

***Protocol: Development and Promotion of Walking Trails***  
**Prevention Research Center at Saint Louis University**  
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This 3-stage protocol is intended to assist researchers and practitioners who are implementing environmental changes and programs to promote walking. It is based on our work in southeastern Missouri and reflects over a decade of experience. While we anticipate this protocol will be useful to others, it should be emphasized that in participatory research, a “cookbook” approach is not advisable. Therefore, we suggest others use this protocol as general guidance while adapting to the context of their own local needs and assets.

**Stage 1: Needs assessment and planning**

Use quantitative data to identify high risk areas.

Data-driven planning relied mainly two data sets: mortality data and regional risk factor data (e.g., smoking, physical inactivity). Analysis of mortality data revealed an unusual concentration of cardiovascular disease deaths in the southeast portion of the state. A regional behavioral risk factor survey identified key risk factors that could potentially be addressed through community-based programs and policies. These data suggested that physical inactivity, obesity, and hypertension are especially acute problems in the area.

Identify and characterize walking trails “social reconnaissance”.

Walking trails in southeast Missouri range widely in material and length. Prior to any walking trail intervention, each trail was visited and characteristics were documented. Trail material (e.g. asphalt, gravel, chat), length and condition were identified, as well as numerous amenities. Examples of amenities include: presence of lights, benches, playground, sport fields, restrooms, water fountain, parking, and posted restrictions (e.g. no bikes/skateboards/roller blades, no pets, hours of operation). Research staff measured trail length with a rolling measurement device (a Rolotape) for accuracy. This frequently differed from the length reported by the community.

Conduct focus groups to understand factors that facilitate or impede walking.

The purpose of the focus groups was to use the framework of the Triandis Model of Social Behavior (1) to guide discussion of barriers and facilitators to walking for exercise and to using the trail as a place to walk. Perceived consequences of walking, social factors that contribute to walking behavior, and facilitating and inhibiting factors were discussed. The focus group protocol was developed and reviewed by experts as well as community members to ensure that the questions were open-ended and culturally appropriate. A total of 11 focus groups were conducted with 55 individuals in 2 communities. The participants identified factors that influenced walking and walking trail use that included the individual level (habit, time, knowledge, motivation, skills), physical environment level (safety, aesthetics, weather, policies) and social environment level (norms, culture, social support, role models). They also identified characteristics of walking that made it an accessible form of exercise that almost anyone could do.

### Assess community readiness & interest.

It was important to obtain input from the community members in preparation for delivering the interventions. Existing coalition members were asked about the use of card readers and tailored newsletters in their communities. The overall concepts were acceptable to the community. A prototype card reader developed by Dr. Fiona Bull was temporarily installed at the trails and feedback was collected. Concerns from local community members included vandalism and weather-related concerns. But in general they liked the idea of being able to receive feedback about and incentives for their walking behavior. Prototype newsletters were given to coalition members for their input. The newsletters were well-accepted with minor changes.

### Establish community steering committees & engage stakeholders.

To ensure success of the walking intervention, buy-in from stakeholders and community members was obtained. In early organizational/planning stages, researchers discussed program ideas with heart health coalition members and local health departments. In some communities, city hall, the chamber of commerce, and local hospitals were also involved. Overall, promoting walking for exercise and use of the local trail were acceptable ideas to the communities. Once the idea was accepted, community members involved with stakeholder organizations were invited to participate in a regional steering committee. The committee guided and planned interventions in their respective communities. Saint Louis University Prevention Research Center provided general guidance on evidence-based interventions and technical support to the community steering committee.

## **Stage 2: Intervention implementation**

### Hire & train local project coordinator.

A local project coordinator was hired from the region in which interventions occurred. The person had worked with the local health agency and had extensive knowledge about the people and public health issues in the region. Most of the training about the project was done informally through frequent conference calls and in-person meetings. The individual also attended several national meetings each year to learn about similar interventions in other geographic areas and populations.

### Establish communication, including regular steering committee meetings.

Because the intervention sites were 2-4 hours driving time from Saint Louis University, a variety of communication methods were needed. We held face-to-face meeting with the steering committee monthly or bimonthly. Personal computers and fax machines were purchased for the steering committee chairs to ensure they had email and fax access from their homes. A toll free number at university allowed anyone from the area to contact project staff without long distance phone charges.

### Plan for use of local funds.

As part of this program, “mini-grants,” in the range of \$2,000 to \$4,000 per county per year were provided. Working with the community steering committee, various options were laid out on how the funds might be spent. Options included some combination of the following:

- Hiring part time staff;
- Buying media time;

- Purchasing incentives for events (e.g., t-shirts, water bottles);
- Providing stipends for community leaders; and
- Upgrading walking trails (e.g., adding playground equipment).

In the end, the decision on how local funds were allocated was left to the community steering committee.

#### Build & install card reader devices.

After presentation of a pilot card reader, card reader/counters were installed at a local trailhead in each community. The card reader consisted of a large metal box that housed a power source (deep cell battery), data card, infrared beam and card swipe. The metal box was mounted to a post that also included a solar panel for recharging the battery. On the opposite side of the trail, a post with a reflector was installed to note breakages in the infrared beam (e.g. measure trail use).

