

UCLA

American Indian Culture and Research Journal

Title

Preventing Cardiovascular Disease in Native Communities: The Traditional Living Challenge

Permalink

<https://escholarship.org/uc/item/7bh9h4ws>

Journal

American Indian Culture and Research Journal , 38(1)

ISSN

0161-6463

Authors

Dupuis, Anita
Ritenbaugh, Cheryl

Publication Date

2014

DOI

10.17953

Copyright Information

This work is made available under the terms of a Creative Commons Attribution-NonCommercial License, available at <https://creativecommons.org/licenses/by-nc/4.0/>

Peer reviewed

Preventing Cardiovascular Disease in Native Communities: The Traditional Living Challenge

Anita Dupuis and Cheryl Ritenbaugh

INTRODUCTION: THE TRADITIONAL LIVING CHALLENGE

This article presents the results of a Native-based intervention to address cardiovascular disease (CVD) risk factors in a population with high rates of CVD that used cultural capital as the foundation for the intervention. Conducted on the Flathead Indian Reservation in Montana and called the Traditional Living Challenge (TLC), the specific purpose of the intervention was to revitalize wellness by means of a cultural immersion experience that reproduced as closely as possible a former lifestyle with its higher level of health, during which the participants could foster personal and group motivation and a commitment to wellness.

The TLC itself is a health promotion/prevention intervention in which members of Confederated Salish and Kootenai Tribes (CSKT) can reconnect with the lifestyle of their ancestors and regain an appreciation for its wisdom,

ANITA DUPUIS (Confederated Salish and Kootenai) initiated a program of research as director of the Community Health and Development Department at Salish Kootenai College that focused on community and culturally based health promotion. She is currently a PhD candidate at the University of Montana. CHERYL RITENBAUGH is professor of family and community medicine, nutritional sciences, anthropology, and integrative medicine at the University of Arizona. She has worked with many American Indian communities since 1972, where her research has focused on disease etiology and prevention, particularly in relation to diabetes, heart disease, obesity, cancer, dental caries, and severe combined immunodeficiency diseases.

simplicity, and balance. The intervention was developed as a three- to nine-day traditional living experience that exposed participants to an immersion in Native lifestyles with a focus on diet and physical activity common to daily life prior to contact with European cultures. Feasibility assessment of community supports was conducted to assist participants in finding ways to translate their experiences into daily life in a way that reduced CVD risk factors.

The background to the development of the TLC model has been published elsewhere.¹ Using “immersion encampments,” the intervention acknowledged the importance of “Indian-ness,” identity, and a sense of belonging, and was designed to recreate culture-based social norms and create population-wide shifts in behavior toward health by drawing on the motivational desire of Native peoples to honor traditional values and culture—their cultural capital. The TLC model used a multicomponent strategy that addressed individual knowledge, attitudes, and behaviors, and incorporated social support, communal mastery, and empowerment. Grounding the intervention in traditional diets and lifestyles served as a stark reminder of how the tribal ancestors lived. That program elements have continued to spread within the community and to other local groups attests to the success of the program concept.

THE HEALTH STATUS OF AMERICAN INDIANS AND ALASKA NATIVES

American Indians/Alaska Natives (AI/ANs) suffer the greatest health disparities of all ethnic groups in the United States.² Cardiovascular disease is the leading cause of death among AI; the prevalence rate of CVD in 1999 in an AI population greater than forty-five years of age residing in Montana was 18 percent compared to 10 percent in the general population in that state.³ During the five-year period from 1999 to 2003, the prevalence of CVD risk factors increased significantly in the AI population in Montana: diabetes from 12 percent to 16 percent, hypertension from 26 percent to 34 percent, high cholesterol from 23 percent to 30 percent, and obesity from 34 percent to 39 percent.⁴ Among peoples residing in Montana of ages 18 to 44 years, AIs were more likely than non-Indians to report hypertension (15 percent vs. 10 percent), obesity (29 percent vs. 12 percent), and smoking (42 percent vs. 24 percent).⁵

Adult AI smoking rates in the Northern Plains/Plateau tribes, including the Confederated Salish and Kootenai Tribes (CSKT), have ranged from 36 percent to 50 percent over the past fifteen years.⁶ National data from 2005 to 2010 reported AI/AN smoking rates at 31.4 percent compared with overall smoking rates of 19.3 percent.⁷ In a national study of gender differences in smoking, drinking, and illicit drug use by ethnicity (grades eight to twelve), researchers found that lifetime prevalence was highest among AI populations

for both genders. American Indian girls showed a lifetime prevalence rate of smoking by grade twelve of 80.2 percent, and AI boys had a lifetime prevalence rate of 69.4 percent.⁸ These rates are particularly alarming as smoking is a major risk factor for CVD. These health risk factors and behaviors are a harbinger of serious health problems for members of these tribes unless lifestyle changes are implemented.

CULTURAL CONSONANCE, CULTURAL MODELS, CULTURAL CAPITAL

Cultural consonance is said to exist when one's life reflects the shared cultural model of the values, attitudes, beliefs, and behaviors within a particular societal cultural domain.⁹ Evidence suggests that the more culturally consonant one is with a shared cultural model, the healthier one is.¹⁰

The TLC model reflects this cultural consonance because it was designed to draw upon tribal traditional values, practices, lifeways, and resources, which researchers including Abel and Bourdieu describe as using enculturation to promote health.¹¹ Bourdieu suggests that the use of cultural capital is one of the key determinants of health status.¹² According to Bourdieu, cultural capital, which is based on cultural values, behavioral norms, and knowledge acquired through social learning, serves as the individual's or group's symbolic and informational resources for action.¹³ This perspective also views culturally based activities, knowledge, and perceptions as essential parts of health-related cultural capital.¹⁴

Bourdieu identifies three distinct forms of cultural capital: embodied, objectified, and institutionalized.¹⁵ Embodied cultural capital is that which is formed by one's personal experiences, education, upbringing, and training. For example, in many tribal communities, expert basket weavers are usually considered to possess important cultural capital, and their skill, knowledge, and products are highly sought by others. Objectified cultural capital refers to a number of symbolic tangible cultural goods owned by an individual or group, such as war shields, drums, or digging sticks, and the knowledge of how to use these goods. Institutional cultural capital refers to the qualifications for a privileged position or designation given or recognized by one's cultural group such as that of a war dance chief, camp crier (bearer of news), clown (disciplinarian), spiritual leader, or in today's world, the tribal chairperson.

