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Permalink

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Journal

Parks Stewardship Forum, 37(1)

Authors

Johnson, Eric
Samayoa, Cathy
Mendez, Rebecca
[et al.](#)

Publication Date

2021

DOI

10.5070/P537151709

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Peer reviewed

NATURE AND HEALTH

EMERGING KNOWLEDGE INFORMS NEW POLICY DIRECTIONS

NOOSHIN RAZANI, MD, MPH, GUEST EDITOR

Insider community-engaged research for Latinx healing in nature: Reflections on and extensions from Phase 1 of the Promoting Activity and Stress Reduction in the Outdoors (PASITO) project

Eric Johnson, *San Francisco State University*
 Cathy Samayoa, *San Francisco State University*
 Rebecca Mendez, *San Francisco State University*
 Miriam Wong, *The Latina Center*
 Edgar Velazquez, *University of California, Davis*
 Leticia Márquez-Magaña, *San Francisco State University*



Corresponding author

Eric Johnson, MS
 San Francisco State University
 Department of Biology, Health and Equity Research Lab HH 635
 1600 Holloway Avenue
 San Francisco, CA 94132
ericjohnson269@gmail.com

Abstract

In Spanish, *pasito* means “small step,” and in Phase 1 of the PASITO (Promoting Activity and Stress Reduction in the Outdoors) project we took small steps towards reclaiming nature for Latinx communities. The Latinx reclamation of green spaces for healing is a necessary step alleviating the observed unequal burden of chronic and infectious disease. Paradoxically, the Latinx community who could greatly benefit from green spaces has reduced access, as is the case for many poor communities of color. This perspective seeks to reflect on and utilize the lessons learned from PASITO in order to expand the positive impacts of nature for communities of color. Through self-reflection by members of the academic research team and a community leader, as well as preliminary analysis of qualitative data gathered from PASITO participants, we share insights from a community-engaged research project. Our approach validated culturally competent research practices with insider researchers, as well as culturally sensitive biospecimen collection, and revealed steps towards recruitment, retention, and healing for Latinx participants in research projects. These findings come at a pivotal time for park stewards and green space researchers as the need for spaces for healing accelerates for all communities of color, including Latinx, as we face a society plagued by biological and social reckonings. To find true and sustained healing within these communities calls for communities to progress from small steps towards giant strides in the reclamation of natural landscapes for well-being.

Introduction

Nature is a sacred space for many cultures. For many Latinx with Indigenous ancestry, it is part of the oneness, with one another and all spiritual beings, conceptualized by our

Indigenous ancestors. Nature connects us to the source. This ancestral teaching was embraced by George Meléndez Wright. His mother was from El Salvador and his father was from San

The Latinx population is the fastest-growing ethnic minority group in the country and is the new ethnic majority in the state of California.

Francisco, making Meléndez Wright a naturalist pioneer for those he interacted with in the Bay Area and for people of Latinx heritage. His legacy in the world of conservation biology continues to this day by way of an impassioned group of people he inspired to view nature as a sacred space. In fact, the George Wright Society captures his vision for protecting natural environments as sacred spaces that can be experienced by all. Thus, we reclaim nature as an ancestral space for connection that we must conserve and equitably share as part of social justice efforts. In this way we bring a modern perspective to the Latinx experience in nature, and advocate for community-engaged approaches to reclaiming nature as a space for healing.

The Latinx population is the fastest-growing ethnic minority group in the country and is the new ethnic majority in the state of California. A diverse community of native-born Americans and immigrants, the Latinx community suffers disproportionately from economic inequalities and negative health outcomes in the United States. These outcomes can be partially explained by the fact that, historically, Latinx have been segregated into poor neighborhoods with limited access to structural determinants of health. These include access to pristine natural environments, high-paying jobs, quality education, and well-provisioned health care, giving rise to chronic stress that is exacerbated by targeted racism of Latinx in the US. All together these factors contribute to the burden of excess obesity, diabetes, cardiovascular disease, and mental health illness within the Latinx community.

The unequal burden of social environmental stress and chronic disease necessitates development of community interventions rooted in cultural ways of knowing, and evidence-based approaches for achieving health equity. Nature offers the necessary connections for improving

Latinx health outcomes through culturally adapted stress management interventions and physical activity programs. This perspective details one such program in the Bay Area and the views and experiences of its research team. We describe a community-engaged, transdisciplinary research and health promotion project known as Promoting Activity and Stress Reduction in the Outdoors or PASITO (Spanish for “little step”). All involved in PASITO have a vision for the universal experience of nature as sustainably health promoting.

