Maintenance of recommended physical activity levels is associated with favorable cardiovascular outcomes. Consequently, the American Heart Association (AHA) included physical activity in the new Ideal Cardiovascular Health concept. Although physical activity is known to decline with age, the age-specific probability of transitioning between AHA defined levels (ideal, intermediate, poor) is unclear. This knowledge could inform interventions seeking to increase or maintain physical activity levels across the life-course. We estimated age-specific prevalence of ideal (≥150 min/wk moderate or ≥75 min/wk vigorous or equivalent combination), intermediate (1-149 min/wk moderate or 1-74 min/wk vigorous or equivalent combination) and poor (0 min moderate and vigorous) physical activity among adult (16+) European Americans (EA) and African Americans (AA) from the 2007-2010 NHANES (n=13,418) and Hispanic/Latino participants (H/L) from the 2008-2011 HCHS/SOL (n=14,291). Prevalence estimation incorporated data from identical NHANES and HCHS/SOL self-report questionnaires. We then used the prevalence estimates to calculate age, race, and sex-specific probabilities of transitioning between levels using Markov-type state-transition models. These models are designed to estimate transition probabilities from cross-sectional data assuming time-constant transitions, and have been updated to accommodate complex sampling procedures. The estimated 5-year probability of maintaining ideal physical activity levels remained high through the fourth decade of life, after which race and sex differences were observed. For example, the estimated 5-year probabilities of transitioning from ideal to intermediate physical activity levels were similar at age 40 for EA and AA men (1.2% [95%CI: 0.3, 2.3] vs. 2.2% [95%CI: 1.0, 3.6]), but by age 65 diverged to 5.3% (95%CI: 3.9, 6.9) vs. 11.6% (95%CI: 8.5, 15.2), respectively. During middle age, the estimated probability of transitioning from intermediate to poor physical activity levels was accelerated, although variation by race was noted. For example, the estimated probability of transitioning from intermediate to poor physical activity levels was <25% for EA, AA and H/L men through age 40, but by age 65 this increased to 32.6% (95%CI: 22.0, 44.1) for EA men and 41.1% (95%CI: 26.1, 58.0) for AA men while remaining low (11.1% (95%CI: 0.3, 24.3) for H/L men. Across all race-sex groups, individuals with poor physical activity levels had a 0% estimated probability of transitioning to ideal or intermediate physical activity levels, regardless of age. These results indicate need for interventions aimed at maintaining ideal physical activity levels beginning in young adulthood, particularly in AAs who transition from ideal levels at earlier ages than other race/ethnic groups. Innovative efforts may be needed for those with poor physical activity.