Because many aspects of traditional tribal cultures and traditions have encouraged and fostered healthy living historically, many tribal groups utilize cultural capital in developing their health promotion programs to make the interventions culturally congruent. For example, Terry Cross and colleagues note that most models of American Indian community-based systems of care are found to be

culturally competent because the models draw on the cultural strengths (cultural capital) of the respective communities and utilize these cultural resources to shape the services the programs provide.¹⁶ These authors have also observed that “in some cases, the intervention practices are so completely integrated with the culture that it is difficult to describe to outsiders what is culture and what is the project.”¹⁷ The article in this collection by Smith-Morris and Epstein provides an in-depth discussion of cultural competency and cultural capital.¹⁸

One of the primary purposes of the Traditional Living Challenge intervention implemented with the Salish Kootenai community was to see whether applying cultural capital through the use of traditional cultural practices and ways of living and knowing would effectively inspire and motivate individuals to adopt protective behaviors against cardiovascular disease.¹⁹

METHODS AND RESULTS

This project was a pilot study conducted using the community-based participatory research (CBPR) model, a model which in its most effective manifestation draws upon cultural capital in order to engage the community throughout the research and/or intervention process. As such, adjustment and change of methods both led by and in response to the community were built into the process from the beginning. For this reason, it is appropriate to describe the methods and results together.

In CBPR, community members and researchers contribute equally and in all phases of research. The overarching principles include trust, collaboration, shared decision-making, and shared ownership of the research. The goals are that the findings and knowledge generated will benefit all partners. Community members and researchers recognize each other’s expertise in bidirectional, colearning processes that balance rigorous research and tangible community action. Ideally, the processes are designed to embrace skills, strengths, resources, and assets of local individuals and organizations. The community is recognized as a unit of identity and partners commit to long-term research relationships. Core elements include local capacity building, systems development, empowerment, and sustainability.²⁰

PROJECT OVERVIEW

This two-year pilot project was funded in July 2006 by the National Heart Lung and Blood Institute as a partnership between Salish Kootenai College and the University of Arizona. This article’s coauthor Anita Dupuis, a member of the CSKT, took the lead in conceptualizing the community project and managing project implementation, and coauthor Cheryl Ritenbaugh took the lead in

developing the formal research design and outcome measurements. The Human Subjects Protection Program at the University of Arizona (HSPP) approved all protocols and procedures. At the time of project initiation, Salish Kootenai College did not have an HSPP. When the Salish Kootenai College HSPP was initiated in project year 2002, all procedures were submitted and approved by this HSPP as well. The CSKT Tribal Council also gave permission for all activities.

This pilot project's main goal was to assess the feasibility and acceptability of implementing the project concepts on a larger scale and/or refining those concepts as necessary to develop appropriate local CVD prevention activities. The project concept was developed from Dupuis' master's thesis research on CBPR, which had assessed what the community felt was needed.²¹ Dupuis' role was that of community member as researcher, and her data-gathering process allowed for considerable reflection and input across a broad range of community members.

There were three components to the project. The first and most visible component initially was a camping immersion experience targeted toward encouraging participants to embody their tribal history in relation to environment, food, physical activity, cultural crafts, and the use of tobacco in group settings for ceremonial use or spiritual practice. The research goal was to document CVD risk factors of participants before and after the experience. Inclusion criteria were persons from twelve to fifty-five years of age without prior evidence of CVD. Exclusion criteria focused on evidence of CVD. Participants were recruited and then provided written informed consent in the weeks preceding the camps. Adults eighteen years of age and older provided their own consent; youth provided written assent together with parental consent.

The second component was a community survey to assess interest in cultural foods and activities along with lifestyle risk factors for CVD. The goal of the survey was to understand the community baseline in attitudes and behaviors in order to aid both the assessment and future research design. The third component was designed to support individual participants after their camp immersion experiences by identifying their needs and, where possible, developing the necessary resources. The needs were anticipated to include opportunities for appropriate and relevant physical activity, availability and preparation of traditional or similar foods, and development and education in ancestral and cultural skills, including the making of material goods that supported traditional lifestyles.

SETTING AND SAMPLE POPULATION

The project was developed and implemented on the Flathead Indian Reservation, which lies within the Rocky Mountain Plateau in western Montana, occupying more than 1.3 million acres surrounding Flathead Lake

and bordering on national forests and wilderness areas. The total population on the reservation is more than 30,000 and includes approximately 10,000 AI/ ANs, 4,500 of whom are Salish, Kootenai, and Pend d'Oreille people. Salish and Kootenai are the Native languages, and all three cultures are represented on the reservation. The AI population also includes tribal descendants who are not enrolled members as well as members and descendants of other tribes.

Prior to the reservation period, the Salish, Pend d'Oreille, and Kootenai tribes traditionally gained subsistence from a tribal system of hunting, fishing, and harvesting. The quest for food began in the early spring with root digging and the collection of spring greens. The people fished year-round. In summer and fall, they hunted and picked berries. In the fall the men concentrated more on hunting deer, elk, and bison, while the women dried the meat and prepared hides for robes and buckskins. Tobacco use was limited to ceremonial situations.

