletal muscles from adipose stores as the primary fuel for the activity.[30] Current clinical guidelines specific to weight loss primarily focus on low to moderate intensity PA;[24,31,32] however, this may not provide adequate time to allow the body to physiologically achieve sustained FFA oxidation nor maintain for adequate duration to maintain this aerobic process to receive weight loss benefits[24,31–34] Data from the present study suggested relative differences in the frequency and amounts of MPA and VPA by weight status. Adults striving for weight loss or a healthy weight should be encouraged to increase their cumulative energy expenditure by engaging in longer durations of PA at intensities necessary to create an energy deficit.[14,24] In terms of vigorous and total activities, NW adults from the present study spent significantly more time per week (Time) engaged in vigorous and total activities (Frequency) than OW and OB individuals. Taken together, these data suggest that VPA may contribute to a better understanding of weight status.

In addition to addressing duration of PA, the FITT Principle is designed to comprise the additional facets of PA to promote optimal health. Previous studies have examined the proportion of individuals meeting duration-based guidelines without respect to the activities performed to achieve those rates, especially in light of intensity.[5,6,20,21] Moderate duration activities were operationally-defined as those that "[cause] small increases in breathing or heart rate."[26] Of particular interest, the specific types of "moderate" activities reported by the OW categories were unlikely to result in sustained energy deficits (eg, golfing, fishing). Although NW adults shared the common frequency and duration of most MPA; the significant difference was found in the vigorous PA reported. Running was the primary VPA reported for both frequency and duration of PA in NW adults; whereas stair climbing was the primary VPA of both duration and intensity for OB adults. Therefore, participants in the present study had varying perceptions about that intensity needed to achieve true moderate or vigorous levels. Taken in combination, these findings suggest that adults are not currently meeting the minimum physiological threshold of intensity needed to elicit an energy deficit to facilitate weight loss.

Historically, overweight individuals have been encouraged to engage in low to moderate intensity activities for a longer duration of time in an attempt to enhance FFA release[14] and

thus, contribute to fat loss.[14,24,31–34] From the present study, nearly half of OW or OB participants met the duration-based guidelines but did not exhibit the benefits of a healthy weight because of the focus on moderate activity alone. Similarly, those with healthy WC participated in greater amounts of VPA and TPA. Thus, differences exist in the types and intensities of activities performed and may help to explain differences in weight status. NW individuals from the current study performed greater amounts of VPA, which included activities such as running and weight-lifting. Our data suggests that the translation of the research evidence into clinical recommendations does not appear to precipitate optimal weight outcomes in the general population using the current recommendations.

The prevalence of obesity-related comorbidities highlights the importance of focused efforts to prevent and treat obesity rather than just its related comorbidities.[13] PA has been shown to increase lean body mass, decrease WC, improve cardiometabolic risk factors and reduce the risk of chronic disease.[28] However, these data suggest a gap in the literature regarding the reporting of PA intensity as well as the potential for reliance on a cumulative effect of shorter bouts of MPA to precipitate a healthy weight. The data suggest a need for further intervention to assess the effectiveness of varied intensities and durations of activity to elicit weight loss or weight maintenance; these data are paramount to improving health outcomes and reducing disease-related-risk factors through therapeutic lifestyle modifications.

Although these data illuminate many existing differences in the PA patterns of Americans by weight status, several limitations must be addressed within the context of the available data, which are inherent with the use of secondary data. These data reflect cross-sectional, correlational data and do not suggest that the obesity status examined was caused by PA patterns described herein. Furthermore, these analyses were limited to the data available from the public-use data files, which represent a snapshot in time and do not indicate causation; however, the use of a 30-day period allows for a broader assessment of activity patterns than over a shorter period. Data were limited to the PA questionnaire to assess current PA levels, which were not available for all participants completing the MEC examination; however, standardized interview techniques were used by trained interviewers to collect the PA questionnaire. The PA data analyzed represented were self-reported as activities participated in over the past 30 days, which may introduce recall bias and may not reflect usual PA patterns. As well, there may be a potential in these data to overreport exertion, which may artificially inflate the amount of VPA in the sample.

## CONCLUSION

PA is a necessary component to achieve or maintain a healthy weight. Particularly, adults with obesity and a central adiposity reported the lowest overall duration and frequency of VPA and TPA. MPA, such as walking or yard work, may not be sufficient for achieving optimal weight status. Therefore, individuals should not just consider the duration of an activity, but remain attentive to the intensity level when striving for weight loss and maintenance. Though MPA provides some health benefits; weight loss does not seem to be one of them. Indeed, caloric expenditure must exceed caloric intake for weight loss. These findings confirm the need to reconsider current guidelines in an effort to target PA guidelines to combat the obesity epidemic.

