

A Multi-Year Survey of Physical Activity among College Students, their Families, and Friends

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Abstract

The 1996 U.S. Surgeon General's report on Physical Activity and Health revealed disturbingly low rates of physical activity among Americans. The report publicized the already well-documented link between inadequate exercise and chronic disease and its authors urged the nation to become more physically active. More than a decade has passed since the report was released, but most U.S. adults still do not engage in regular physical activity. Annually since 1996, undergraduate students at Saint Mary's College of California have surveyed the exercise behaviors of their adult peers, family and friends. The results of this time series study have revealed important statistical trends in exercise behaviors, and allowed comparisons with national physical activity data. Since 1996, both the Saint Mary's subjects and the general population reported less physical inactivity and higher rates of exercise that meet or exceed what is generally recommended for maintaining or improving health. The Saint Mary's subjects were, by percentage, more likely to be physically active than the national population. Despite this good news, the study also revealed that a disturbingly high percentage of the Saint Mary's subjects and the national population were physically inactive or only engaged in limited physical activity.

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Introduction

In 1996, the U.S. Surgeon General's report on Physical Activity and Health revealed startling statistics with regard to Americans and their level of physical activity. Despite the fact that since the 1970s the American Heart Association (AHA), the American College of Sports Medicine (ACSM), and other prominent organizations had been issuing physical activity recommendations for health, the report announced that, "more than 60 percent of American adults are not regularly active, and 25 percent of the adult population are not active at all" (U.S. Department of Health and Human Services, 1996). The Surgeon General's report not only emphasized the link between inadequate exercise and chronic disease, but also detailed the positive role that regular physical activity plays in preventing and delaying the onset of multiple pathologies (Centers for Disease Control and Prevention, 1999). Perhaps because of the Surgeon General's report and the

various efforts of allied health professionals to encourage Americans to exercise, between 1996 and 2006 the prevalence of leisure-time physical inactivity declined from 29.9% to 23.9%. However, a decade after the 1996 report nearly one in four American adults still reported no leisure-time physical activity (Centers for Disease Control and Prevention, 2008a) and more than half of the nation's adults did not meet the recommended levels of physical activity (Centers for Disease Control and Prevention, 2008b).

Purpose of the Study

Immediately following the release of the 1996 Surgeon General's report, a multi-year study focused on physical activity was initiated in the required introductory course in the Department of Kinesiology at Saint Mary's College of California. This work is ongoing with 11 years of results collected. All students enrolled in the department's introductory course participated in the study. The study's main goals were to gather

and analyze data on the exercise behaviors of the students' adult peers, family and friends and compare these data to national physical activity behaviors. We wanted to know if our subjects were at similar high risk for chronic disease (due to physical inactivity and low rates of exercise) as the national population and if there were any exercise behavior trends within the Saint Mary's population.

Methods

Sample

Annually since 1996 (during the Thanksgiving holiday), the department's students conducted surveys that focused on the exercise behaviors of their peers, family, and friends. Each introductory course enrolled approximately 30 students. This project was voluntary and not graded. The survey's subjects were adults (18-65 years of age) who were related to or were friends of the Saint Mary's students administering the survey. Students were given a set of instructions before administering the survey. One instruction was for the students to give the survey at a time and place when and where most people (family and friends) were present. The survey question did not change during the 11 years that data were collected. The Saint Mary's students who conducted the survey were also included as subjects. On average, 354 adult subjects were surveyed each year. Individuals who indicated they could not exercise were excluded. Subject and administrator anonymity was maintained throughout.

Measures

The survey subjects were asked: "How many days during the previous week (seven days) did you engage in moderate intensity exercise?" This question allowed exercise during non-work time and physical activity during employment hours to be counted. Moderate intensity was defined for the respondents per the guidelines in the 1996 Surgeon General's report. In the Surgeon General's report, moderate intensity exercise is a function of exercise intensity and duration, and the students who administered the survey were given multiple examples of activity that qualified as such. The study was designed to produce data that would: 1) reveal the Saint