THE TLC ENCAMPMENTS: RECRUITMENT

The design of this project called for using community outreach to locate social network leaders, and then having them recruit through their social networks and by word of mouth. The two-year funding window was problematic for the encampment component. The most reasonable camping season is from April to October. It was important to the project to have an encampment experience in the first third of the project. Given the July funding date, this meant holding the first encampment by October. This was accomplished, but the short time frame meant that recruitment focused on community members who were known to the staff. Therefore, in contrast to the original plan, the social network outreach process recruited one or two people in addition to immediate family, but it was not successful beyond close relatives or friends. For the subsequent encampments in the following spring through fall, project staff wrote articles that appeared in the *Char Koosta News* tribal newspaper, and the word began to spread throughout the reservation. As with much that is introduced to a reservation population, it takes time for the word to spread, for people to decide what they think of it, and whether they trust the leadership of the initiative. The burdens of the consenting and measurement procedures also were a barrier to recruitment and greatly increased the staff time needed.

Among those successfully recruited it was difficult to get commitments at least one month in advance of camps, often because of scheduling issues such as obtaining time off from work and arranging schedules for multiple family members. The one-month lead time was important to achieve the research requirements of physicians' exams and signed release forms as well as the pre-camp anthropometric and blood measurements. In addition, some who wanted

to attend felt the smoking restriction would be prohibitive. Others found that the camp duration or locations far from town presented barriers to participation. The largest camp was the final camp, which only took survey measures, was funded from other resources, and did not require the physician's release for attendance. In addition, it was notable that the final camp location—the Bob Marshall Wilderness—was highly desirable, and the camp involved riding horses, a component that was especially attractive to older children.

FIRST COMPONENT: THE ENCAMPMENT INTERVENTION—AN EVOLVING PICTURE

Dietary Guidelines and Physical Activities

The cultural domains of commercial tobacco use, nutrition, and ancestral lifestyles were key targets addressed in the TLC. The basic dietary guidelines for the camps, with community support, called for a diet composed of traditional pre-acculturation foods as available, with contemporary foods added for nutritional completeness but remaining as true to traditional foodstuffs as possible. Use or consumption of caffeine, refined sugars, nicotine, or alcohol was not permitted during the encampments. Pre-acculturation diets were particularly high in lean meat; carbohydrates and essential fats were in limited supply due to animal protein food supply sources being at a minimum after a long hard winter. Greens and berries were widely used, and long-term trading partnerships provided access to maize and other cultivated crops. The Salish, Kootenai, and Pend d'Oreille do not have gardening or agricultural traditions of their own; however, they do have permaculture traditions. Permaculture is the ancestral practice of humans working with plant and animal cultures to enhance, within natural environments, the natural system of production. This could include such activities as clearing competing plants or burning to enhance berry or root production, or manipulations for managing animal herds.

Physical activities included wood gathering, building and tending smoking and cooking fires and dry meat racks, hide tanning, hiking, hunting, and fishing, food collection and preparation, and general camp maintenance. Participants had opportunities to learn traditional skills from one of the camp leaders and guest elders who were invited to share their knowledge and skills. Participant views on TLC structure, allowable foods and substances, recruitment and selection, logistical support needs, and camp activities provided ongoing modifications to the design.

Smoking of commercial tobacco is particularly common on the Flathead Reservation, and there are strong traditions of tobacco use among some of the people, at wakes and funerals for example. However, the common consumption

levels of today do not mirror that use pattern, and commercial tobacco has a greater toxicity than traditional smoke plants. Participants who smoked were offered nicotine patches, but no one accepted the offer. This feature of the camp was a barrier to some who might otherwise have participated.

TABLE 1

TLC Immersion Encampment Profiles					
Camp Number	Camp Location	Camp Timing	Camp Duration	N	Diet pattern*
C-1	Lozeau Primitive Area	Sept. 2006	9 days	19	1
C-2	Little Prairie – Jocko	June, 2007	5 days	23	2
C-3	Flathead Lake	Aug. 2007	8 days	16	3
C-4	Flathead River	Aug. 2008	3 days	21	3
C-5 **	Entrance/Bob Marshall Wilderness	Aug. 2009	5 days	39	2
*Dietary Make-up: 1 – Most Traditional Foods; 2 – Traditional Foods, plus more contemporary foods of like nutritional value; 3 – No Regular Access to dried meat; consumed more contemporary foods of like nutritional value. ** Camp pattern based in TLC but not under project funding; no biological measures obtained					

Five cohorts with a total of 118 subjects participated in the camps (see table 1). The immersion encampments, which ranged from three days to nine days, provided experiential learning opportunities honoring indigenous knowledge systems and cultural understanding. The encampments were designed to encourage equity, inclusivity, respect, tolerance, and suspension of judgment among the participants. Specific issues for food consumption and traditional activity patterns included internal monitoring, focusing attention on traditional diets and lifestyles generally, learning to be more aware in the world through active physical activities in nature and the wilderness, and breaking the largely unconscious behavior patterns of excessive and unhealthy food and beverage consumption and tobacco use. These issues were particularly significant for learning to live and draw on the strengths and positive values of both the traditional and contemporary worlds.

Since the TLC targeted twelve- to fifty-five-year-old participants without prior diagnosis of CVD, behavioral goals included heart-healthy eating following the nutritional principles of pre-European contact diets of the plains/plateau tribes of western Montana. Other behavioral goals included decreasing tobacco use and increasing physical activity. During all encampments, most participants stayed in teepee or tent accommodations. Table 1 profiles the primary characteristics of each camp. Camps averaged twenty total participants and ten study subjects per camp. The fifth and last camp was the largest, with thirty-nine participants (C-5).