Results from the present study suggest that critical differences exist in the frequency and duration of PA by weight status. Although nearly half of the OB population currently meet the PA guidelines, these data indicate that the reported PA behaviors have not resulted in achieving NW status. Those who maintained a healthy weight were consistently more likely to engage in VPA. Future efforts should explore the effectiveness of MPA alone to promote optimal health and weight management is warranted. This information is pivotal in

providing formative data from which to modify current PA interventions, and those designed to be relevant for overweight and at risk adults in particular. Furthermore, a focused, widespread educational effort is needed to strengthen the emphasis on VPA in PA guidelines.

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## Table 1

Comparison of the Healthy American and American College of Sports Medicine Guidelines using the FITT Principle

| FITT | 2008 Healthy Americans | 2007 ACSM/AHA |
|---|---|---|
| Frequency | *≥ 3 times/week* | *≥5 times/wk* |
| Intensity | Moderate/vigorous | Moderate/vigorous |
| Time | *≥150 – 300 mod And/Or ≥75 – 150 vig* | *≥150 mod And/Or ≥60 vig* |
| Type | Combination of cardiovascular and resistance training | Combination of cardiovascular and resistance training |

**Table 2**

NHANES Data Sources Used in the Analyses

| Data | Source | Variable Name | Transformations |
|---|---|---|---|
| **Sociodemographics** | | | |
| Age (yr) | Demographics | RIDAGEYR | None |
| Gender | Demographics | RIAGENDR | None |
| Race/Ethnicity | Demographics | RIDRETH1 | White/Non-white |
| Income | Demographics | INDFMPIR | Maintained poverty-to-income ratio |
| Education | Demographics | DMDEDUC2 | None |
| **Obesity Markers** | | | |
| Body Mass Index | Physical Exam | BMXBMI | BMI categories |
| Waist Circumference | Physical Exam | BMXWAIST | Waist Circumference risk factor (Female <88cm, Male <102 cm) |
| **Individual Physical Activities** | | | |
| Intensity | Questionnaire | PADLEVEL | Stratified by moderate or vigorous |
| Frequency | Questionnaire | PADTIMES | Computed frequency of activity (x/wk) |
| Duration | Questionnaire | PADDURAT | Computed duration of activity (min/wk) |

**Table 3**

Proportion and Likelihood of Meeting Physical Activity Guidelines by Measures of Obesity Status

| | | Met HA Guidelines | | Met ACSM Guidelines | |
|---|---|---|---|---|---|
| | | % (n) | OR (95% CI) | % (n) | OR (95% CI) |
| BMI category | Normal weight | 57.7 (4440) | 1.0 referent | 42.7 (3286) | 1.0 referent |
| | Overweight | 52.4 (4032) | 0.82 (0.72,0.94) | 39.0 (3001) | 0.89 (0.78,1.02) |
| | Obese | 48.3 (3717) | 0.70 (0.61,0.81) | 35.2 (2709) | 0.75 (0.65,0.87) |
| Waist Circumference | No Waist Circumference risk | 56.7 (4363) | 1.0 referent | 42.2 (3247) | 1.0 referent |
| | Has Waist Circumference risk | 47.6 (3663) | 0.70 (0.62,0.79) | 34.8 (2678) | 0.73 (0.64,0.84) |

Sociodemographic factors that were controlled for in this analysis included age in years, gender, ethnicity, income-to-poverty ratio and educational attainment level. BMI ($kg/m^2$) computed from measured height and weight. Waist Circumference risk (<102cm Male, 88cm Female)

**Table 4**

Mean Frequency and Duration of Physical Activity by Intensity and BMI Category

| | Intensity | Normal Weight | Overweight | Obese | P |
|---|---|---|---|---|---|
| Frequency (times per week) | Moderate | 2.51 (0.11) | 2.66 (0.13) | 2.59 (0.14) | 0.514 |
| | Vigorous | 2.74 (0.22) | 2.29 (0.16) | 1.87 (0.16) | <0.001 |
| | Total | 5.26 (0.27) | 4.95 (0.22) | 4.45 (0.23) | 0.001 |
| Duration (min per week) | Moderate | 102.27 (5.53) | 121.39 (6.73) | 117.68 (5.68) | 0.022 |
| | Vigorous | 140.94 (14.95) | 109.41 (12.31) | 95.87 (13.22) | <0.001 |
| | Total | 243.2 (15.31) | 230.8 (12.4) | 213.55 (13.52) | 0.030 |

Data presented as Mean (SE). Sociodemographic factors that were controlled for in this analysis included age in years, gender, ethnicity, income-to-poverty ratio and educational attainment level