A collective vision of nature as a space for oneness and healing calls for a shift in current park stewardship because racial and ethnic minority populations often experience nature differently than their white counterparts. While white park-goers often experience nature as a recreation space and a site for self-segregation away from racial/ethnic minorities (Powers et al. 2019), communities of color often experience it through an ancestral lens of connectedness and universality that heals mind and body. These ways of being and interacting with nature require a revitalization of park stewardship towards community-informed ways of healing in nature, which can be best achieved through community-engaged research approaches. Such approaches warrant the application of the National Institutes of Health’s framework (National Institute on Minority Health and Health Disparities 2017) for understanding the many domains of influence that impact the health outcomes of individuals, communities, and societies. To achieve this revitalized vision, we share our experience and success with a research initiative directed by Latinx community for Latinx community. Our work employed culturally diverse, community-engaged transdisciplinary research teams with a shared vigilance for improving health outcomes in communities of color. We also call for the inclusion of Indigenous forms of knowledge in discourse on the role of nature in





answering public health questions, such as those prominent during a global pandemic. We expect this call to action to galvanize strong, culturally competent, community-engaged researchers from different disciplinary backgrounds to investigate the ways in which nature can be a healing space for all.

Health disparities research framework

Transdisciplinary partners seeking sustainable improvements in health outcomes must consider individual, community, and societal factors in their work. With the mounting evidence of the positive impacts of green spaces on health, a crucial arena for advancing health, particularly for people of color, is to increase access to natural landscapes in communities. In addition to accessing these spaces, communities of color need green spaces that provide a sense of belonging and healing. To achieve this impact, the PASITO project was grounded in a health equity framework developed in 2015 by the National Institutes of Minority Health and Health Disparities (NIHMD) so as to better understand and eliminate disparities observed

in Latinx communities. The NIHMD framework (Figure 1) combines the National Institute on Aging’s health disparities research framework and Urie Bronfenbrenner’s socioecological model (Bronfenbrenner 2007). It proposes the levels of impact an individual’s surrounding environment has on their development, with relationships with community and society having the most impact and being the most complex. PASITO integrated this framework within the context of community resources and capital in the Bay Area and between academic, community and parks partners. The resulting framework (Figure 2) is multi-dimensional, illustrating the broad array of factors that impact health in Latinx communities and that are relevant to understanding and addressing disparities. These factors span both *levels* of influence and *domains* of influence (see Figure 2), all of which are important to address in order to achieve health equity. Given the multiple levels and domains, the NIMHD framework is best applied by a diverse team that includes insider researchers with in-depth knowledge of the community.

Figure 1. The National Institutes of Minority Health and Health Disparities Contextual Factors Framework.

		Levels of Influence*			
		Individual	Interpersonal	Community	Societal
Domains of Influence (Over the Lifecourse)	Biological	Biological Vulnerability and Mechanisms	Caregiver–Child Interaction Family Microbiome	Community Illness Exposure Herd Immunity	Sanitation Immunization Pathogen Exposure
	Behavioral	Health Behaviors Coping Strategies	Family Functioning School/Work Functioning	Community Functioning	Policies and Laws
	Physical/Built Environment	Personal Environment	Household Environment School/Work Environment	Community Environment Community Resources	Societal Structure
	Sociocultural Environment	Sociodemographics Limited English Cultural Identity Response to Discrimination	Social Networks Family/Peer Norms Interpersonal Discrimination	Community Norms Local Structural Discrimination	Social Norms Societal Structural Discrimination
	Health Care System	Insurance Coverage Health Literacy Treatment Preferences	Patient–Clinician Relationship Medical Decision-Making	Availability of Services Safety Net Services	Quality of Care Health Care Policies
Health Outcomes		 Individual Health	 Family/ Organizational Health	 Community Health	 Population Health

		Levels of Influence		
		Individual	Interpersonal	Community
Domains of Influence	Biological	Decrease stress hormone (cortisol) and psychological measures of stress	Stress reducing participant-family interaction activities	Community stress exposures
	Behavioral	Activity promoted health and coping stress strategies	Social cohesion between participants-family members, friends and student researchers	Community gatherings promoting health and belonging Sustainable nature-based health promoting program
	Physical/ Built Environment	Principle of equity informed student researchers	Family, and age inclusive environment Convivial environment	Partner with community-based organizations Social media network Low cost accessible public parks and green spaces
	Sociocultural environment	Low income Latinos - Limited English Culturally diverse	Increased social network Cultural congruence Researchers-participant relationship Valuing participant and partner diversity and culture	Shared vision of promoting health and community safety Program grounded on strong social justice Alleviated social environmental stress Academic Institutional interventions to transform inclusive biomedical research environment for student researchers and community

Figure 2. PASITO-specific contextual factors in the NIMHD framework addressed in this project.