The first camp (C-1), which was implemented within ninety days of funding, was the longest (nine days) and was the most isolated reservation-based camp. It was located in the northeast corner of the reservation, primarily in the Kootenai territory of the reservation. It featured the most intense use of traditional foods and preparation methods, including large quantities of dry wild meat.

The second camp (C-2) was in a similarly isolated reservation location on the south end of the reservation, primarily in Salish and Pend d'Oreille territory. It was a five-day camp and utilized foods similar to the first camp; however, fresh, whole, contemporary foods were used because staff resources were inadequate to do all the gathering of traditional plant foods. Foods most unlike the traditional foods were tomatoes and watermelon, but still of New World origin. Otherwise, foods used were quite similar to traditional foods.

The third camp (C-3) was held at a commercial campground on Flathead Lake due to major fire restrictions at the time. We were unable to have an open fire, so dried meat was not available. When participants seemed to be particularly drawn to the main carbohydrate sources in camp (rice crackers), we improvised a way of using the propane cookers to prepare meat to resemble dried meat strips. This "dried" meat source was widely welcomed. The camp atmosphere resembled a recreational camping experience more than a traditional living challenge, and activities focused primarily on swimming and cultural arts. Berry picking was unsuccessful in the locations that were accessed, but comments were positive about the experience, especially from those who had no other TLC experiences for comparison.

The fourth camp (C-4), which was run for three days, was held on the Flathead River. The camp activities focused on traditional forms of fishing, a berry-picking trip, river floats, and swimming.

The fifth camp (C-5) included horseback rides into the Bob Marshall Wilderness area, berry-picking, fishing, swimming, general food preparation, and camp maintenance activities. Because of its isolation in the wilderness, this five-day camp again provided more emphasis on traditional activities.

Data Collection for TLC Participants: Questionnaires

In year 1, the project team worked with community participants, beginning with the participants in the first encampment, to determine what elements of questionnaires would be most meaningful for the study and most likely to be completed. The initial data collection plans, including food and activity logs, turned out to be too complex to be implemented and were subsequently streamlined. Participants did complete a questionnaire covering demographic information as well as self-report of traditional diet, physical activity, tobacco use, well-being, and sense of community.

Biologic Measures

Participants initially consented for the blood samples and body measurements. Once consent was obtained, blood samples were taken using a finger stick and subsequently analyzed for total cholesterol and hemoglobin A1c (HbA1c) using the Cholestech blood analyzer. Total cholesterol provided the blood lipids measure. HbA1c measures the percent of hemoglobin that has sugar bound to it, and serves as an indicator of diabetes or diabetes risk. The researchers added the Tanita body composition analyzer as a highly acceptable measure of body composition.

Implementation Issues

A number of difficulties were identified in the original data collection design. Participants often could not commit to the encampment early enough to permit full data collection. As the camp date became imminent, previously identified participants found themselves unable to attend and new participants appeared. This problem, in conjunction with the considerable preparation involved in staging the camp, created a level of chaos that made data collection timing problematic for everyone. The IRB-required physicians' release presented a barrier for many, especially those choosing to attend on short notice. The complex lives of participants also made post-camp data collection extremely difficult. Excluding Camp 5 because consent procedures and data collection were minimal, the final sample size of participants across four camps was thirty-three participants with some data, and seventy-nine total participants (ages twelve and older), including families. In addition, twenty-one children under age twelve attended with their families but are not included in Table 1 as they were not eligible for data collection.

The general consensus of the staff members who attended all the camps was that the camps that were most isolated and most closely matching traditional life, including dried meat and other dietary aspects, created the most satisfactory experiences for participants. There were fewer disruptions from the modern world, fewer people left the camp to deal with personal issues, and people coming and going was also less frequent. Even though the weather turned cold towards the end of the first camp and participants were offered the opportunity to leave early if they wished, none of the participants chose to do so.

Outcome Measures — TLC Baseline Survey Data

The baseline measures for the TLC participants are shown in conjunction with the community-wide survey data (tables 2–4). In general, camp participants were somewhat younger and healthier than other community members. Overall, the lack of follow-up data did not permit evaluation of impact of the five encampments

on CVD risk factors. This lack of outcome data was in itself an important result because it established that this aspect of the project design was not feasible.

Qualitative Results

In relation to dietary patterns, one of the most important results was the desire of virtually all the participants for frequent consumption of animal products. Animal products (meat, fish, birds, dried meat) were the traditional mainstay of the CSKT. In the camp environment, consumption of dried meat decreased food intake (especially carbohydrates) and hunger, and was associated with higher levels of energy. For those few participants for whom pre-post data were available, consumption of dried meat was associated with weight loss and improvement in total cholesterol. One particularly overweight and sedentary youngster went on to follow this diet post-camp and reported back several months later with substantial improvements in cholesterol levels.

SECOND COMPONENT: COMMUNITY SURVEY AND SCREENING

Recruitment

The planned approach for the community screening was to undertake a random sample of the community members, both genders, ranging in age from eighteen to fifty-five years of age. To achieve this, complete mailing lists of tribal members were obtained from the CSKT, and two samples of 7 percent of the adult population, ages eighteen to fifty-five, were randomly selected. These randomly chosen tribal members were sent culturally designed letters and flyers recruiting them to a CVD risk factor screening at a convenient location. Forms were created, staff were prepared, appropriate venues were scheduled, and all plans were made to accommodate community screening.

Once the letters were mailed, however, community members provided feedback that the random sampling approach raised skepticism and perhaps suspicion in the communities. In addition, the concept of a random sample was not clear to tribal community members. This problem with sampling, together with the short time frame and other project activities, precluded taking on that educational task as a major function of the project.