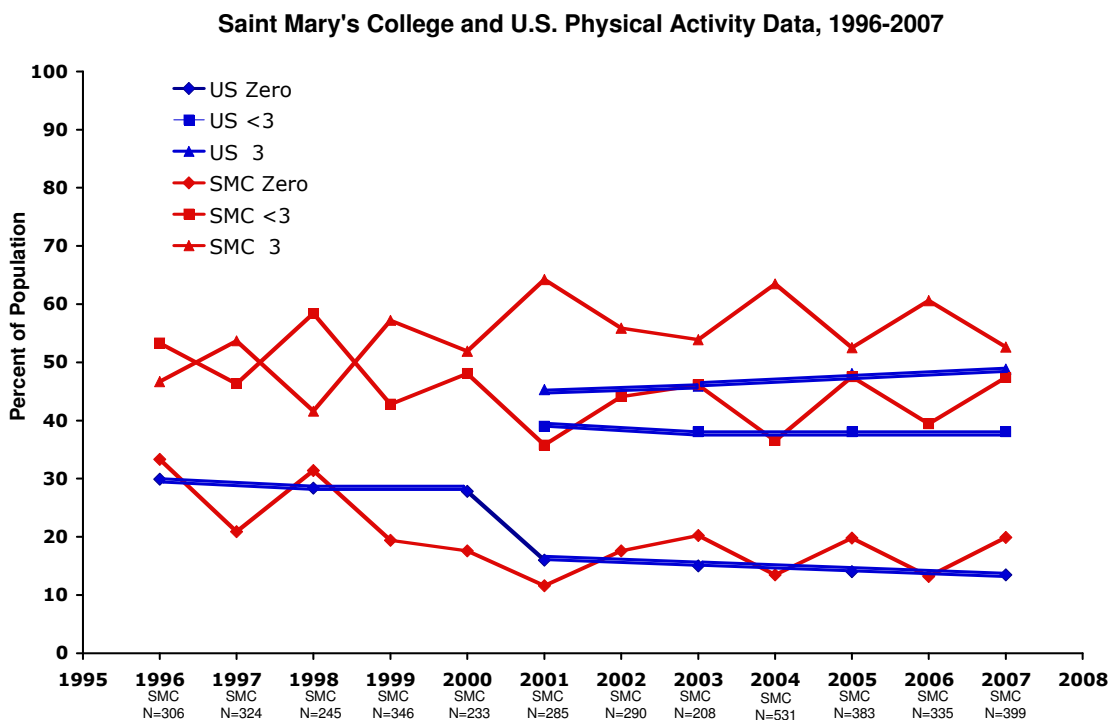
Mary's subjects' physical activity levels and trends and 2) allow these to be compared to physical activity behaviors and trends among U.S. adults. The Saint Mary's survey was particularly constructed to collect information on the percentage of subjects that reported: 1) no moderate intensity exercise (labeled "SMC Zero" in Figure 1 below); 2) some physical activity or exercise, but below recommended levels (labeled "SMC < 3" in order to represent subjects who engaged in exercise or physical activity on fewer than three days in the previous week); and 3) exercise or physical activity levels that met the Surgeon General's report recommendations, i.e., moderate intensity physical activity for at least 30 minutes on five days per week or vigorous physical activity for 20 minutes on three days or more per week (labeled as "SMC \geq 3").

The Saint Mary's survey results are charted in Figure 1 with the most comparable, and, before 2001, the only available, CDC nationwide data on adult Americans. The CDC and Saint Mary's physical activity level categories were not identical, but do allow for some meaningful comparisons. For our first category in Figure 1, "US Zero," we used CDC reports that tracked "no leisure time physical activity." This was the best available national data for 1996-2000. However, from 2001-2007, in "US Zero," we used CDC data that reported individuals who were "inactive." The "inactive" category was more comparable to "SMC Zero" than the "no leisure time physical activity" category. The CDC defined individuals as "inactive" if they engaged in < 10 minutes of moderate or vigorous intensity physical activity per week. For our second category, "US < 3," we used CDC reports that tracked U.S. adults who engaged in "insufficient" exercise. These adults were more physically active than the "inactive" group, but did not meet the Surgeon General's recommended level of physical activity. Our third category, "US \geq 3," used CDC reports that tracked adults who "met recommended physical activity" levels, as defined in the 1996 Surgeon General's report. These individuals engaged in moderate intensity physical activity for at least 30 minutes on five days per week or vigorous physical activity for 20 minutes on three days or

more per week or both. See Centers for Disease Control and Prevention, 2008c for the CDC reports on rates of physical activity among American adults.

Because of the different categories used in the national and Saint Mary's College studies,

statistical comparisons were not carried out on these data. However, the Saint Mary's data were statistically analyzed. A chi-square test was conducted to determine whether subjects from 1996 significantly differed from subjects in 2007 in how frequently they engaged in moderate intensity exercise.



* p<0.05, for SMC zero, SMC < 3, and SMC ≥ 3 for trends between 1996 and 2007.

