

About the Physical Activity Research Resources of the Risk Factor Monitoring and Methods Branch Applied Research Program

Introduction

The Risk Factor Monitoring and Methods Branch (RFMMB) is one of three branches in the National Cancer Institute's Applied Research Program. RFMMB contributes to reducing cancer in the US by serving as a critical link between etiologic research on cancer risk factors, such as tobacco, diet, physical activity, sun exposure, and genetics and family history, and the translation of such research into targeted and effective interventions for prevention.

Current evidence convincingly indicates that physical activity reduces the risk of colon and breast cancer. Physical activity may also reduce risk of prostate cancer. Scientists are evaluating potential relationships between physical activity and other cancers.

The consistent findings for colon and breast cancer have led researchers to recommend that individuals increase physical activity to reduce the risk of cancer. However, it is not yet possible to provide a specific activity prescription for the population.

To better understand the relationship between physical activity and cancer and to make specific activity prescriptions, it is necessary to be able to accurately assess levels and types of activity. This poses a challenge because existing assessment methods are crude and imprecise.

The RFMMB supports the collection of physical activity data in existing and planned surveys. In doing so, we are attempting to develop more complete assessments of individuals' physical activity based on information derived from multiple contexts, including transportation, occupation, and recreation. We also

conduct and support methodologic research to evaluate and improve physical activity assessment.

Activity Monitors

We have supported the use of activity monitors to collect objective physical activity data in large surveys, such as the National Health and Nutrition Examination Survey (NHANES). These monitors, which record motion activity as people wear them over several days, circumvent the cognitive and cultural challenges inherent in collecting physical activity data by questionnaire.

Several SAS programs are now available to investigators who wish to analyze accelerometer data from the 2003-2004 NHANES. Specifically, SAS code is now available for analyzing Actigraph 7164 Physical Activity Monitor (PAM) data from the 2003-2004 NHANES. These programs are written to import and analyze accelerometer data downloaded from the National Center for Health Statistics.

If you wish to use these programs with data downloaded directly from Actigraph 7164 accelerometers used in a different study, then you must first convert the data into the appropriate format and merge the records from multiple accelerometers.

For more information:

http://riskfactor.cancer.gov/tools/nhanes_pam

Troiano RP, Berrigan D, Dodd KW, Mâsse LC, Tilert T, McDowell M. Physical activity in the United States measured by accelerometer. *Med Sci Sports Exerc.* 2008 Jan;40(1):181-8.

Cognitive Research

We are conducting cognitive research to better understand the information respondents provide when asked about their physical activity. We are exploring cultural differences in how concepts such as “leisure time,” “vigorous activity,” and “moderate activity” are interpreted.

Standardized Surveys of Walking & Bicycling Database

This database contains survey questions and a list of validation studies for standardized survey questions on walking and biking from multiple national and international physical activity surveys and questionnaires (PAQs). The database provides easy access to numerous questions assessing duration and frequency of walking and bicycling in the non-disabled adult population, plus references describing validation studies of the questions.

For more information:

<http://appliedresearch.cancer.gov/tools/paq>

Coronary Artery Risk Development in Young Adults (CARDIA)

We supported research in the CARDIA cohort to determine whether it was feasible to assess physical activity retrospectively over long time spans. Results from this ancillary study will provide information on how well respondents can recall information about their physical activity in the distant past. Preliminary findings suggest that physical activity recall from the distant past is modestly reliable. Recall was better for activity during high school and for vigorous than moderate activity. However, most participants misclassified the number of months they participated in activities throughout the year, generally recalling either no activity (0 months) or activity during all 12 months regardless of the number of months initially reported.

We will also learn from this study whether certain factors predict an individual’s ability to provide a reliable report.

For more information:

<http://www.cardia.dopm.uab.edu/overview>

National Health Interview Survey (NHIS) and California Health Interview Survey (CHIS)

We have supported inclusion of a variety of questions related to physical activity and sedentary behavior in the National Health Interview Survey (NHIS) Cancer Control Topical Module and the California Health Interview Survey (CHIS). These added questions complement the NHIS/CHIS core physical activity questions concerning leisure and transportation walking. The data from these surveys are publicly available and provide a rich resource for exploring the demographic and health related correlates of physical activity in multiple domains.

For more information:

<http://appliedresearch.cancer.gov/surveys/nhis>

<http://appliedresearch.cancer.gov/surveys/chis>

Genes, Environment, and Health Initiative (GEI)

In collaboration with our NIH partners, we are supporting the research and development of innovative wearable sensors to accurately measure physical activity. This project is part of the NIH-wide GEI, with \$16 million in funding over 4 years for 7 grants. GEI investigators are using cell phone technology to capture and/or transmit data, combining accelerometers with physiologic sensors (e.g., heart rate) to improve estimates of energy expenditure, and pairing video/audio components with automated processing technology (e.g., image detection, voice recognition).

For more information: <http://www.gei.nih.gov>