With community input, the researchers shifted strategies to gain a sampling of the community by setting up screenings at a variety of work sites and community events. Broad representation was obtained by choosing different community locations on this large reservation and selecting activities that would attract different community segments. Announcements (posters and flyers) were developed using culturally appropriate images and art. They were widely distributed at health fairs and at various work and community gathering

sites, including fire control, the tribal complex, the tribal housing authority, and a tribal health fair, among others. With this approach, the research team was able to successfully screen 175 adults (see table 2).

Community Data Collection

Prior to the community screening the research team developed and pilot-tested a survey form. The form included demographic information as well as lifestyle factors such as food, physical activity, and smoking. Anthropometric measurements included height and weight. Body composition was measured using the Tanita analyzer, which measures body composition with a weak electrical signal when barefooted participants stand on it. All blood samples were collected through finger sticks by trained phlebotomists and analyzed using standard protocols with quality control using the Cholestech methods described below. Measures were chosen based on available kits that did not require fasting status. All anthropometric measurements were taken using standardized methods. One of the coauthors (Ritenbaugh) trained the staff in appropriate anthropometric measurement techniques and other data collection methods, and implemented quality assurance procedures. Participants received the information about their measurement results prior to leaving the screening session whenever possible.

Community Screening Results

The demographics of the Community Health Survey sample and the TLC sample are shown below in table 2, and the results for the physical measurements, blood assessments, and smoking rates are presented in table 3. The values shown, including smoking rates, are similar to those found among the other northern tribes that have been studied.²² These are the first data of this type to be reported on the CSKT.

TABLE 2

Participant demographic characteristics: Community Survey and TLC Participants		
Variable	Community Sample (n = 175)	TLC (n = 28)
Gender (percent female)	66.4	72.4
Age (mean + s.d.)	36.3 + 11.1	33.7 + 11.6
CSKT member (percent)	72.6	82.8
Education (percent)		
Not HS grad	9.1	13.8
HS grad	30.9	3.5
Some college or	41.7	48.3
Assoc. deg.	12.6	17.2
College grad	5.7	17.2
Post-college		

Participant demographic characteristics: Community Survey and TLC Participants		
Variable	Community Sample (n = 175)	TLC (n = 28)
Income (percent)		
<\$15,000	24.9	27.6
-\$25,000	21.7	10.3
-\$35,000	18.3	27.6
-\$50,000	14.3	24.1
>\$50,000	13.2	10.4

From the data shown in tables 2 and 3, it is clear that there are several important CVD risk factors in this population. Approximately one-third of the population had elevated screening blood pressures, a similar proportion had elevated total cholesterols, and the mean Body Mass Index was in the “obese” range, or a BMI of 30.9 for men and 30.2 for women.

TABLE 3

Community Health Survey and TLC Participants Biological Measurements (mean (SD))				
Variable	Community Sample		TLC	
	Men (n = 60)	Women (n = 115)	Men (n = 9)	Women (n = 19)
Height (inches)	69.1 (2.7)	64.0 (2.4)	68.9 (1.2)	64.6 (2.7)
Weight (lbs)	208 (40)	175 (38)	195 (26)	166 (40)
BMI (kg/m ²)				
mean (SD)	30.9 (6.1)	30.2 (6.4)	28.9 (4.3)	27.9 (6.3)
< 25	14.6 percent	19 percent	25 percent	42 percent
25-< 30	31.3 percent	34 percent	38 percent	26 percent
30-<35	29.2 percent	25 percent	38 percent	11 percent
35-<40	18.8 percent	14 percent	0	16 percent
>40	6.2 percent	8 percent	0	5 percent
Systolic BP (mm Hg)				
mean (SD)	135 (13)	118 (18)	129 (11)	111 (12)
£ 120	9.4 percent	62.6 percent	33 percent	84 percent
<140	60.4 percent	26.1 percent	33 percent	11 percent
>140	30.2 percent	11.3 percent	34 percent	5 percent
Diastolic BP (mm Hg)				
mean (SD)	84.7 (14.8)	76.5 (14.2)	85 (12)	72 (10)
< 80	17.0 percent	60.0 percent	33 percent	79 percent
< 90	45.3 percent	22.6 percent	11 percent	16 percent
> 90	37.7 percent	17.4 percent	56 percent	5 percent
Cholesterol (mg/dl)	192 (40)	185 (39)	154 (95)	171 (51)
HbA1c (percent)	5.9 (0.5)	6.0 (1.0)	—	5.0 (0.6)

The Community Health Survey form also assessed exercise patterns as well as interest in indigenous foods. Results are shown below in table 4. The community sample, a relatively young and healthy population, was somewhat sedentary, with 17 percent indicating that they rarely/never walked more than

ten minutes continuously. More than 46 percent indicated walking ten or more minutes continuously four or more times per week. Of those who did walk more than ten minutes, most (74 percent) walked two to three miles per hour or more slowly (data not shown). About 25 percent of the respondents rarely or never did moderate or strenuous exercise, while almost 19 percent did moderate and/or strenuous exercise four or more days/week (joint distribution, not shown).