Our group, the Health Equity Research Lab at San Francisco State University, included insider researchers who used the NIMHD framework to design the PASITO project, which combines a research component with health-promoting interventions. We used three levels of influence (individual, interpersonal, and community) across four domains of influence (biological, behavioral, physical environment, and sociocultural environment) as depicted in Figure 2, to address our overarching goal to improve individual, family, and community health. To assess our impact on individual health we measured biological stress in the form of cortisol levels found in saliva and hair, and behavioral outcomes through validated scales of perceived stress and a psychological affect survey. To actively increase the project’s impact on familial health, we invited the families of our participants to our PASITO activities (described below), interviewed participants about how aligned our project was with needs of their family, and prioritized social cohesion in our intervention design. The latter priority contributed to our impact on community health, as did our partnership with a community-based organization called The Latina Center. Furthermore, given our outreach

to a low-income Latinx community experiencing chronic stress, we utilized low-cost and readily accessible public parks and developed a shared vision for alleviating social environmental stress.

The PASITO project

With the goals of promoting healthy activity in nature and reducing stress, the PASITO team also shared a vision for advancing the health of the Latinx community. Towards this end, our work began in the East Bay community of Richmond, California, that houses a significant Latinx population. Richmond is a diverse and vibrant community of predominantly racial/ethnic minority groups, 36% Black and 27% Latinx, many of whom also have Indigenous ancestry. Richmond is the homeland of the Ohlone Indigenous peoples, who sustained the pristine nature of their environment for 11,000 years before colonization. The current city of Richmond is less than 20 miles northeast of downtown San Francisco, and its immediate surroundings contain more than 50 municipal public parks. The majority are stewarded by the hard-working people at the East Bay Regional Park District. They maintain Richmond’s dense public park system, which makes the most of

> *PASITO sought to reclaim nature as an ancestral form of healing for a community disproportionately impacted by health disparities.*

its unique placement between San Francisco and San Pablo Bays and Wildcat Canyon. Over 100,000 East Bay residents can enjoy parks, such as Point Pinole and Kennedy Grove (Figure 3), that are a short distance from The Latina Center, one of several local community-based organizations that tackle the unique economic, health, and wellness needs of the greater Richmond area.

The Latina Center is devoted to educating and empowering Latina leaders in the Bay Area. The center aims to improve the lives and health of Latina community members through development of skills for project planning, community outreach, advocacy, and presentation of health seminars. Given this rich resource, PASITO investigators invited leaders at The Latina Center to participate in community-engaged research to design

and implement our study. These leaders graciously accepted the invitation. They worked closely with Latinx students who were insider researchers, other investigators at San Francisco State University from different disciplinary backgrounds, and a community relations manager at the East Bay Regional Parks district to design a park-based intervention to alleviate chronic stress. Together, this team of community experts and health investigators created and implemented PASITO's interventions, and assessed their outcomes, taking a multilevel approach to achieving health equity for the Latinx community.

There is a multitude of studies that support the link between specific experiences in nature and improved health outcomes (Bratman et al. 2019), and many of these studies point out that opportunities for healing in nature are diminished for some populations. Ironically, in the US the situation is worst for populations who could benefit from access to nature the most. Consequently, the PASITO team sought to reclaim nature as an ancestral form of healing for a Richmond Latinx community disproportionately impacted by health disparities.

Phase 1

Our intervention began by assessing the feasibility and acceptability of walking in nature among participants (project Phase 1). After obtaining their agreement to collect biospecimens, the intervention launched. Attendance at organized walks in local parks (Figure 4), and physical activity during these events, were tracked throughout the duration of Phase 1. Biospecimens of hair and saliva were used to measure biological levels of stress, and participants completed surveys to monitor behavioral outcomes as self-reported measures of stress and psychological affect. Results from Phase 1 were recently published in the journal *Recreation, Parks and Tourism in Public Health*

Figure 3. Map of Richmond, CA, with the location of the Latina Center and parks visited as part of the PASITO program.