How it works: The card reader had two purposes. First, it counted the number of times people pass in front of it, therefore logging how many people use the trail. This is determined by the number of infrared beam breakages logged on the data card. Second, it allowed people who are enrolled in a program to swipe a membership card with a unique identifier when they arrive and leave the trail. Each participant's personal use of the walking trail could be reported back through tailored newsletters. Both measures also allowed the research team to look at the frequency and length of time the trail is used in addition to what times of day were most popular.

Steps to installation and maintenance:

1. Prior to any installation, get approval from the appropriate group (trail owners, parks and recreation department or city hall).
2. Select a location for your card reader installation. Keep in mind where people usually start walking (the trail head), can park, or that allows for enough sunlight to utilize the solar powered recharge of the power source.
3. Using a post hole digger or two-man auger dig two holes on opposite sides of the trail. These holes should be approximately 4 feet deep. These will hold 4x4 posts.
4. Attach the solar panel to the top of one of the posts with appropriate wiring and casing that will sustain all weather conditions.
5. Mix cement and install the first post. Next, insert a grounding rod into the ground and connect recharge and power wiring as appropriate. This ensures safety for all walking path patrons. Finally, mount the card reader box to the post. Be sure the infrared beam is of a height to count adults, youth and persons with disabilities.
6. Next align and install the second post using the same steps above.
7. Once the box is mounted and the card reader/counter is working, align and attach the reflector to the opposite side of the trail.
8. Due to the ground settling over time, the reflector or infrared beam may need to be realigned to be sure counts are recorded. A misaligned beam will also drain the battery.
9. Even with the solar recharge, the battery may need to be recharged at an auto shop 3-4 times a year. This is especially important in months where there is less sunlight.

#### Enroll participants in newsletter program.

Individuals who were interested could sign up to receive tailored newsletters. These newsletters provided messages relating to physical activity and walking based on each person's responses in an enrollment questionnaire. Each newsletter was created using a computer program, and was unique to the recipient. Over a 2 year period 18 newsletters were sent. Participants could enroll in newsletters in one of three ways: 1) through participation in the telephone survey, 2) through community organizations or 3) by attending community events. Through the telephone survey, participants were asked if they would be interested in receiving free health information. If so, an explanation of the newsletters and enrollment questionnaire were sent. The community steering committee partnered with different community organizations such as hospitals, doctor's offices, chamber of commerce, county health departments and city hall to distribute enrollment questionnaires. The committee then ran announcements on public access television, in the local paper or on the radio to promote enrollment. In addition, the steering committee participated in community health fairs and organized a variety of events at the local trail where participants could use the trail and enroll in the newsletter program.

#### Organize events.

Events were organized largely under the guidance of the community steering committee. Each city was able to organize its own events and many events were carried out across the entire region, making more efficient use of resources. The local project coordinator played an important role in most events, particularly

### **Stage 3: Evaluation**

#### Conduct baseline & follow-up surveys.

Two special risk factor surveys (baseline and follow-up) were conducted to evaluate the project's progress. Telephone surveys were based on the methods of the Behavioral Risk Factor Surveillance System (BRFSS) (2, 3), developed by the Centers for Disease Control and Prevention. BRFSS provides a flexible, state health agency-based surveillance system to help plan, implement, and evaluate health promotion and disease prevention programs.

#### Develop survey instrument.

Whenever possible, dependent and independent variables were developed from existing, tested instruments. The self-reported walking behavior assessment used a four-item scale developed at San Diego State University (4). These questions ascertained the total number of minutes walked in the past week and total minutes walked for exercise.

#### Determine sampling scheme.

Using random-digit dialing, cross-sectional samples were selected of non-institutionalized adults in the six intervention communities in Missouri and six comparison communities (three in Arkansas and three in Tennessee) who had working telephones. Based on the 2000 census, an estimated 93% of households in the study region had telephones.

#### Process data from card reader devices.

On a monthly basis, information from the data cards located in the card reader were downloaded and cleared. On trails where there was high usage, this was done bimonthly. Each community's

data were sent to the university to be processed (cleaned) by the research team and incorporated into the tailored newsletters. Once received, the community data is imported into a database program and automated cleaning occurred. This process deleted any trail counts that were a result of people standing in front of the card reader and any test card numbers used for card reader maintenance. When cleaned, the database created a summary table reporting card numbers of walkers who used their unique membership card at the trail, the time they swiped their card, and the minutes between the first and last card swipe for that day. Research staff examined this file to ensure that each visit to the trail was recorded, and minutes were realistic. For those who had visited the trail more than one time in a day, their total time needed to be calculated manually. Once all fields were cleaned, the data was imported into software for production of tailored newsletters.

#### Disseminate data.

Following analysis of data, results of this project were disseminated widely to scientific researchers and public health practitioners. Dissemination occurred mainly through presentations at national and international meetings and via peer-reviewed publications. We also disseminated results locally to community volunteers and to our steering committee. Local project volunteers presented their perspectives to masters and doctoral students through classes at our school of public health.

#### **References**

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