Approximately 80 percent of the respondents indicated they would eat more indigenous foods if the foods were available. These results are supported by almost identical findings from a survey of parents of children in the tribal Head Start program.²³

TABLE 4

Self-reports on Physical Activity and Diet* for combined sample.				
	<i>Rarely/never</i>	<i>1-3 times/wk</i>	<i>4-6 times/wk</i>	<i>7+ times/wk</i>
Walking >10 min. continuous (percent)	17	34	30	16
	<i>Rarely/never</i>	<i>1 day/wk</i>	<i>2-4 days/wk</i>	<i>5+ days/wk</i>
Moderate exercise (percent)	37	10	35	10
Strenuous exercise (percent)	35	19	35	8
How often do you —				
	<i>Never</i>	<i>Occasionally</i>	<i>Frequently</i>	
Eat native plants, roots, berries	16	74	8	
Gather native plant foods	36	54	8	
Eat wild game	11	47	40	
If native foods available, would you eat more? (percent yes)				80
Most preferred items (percent liking):				
Wild game	Elk (71 percent), deer (63 percent), buffalo (62 percent), native fish (55 percent)			
Wild plant foods	Huckleberries (88 percent), Service berries/choke cherries (45 percent)			
*Items may not total 100 percent due to missing data				

Finally, two items that rated perceived physical and emotional/spiritual health were administered to both the TLC encampment participants and as part of the Community Health Survey. Figure 1 compares results drawn from those two samples. These graphs illustrate that the TLC sample participants considered themselves to have slightly better physical health than the Community Health Survey participants, which is not surprising given the perceived rigors and the need for physician approval in the early camps. However, the two groups were extremely similar in relation to mental, emotional, and spiritual health. Interestingly, in spite of biological parameters that would suggest obesity and cardiovascular disease risk, more than 70 percent of participants in

both groups considered themselves to be at least in good health. And in spite of the difficulties of reservation life, more than 85 percent considered themselves to have at least good emotional health.

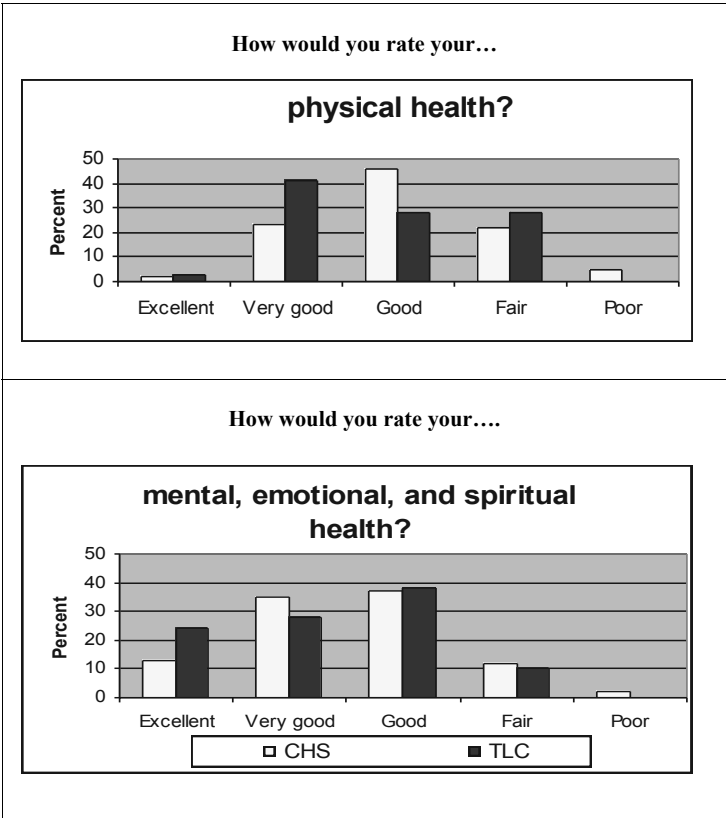


FIGURE 1. These graphs indicate the responses given by the members of the CSKT study populations to two items, rating of physical health and rating of mental/emotional/spiritual health. The white bars indicate the Community Health Survey population (n=175) and the black bars represent the adults participating in the Traditional Living Challenge encampments who completed the data collection (n=28). These two samples show very similar profiles.

THIRD COMPONENT: ENHANCING COMMUNITY RESOURCES TO SUPPORT LIFESTYLE CHANGES

In working with the community during the preparation of the grant, we found that it would be difficult for community members to maintain any momentum gained in the encampment experiences. The need to build supports for participants was recognized in the grant application and formally developed as the

third component. However, available grant resources were extremely limited. Therefore, both during and after the development of the National Health Lung and Blood Institute application, one of the authors (Dupuis) began looking for other routes to gain community participation for sustaining some of the TLC intervention components. Ultimately, the programmatic effort extended far beyond the limits of the initial project to include other community organizations and leaders not involved initially.

Over time a series of programs was developed, funded, and implemented that focused on one or another of the areas in which there was an opportunity to build upon the TLC concepts and provide community resources. The timing and funding of these programs are shown in figure 2. In this figure, project implementation is shown in white, the funding timing and organization in gray, and the planning period in black. The overall impression from this figure is that the density of community programs developed and implemented by a growing number of community groups and project leaders has grown substantially over time. This is certainly in part due to a growing willingness on the part of funders to support such programs and even to propose initiatives requesting applications for such programs.

The first project expansion happened within the context of the TLC and included an increase in the number of community food gathering trips to harvest wild foods at the right times. While this originally developed to provide provisions for the camps, it raised community awareness of traditional foods and an interest in how their abundance might be enhanced. A key support activity was to form partnerships for exploration of permaculture practices and their potential application today, with emphasis on creating mentoring relationships between elders and youth to restore previous production levels of traditional native plants. In order to create local sustainable food systems the range of permaculture activities could also include reestablishing indigenous, or establishing nonindigenous, plant and animal polycultures where they once thrived or have the potential to thrive.