Figure 1. Saint Mary's College and U.S. Physical Activity Data, 1996-2007. SMC Zero: no moderate intensity exercise; SMC < 3: exercise or physical activity on fewer than three days in the previous week; SMC ≥ 3: exercise or physical activity levels that met the Surgeon General's report recommendations. US Zero (1996-2000): "no leisure time physical activity" and US Zero (2001-2007): "inactive" (<10 minutes of moderate or vigorous intensity physical activity per week); US <3: "insufficient" (more physically active than the "inactive" group but did not meet the Surgeon General's recommended level of physical activity); US ≥ 3: "met recommended physical activity" (as defined in the 1996 Surgeon General's report).

Results

Figure 1 presents the results and trends from the Saint Mary's College surveys and national exercise behaviors and trends as reported by the CDC. When compared to the U.S. adult population, the Saint Mary's subjects, by percentage, were more physically active at and above recommended levels. For example, between 2001 and 2007, 58% of the Saint

Mary's population reported exercising at or above the Surgeon General's recommended levels of physical activity. During the same time frame, only 47% of adult Americans met or exceeded the recommended levels of physical activity. Trends in the study's three categories were common to both the Saint Mary's and national groups. In general, adult Americans are becoming: 1) less physically inactive, 2) less

likely to exercise below recommended levels, and 3) increasingly likely to exercise at or above recommended levels. However, it is important to point out that despite these advances, large segments of both populations were not exercising at all, or were doing so below recommended levels. For example, between 2001 and 2007, 42% of the Saint Mary's population did not meet the Surgeon General's recommended levels of physical activity and neither did 53% of adult Americans.

The results of the chi-square test revealed significant change ($p < 0.05$) over time in all three of the Saint Mary's College categories. Specifically, between 1996 and 2007, there was: 1) a statistically significant decrease in the percentage of subjects that engaged in no physical activity, 2) a statistically significant decrease in the percentage of subjects that were physically active below recommended levels, and 3) a statistically significant increase in the percentage of subjects that were physically active at and above recommended levels.

Discussion

The annual Saint Mary's survey project has provided important data on exercise behaviors among the subject group and allows some comparisons with national levels of physical activity. However, because the scope of this study was limited (e.g., the subjects' sex, specific age, race, ethnicity, and educational attainment level were not collected) only broad comparisons can be drawn and only to the general U.S. adult population.

The number of student-athletes and Kinesiology majors included in the Saint Mary's survey probably explains why the Saint Mary's population was more likely to be physically active at and above recommended levels than the national group. The Department of Kinesiology enrolls a significant number of students who participate in intercollegiate athletics. Approximately 25 percent of the students in each introductory course were student-athletes, and thus were required to exercise vigorously on most days of the week. Many of these students came from homes where children were

encouraged to engage in sport, and the adults in these families were often physically active themselves. Additionally, given their choice of academic major, even those undergraduates who were not college athletes had an interest in physical activity and sport and were often regular exercisers and came from active families. Though Saint Mary's matriculates a significant number of first generation college students, many others come from households where parents have a college education. This level of educational attainment is linked to being more likely to engage in regular physical activity when compared to adults who have not attended college. Together, these Saint Mary's subject characteristics probably explain the group's higher levels of regular exercise when compared to the national population.

This study served as a valuable learning vehicle for Department of Kinesiology students. The project has been particularly useful for students as they examine Americans' exercise habits and disorders and disease related to physical inactivity. Hundreds of undergraduates have been exposed to classic and current epidemiological studies and gained experience as student-researchers through involvement in the study. The project has encouraged students to think critically about physical activity and inactivity as multifaceted behavior choices that impact not only the individual citizen but also broader society. Many of our students are destined for careers in health promotion. Preparing for and administering the survey and then analyzing and discussing its data have provided foundational knowledge for students who aspire to become professionals in our field.

Conclusion

This multi-year survey provided valuable data concerning the exercise habits of one group of adult Americans and has allowed their behaviors to be compared to the physical activity levels of the national population. During the last decade, both the Saint Mary's subjects and the general population became less physically inactive and less likely to exercise at levels below what is generally recommended for maintaining or improving health. Additionally, over time, more individuals in both groups reported exercising at

or above recommended levels. The Saint Mary's subjects were more likely to be physically active than the national population. Despite this good news, the study also revealed that a disturbingly high percentage of the Saint Mary's subjects and the national population were physically inactive,

or only engaged in limited physical activity. Because these individuals exercise infrequently or not at all, they are at increased risk for serious chronic disorders and disease when compared to those who exercise regularly.

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