## Table 5

Mean Frequency and Duration of Physical Activity by Waist Circumference Risk Factor

| Activity | Intensity | Healthy Waist Circumference | Has Waist Circumference risk factor | P |
|---|---|---|---|---|
| Frequency (times per week) | Moderate | 2.58 (0.13) | 2.6 (0.13) | 0.879 |
| | Vigorous | 2.66 (0.17) | 1.83 (0.16) | <0.001 |
| | Total | 5.24 (0.22) | 4.43 (0.21) | <0.001 |
| Duration (min per week) | Moderate | 113.22 (5.26) | 114.86 (4.99) | 0.792 |
| | Vigorous | 132.88 (11.87) | 90.1 (12.13) | <0.001 |
| | Total | 246.1 (12.03) | 204.95 (12.29) | <0.001 |

Data presented as Mean (SE).

Sociodemographic factors that were controlled for in this analysis included age in years, gender, ethnicity, income-to-poverty ratio and educational attainment level

## Table 6

Most Frequently Performed Behaviors by Intensity and Weight Status

| | | Weight Classification | | |
|---|---|---|---|---|
| **Intensity** | **Leisure time activity** | **Normal Weight** | **Overweight** | **Obese** |
| Moderate | Walking | 47.0% | 50.0% | 52.0% |
| | Stretching | 9.4% | 7.7% | 7.4% |
| | Weight lifting | 7.7% | 6.8% | 5.7% |
| | Dance | 4.3% | 3.3% | 4.1% |
| | Bicycling | 3.8% | 3.6% | 3.6% |
| | Stair climbing | 3.1% | 3.7% | 4.4% |
| | Golf | 2.4% | 3.2% | 2.3% |
| | Aerobics | 2.3% | <2% | <2% |
| | Treadmill | 2.1% | 2.9% | 2.2% |
| | Swimming | <2% | <2% | 2.8% |
| Vigorous | Running | 20.9% | 17.3% | 10.9% |
| | Bicycling | 10.3% | 9.8% | 10.7% |
| | Aerobics | 8.6% | 8.0% | 8.7% |
| | Walking | 8.0% | 8.1% | 9.8% |
| | Treadmill | 7.0% | 9.8% | 9.6% |
| | Stair climbing | 6.8% | 8.9% | 11.8% |
| | Weight lifting | 5.1% | 4.6% | 4.5% |
| | Basketball | 4.6% | 3.7% | 5.2% |
| | Swimming | 3.7% | 4.1% | 4.2% |
| | Hiking | 2.6% | 3.9% | 2.6% |

## Table 7

Activities Contributed Greatest to Total Duration of Activity by Intensity and Weight Status

| Intensity | Leisure time activity | NW | OW | OB |
|---|---|---|---|---|
| Moderate | Walking | 40.6% | 40.9% | 43.4% |
| | Golf | 9.2% | 13.7% | 10.2% |
| | Weight lifting | 6.5% | 5.6% | 4.6% |
| | Dance | 5.4% | 5.5% | 4.6% |
| | Fishing | 4.1% | 4.7% | 5.9% |
| | Yard work | 3.8% | 4.1% | 2.9% |
| | Stretching | 3.8% | 2.4% | 2.1% |
| | Bicycling | 3.4% | 2.8% | 2.7% |
| | Hiking | 2.4% | <2% | 2.3% |
| | Bowling | <2% | <2% | 2.1% |
| | Hunting | <2% | 2.0% | 3.4% |
| | Stair climbing | <2% | <2% | 2.1% |
| | Swimming | <2% | <2% | 2.8% |
| | Treadmill | <2% | <2% | <2% |
| Vigorous | Running | 13.4% | 11.6% | 7.3% |
| | Bicycling | 10.5% | 9.5% | 8.3% |
| | Walking | 8.8% | 8.1% | 10.1% |
| | Basketball | 8.0% | 5.7% | 8.2% |
| | Aerobics | 7.2% | 6.6% | 7.7% |
| | Weight lifting | 5.3% | 5.3% | 5.0% |
| | Hiking | 5.2% | 6.0% | 4.1% |
| | Treadmill | 4.3% | 5.9% | 5.5% |
| | Swimming | 4.1% | 4.0% | 4.9% |
| | Yard work | 3.9% | 7.8% | 7.9% |
| | Stair climbing | 2.8% | 5.4% | 5.0% |
| | Dance | 2.5% | <2% | 2.4% |
| | Tennis | 2.4% | 2.0% | <2% |
| | Soccer | 2.1% | <2% | <2% |
| | Gardening | <2% | 3.2% | 5.0% |
| | Football | <2% | <2% | 2.1% |
| | Softball | <2% | <2% | 2.1% |