EXPANSION OF CULTURAL CAPITAL-RELATED HEALTHY LIFESTYLE PROJECTS ON THE FLATHEAD RESERVATION DURING AND FOLLOWING THE TLC PROJECT																		
Year	2006				2007				2008				2009				2010	
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
TLC Camps		B																
TLC Gathering Trips		B																
Ancestral skills		B								F							N	
Ancestor's Choice				C							A /C							
Permaculture											C							
RezChef												A						
Traditional Games																		
RezRoots																A		
Traditional Lifestyles																		
Provisioning Pilot															R			

KEY: PLANNING FUNDING IMPLEMENTATION

A = US DEPARTMENT OF AGRICULTURE
 B = NATIONAL HEART LUNG AND BLOOD INSTITUTE
 C = CENTERS FOR DISEASE CONTROL AND PREVENTION
 F = STATE FARM
 N = CORPORATION FOR NATIONAL AND COMMUNITY SERVICE (AMERICORPS)
 R = NATIONAL CENTER FOR RESEARCH RESOURCES

FIGURE 2. This figure illustrates the expansion in community activities related to the Traditional Living Challenge project from 2006 to 2010. Project titles in bold were supported by external grants. Project titles in standard font were undertaken through community efforts.

The ancestral skills component originated when the TLC project had the opportunity to hire a Native man who had studied how to make all of the native food collection and processing equipment along with other cultural items. His skills were on display as part of the project, and he rapidly gained community-wide interest and acceptance, so that before the TLC was over, independent funding had become available for him to expand his activities throughout the reservation, consulting with elders and teaching adults and youth.

Simultaneously with the development of the TLC project, one of the authors (Dupuis) also submitted Ancestor's Choice, a project funded by the

Centers for Disease Control (CDC) providing support to identify the food components most aligned with traditional eating patterns, offer community outreach regarding how to eat in this way, and enhance the availability of important staple foods. This project received a second round of funding from the US Department of Agriculture (USDA). As Ancestor's Choice was being implemented, the project staff realized that there was a lack of cooking knowledge and skills in relation to both traditional and healthy contemporary dietary patterns, and they developed a small pilot called RezChef to address this gap. RezChef was subsequently funded as an independent project by the USDA.

In support of the TLC, one of the student interns funded through a minority supplement and majoring in physical education began to organize traditional games as a community activity. These games have become very popular and have been further developed into the RezRoots physical activity project funded by USDA. Ancestor's Choice has an ongoing Facebook presence and is used to announce upcoming classes, and health and wellness community events.

Overall, the general goals of the project to enhance the success of the TLC and support the participants in their lifestyle changes included forming strong community collaborations to welcome all stakeholders, including the CSKT Tribal Council, Salish Kootenai College Extension, tribal and local schools, culture committees, the CSKT Natural Resources department, and the tribal elders' advisory councils. Project attendance logs across all of these activities suggest that more than five hundred different people have taken part in at least one activity, extending the reach of the project far beyond the more limited original goal of supporting the encampment participants. The activities have expanded through social networks, and new leaders have emerged to take on these new activities.

DISCUSSION

The form of cultural capital used in this project is similar to what Bourdieu classifies as embodied cultural capital. In this form of cultural capital generally, experts in the use of a traditional or cultural resource facilitate experientially based learning opportunities for the community. The TLC encampment was directly targeted toward embodying the experiences of the ancestors, though the staff providing the leadership would in no way refer to themselves as "experts." Due to the historical disruption and displacement of this ancestral way of life, everyone was learning throughout the entire process. Having the involvement of tribal elders as cultural consultants and teachers was key to the learning that took place during the encampments. However, many who helped

to facilitate the camps were there to learn as much about the culture as the recruited study participants.

Prior to this project, most of the culturally related activities on the reservation focused on language and ceremonial activities, but *not* as much on indigenous foods prepared in the ways of the ancestors, the physical activity levels experienced during ancestral times, or strict adherence to traditional patterns of tobacco use, namely occasional use of pipes instead of frequent use of cigarettes. By joining together in a communal way and learning from each other's experiences, participants were able to increase their awareness that living according to some of the traditional cultural approaches to lifestyle was a means to lower risks for CVD. This immersion experience was seen as a major challenge, because few individuals believed that they could "do it." In fact, an overwhelming majority of camp participants felt much better at the end of the camp and were encouraged to integrate some of the activities they had learned into their daily lives. The subsequent development of a variety of activities, each targeting different aspects of the ancestral patterns, allowed many more people to participate.

The TLC project was anchored in the knowledge that there are multiple determinants of health and that community health improvements will result from creating long-term, respectful human relationships and interrelationships between the human and the plant, animal, and mineral "communities." The TLC project was based throughout on the principles of colearning, rigorous research related to community action, capacity-building in the college and community, empowerment of community members of all ages, and project sustainability.

We learned from this project that the encampment model itself was not an adequate intervention plan for the community. The logistical issues surrounding participants being able to take adequate time off from their busy lives to participate in the camp proved insurmountable for most community members, including many who had decided to participate but were unable to do so. Even when one spouse could take the time, the other spouse was often unable to join, or the commitments of both primary school and older children, or the needs of elderly relatives, interfered with participation. This same level of life activities was one of the main problems with pre- and post-data collection in relation to the encampments.

However, in spite of these problems, the concept of using encampment experiences, which now occur relatively frequently across the population as a whole, and the return to traditional lifestyle patterns, has been strengthened within this community. The Community Health and Development Department of Salish Kootenai College (where the TLC project was located) is now frequently being called upon to help other groups throughout the reservation (including the schools and Head Start programs) to plan and

implement their encampments and other healthy lifestyle activities. Assistance sought includes advice on food, traditional games, and training in traditional skills. There is growing interest among teens in using this type of camping experience as a way to enhance life skills, improve fitness, and embody the life experience of the Native ancestors, and several initiatives are considering the explicit use of this methodology for summer camping experiences for youth at risk. As the primary initiator of this project, Dupuis continues to explore with her home community a contemporary cultural model for health and wellness. She is seeking clarification on ways to bring about population-wide shifts, or perhaps ways to promote a return to worldviews, policies and practices more aligned with traditional times, that will increase cultural consonance within the community across the individual, community, and organizational levels, with the hope of improving overall health and well-being in the community.

CONCLUSIONS

The original research design—to use specifically designed encampments to play a direct and major role in changing individual lives in a manner that can be measured and studied biologically—was found to be neither feasible nor acceptable. However, the concept of the encampment experience and its focus on rediscovering the embodiment of ancestral ways has played an important role in bringing alive in the community the possibility of incorporating traditional and culturally appropriate activities into ongoing lifestyles. For the encampment participants, the experience has helped them to reconceptualize their lives and notions of health. Community members continue to support each other to find ways to engage in these traditional activities. As a result, community cultural capital in the context of the embodied awareness of how their ancestors lived has been engaged and enhanced, and the community desire, will, and movement toward strengthening a contemporary cultural model of health and well-being continue.

Acknowledgments

This project was a collaboration between researchers from the University of Arizona and Salish Kootenai College (SKC), and was supported by a Community-based Participatory Research (CBPR) grant from the National Institutes of Health/National Heart Lung and Blood Institute 5R21HL83831. The Department of Health and Human Services, National Institutes of Health National Heart, Lung, and Blood Institute issued Exploratory/Development Grant Number 1 R21 HL083831-01 July 6, 2006 to Principal Investigator Cheryl Ritenbaugh with the project title “Preventing CVD in Native

Populations: The Traditional Living Challenge.” We thank the staff of the TLC project, the members of the Salish and Kootenai Culture Committees, and the members of the Confederated Salish and Kootenai Tribes Tribal Council for their support and guidance.

NOTES

1. Anita Dupuis and Cheryl Ritenbaugh, “A Unique Partnership for Health Promotion in Native Communities: Salish Kootenai College and University of Arizona,” *Pimatisawin: A Journal of Aboriginal and Indigenous Community Health* 5, no. 2 (2007): 217–34.
2. Patricia M. Barnes, Patricia F. Adams, and Eve Powell-Griner, “Characteristics of the American Indian or Alaska Native Adult Population: United States, 2004–2008,” Centers for Disease Control, Division of Health Interview Statistics, National Health Statistics Report, no. 20 (2010): 1, <http://epub.sub.uni-hamburg.de/epub/volltexte/2013/15250/pdf/nhsr020.pdf>.
3. Indian Health Service, *Trends in Indian Health, 2000–2001* (Rockville, MD: US Department of Health and Human Services, February, 2004).
4. Todd S. Harwell, Dorothy Gohdes, Kelly Moore, Janet McDowell, Jane Smilie, and Stephen Helgerson, “Cardiovascular Disease and Risk Factors in Montana American Indians and Non-Indians,” *American Journal of Preventive Medicine* 20, no. 3 (2001): 196–201.
5. *Ibid.*, 198.
6. Dorothy Gohdes, Todd Harwell, Susan Cummings, Kelly Moore, Jane Smilie, and Steven Helgerson, “Smoking Cessation and Prevention: An Urgent Public Health Priority for American Indians in the Northern Plains,” *Public Health Reports* 117 (2002): 281–90.
7. Centers for Disease Control, “Vital Signs: Current Cigarette Smoking among Adults Aged ≥ 18 Years – United States, 2005–2010,” *Morbidity and Mortality Weekly Report* 60 (September 9, 2011): 1207–12.
8. John Wallace Jr., Jerald Bachman, Patrick M. O’Malley, John Schulenberg, Shauna Cooper, and Lloyd Johnston, “Gender and Ethnic Differences in Smoking, Drinking and Illicit Drug Use among American 8th, 10th and 12th Grade Students, 1976–2000,” *Addiction* 98, no. 2 (2003): 225–34.
9. Susan Weller, “Cultural Consensus Theory: Applications and Frequently Asked Questions,” *Field Methods* 19, no. 4 (2007): 339–68.
10. William Dressler, Kathryn Oths, and Clarence Gravlee, “Race and Ethnicity in Public Health Research: Models to Explain Health Disparities,” *Annual Review of Anthropology* 34, no. 1 (2005): 231–52; Christopher Furlow, “Comparing Indicators of Knowledge within and between Cultural Domains,” *Field Methods* 15, no. 1 (May–June 2003): 51–62.
11. Thomas Abel, “Cultural Capital and Social Inequality in Health,” *Journal of Epidemiology and Community Health* 62, no. 7 (2008): e13.
12. Pierre Bourdieu, “The Forms of Capital,” in *Handbook of Theory and Research for the Sociology of Education*, ed. John Richardson (Westport, CT: Greenwood Press, 1986): 280–91.
13. *Ibid.*, 285.
14. *Ibid.*, 286.
15. *Ibid.*
16. Terry Cross, Kathleen Earle, Holly Echo-Hawk Solie, and Kathryn Manness, “Cultural Strengths and Challenges in Implementing a System of Care Model in American Indian Communities,” *Systems of Care: Promising Practices in Children’s Mental Health, 2000 Series*, Vol. I (Washington, DC: Center for Effective Collaboration and Practice, American Institutes for Research, 2000): 19.

17. Ibid., 93.
18. Carolyn Smith-Morris and Jenny Epstein, "Beyond Cultural Competency: Skill, Reflexivity, and Structure in Successful Tribal Health Care," in this special issue.
19. Anita Dupuis, "Sources and Solutions to Health Disparities for the Selish, Ksanka and Qlispe People: A Shared Community Perspective," master's thesis, University of Washington (2004): 10.
20. Meredith Minkler and Nina Wallerstein, *Community-based Participatory Research for Health* (Hoboken, NJ: John Wiley & Sons, 2003): 7, 10.
21. Ibid.; Dupuis, "Sources and Solutions," 25.
22. Harwell, "Cardiovascular Disease," 197.
23. Jeanne Christopher, 2007, personal communication with coauthor Dupuis.