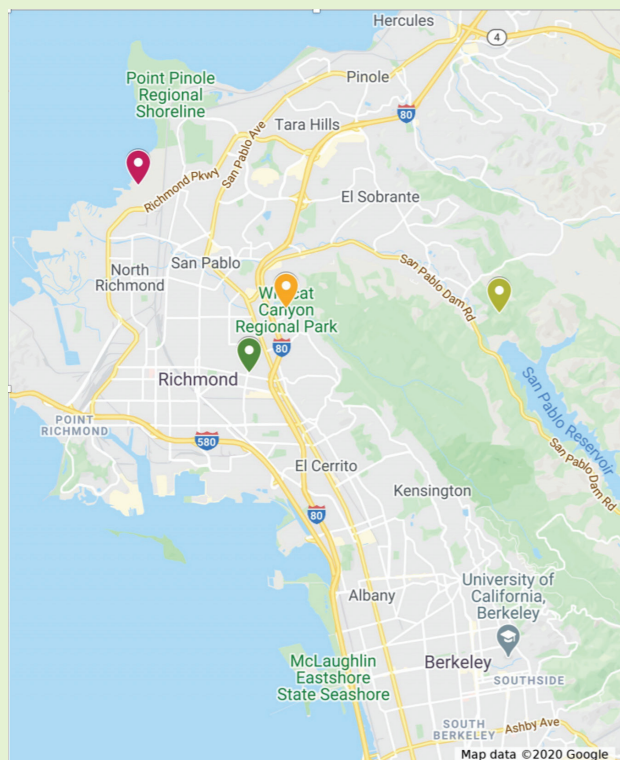




Figure 4. Participants enjoyed a variety of activities as part of walks in parks that were organized by PASITO. | THE PASITO PROJECT

(Yoshino et al. 2018). This work demonstrated the feasibility of biospecimen and psychosocial data collection in a multilingual, multicultural cohort of participants engaged in a health-based public parks program. As such, it begins to address the disparity in equitable access to healing in nature by bolstering the feasibility of gathering community-informed evidence to drive necessary change in park policies.

Future phases

It is important to note that while our Phase

1 data show the feasibility of a community-engaged approach to reclaim nature for populations affected by health disparities, it also calls attention to a limitation that must be overcome in subsequent phases of the work. Specifically, the Phase 1 study did not include a control group for analyzing the impact of the intervention. Instead, due to the strongly voiced input of Latina Center leaders, all participants engaged in the intervention because the leaders wanted “everyone to benefit.” In future phases, the study design could include a control group

to increase internal and external validity of the results obtained. In fact, we are currently consulting with community leaders to develop an acceptable study design that includes a control group, either through delaying the onset of the organized walks for some participants and/or by enrolling community members who are willing to donate biospecimens but do not wish to take part in walking.


Insider researchers as a key to success

Despite this limitation, Phase 1 of PASITO nonetheless serves as a validation of the inclusion of racial and ethnic minorities and low-income participants in biomedical research to promote healing in nature. Such participants have been deemed as “hard to reach” by biomedical researchers because of their low rates recruitment and retention in clinical studies, as well as their reluctance to donate biospecimens (Lemke, Halverson, and Ross 2012). This is largely due to distrust of outsider researchers. In Phase 1 of PASITO, 43 low-income Latinx participants were recruited to the project, and 93% were retained. Moreover,

biospecimens in the form of saliva and hair were collected from 42 of the 43 participants. The successful recruitment, retention, and biospecimen donation in Phase 1 was likely due to the inclusion of insider researchers who maintained the trust of the community through their inherent understanding of social norms (Fitzpatrick, Sutton, and Greenberg 2006) and authentic commitment to social justice work.

For example, biospecimens were collected, processed, and analyzed by insider student investigators from the HER Lab at San Francisco State University. The lab is a collaborative, state-of-the-art cell and molecular biology research facility that is committed to the use of basic biological techniques for the advancement of community health (Figure 5). Much of the lab’s work focuses on health disparities attributable to toxic stress and premature aging in racial and ethnic minorities. HER team members used immunoassays to reliably measure cortisol levels in the biospecimens. These students also served as insider researchers to better connect and engage with

Figure 5. Health Equity Research Lab collaborations across departments, community organizations, and other educational institutions.



COLLABORATIONS ACROSS DEPARTMENTS, COMMUNITY ORGANIZATIONS, AND INSTITUTIONS

San Francisco State University	Community Organizations	Other Educational Institutions
Department of Kinesiology	Healthy Parks Healthy People San Francisco, CA	Center for Aging in Diverse Communities University of California, San Francisco
Department of Psychology	The Latina Center Richmond, CA	Preventive & Restorative Dental Sciences University of California, San Francisco
Department of Parks and Recreation	4Paws Rohnert Park, CA	Reproductive Science University of California, San Francisco
Department of Chemistry and Biochemistry	Center for Youth Wellness San Francisco, CA	School of Education University of California, Berkeley
Health Promotion & Wellness	Leadership High School San Francisco, CA	School of Public Health University of California, Berkeley
Department of Geography & Environment	June Jordan School for Equity San Francisco, CA	School of Education University of California, Los Angeles

> Student investigators were trained to recognize and leverage their community cultural wealth to improve community health.

community members throughout Phase 1 of PASITO.

Role and impact of community-engaged, insider research

The PASITO research group for Phase 1 consisted of academic, community, and municipal parks partners who were primarily members of gender and racial/ethnic minority groups. While we appropriately brought different perspectives to the work because of our diverse social identities and lived experiences, we also shared a vision. Our collective vision was of a true partnership between institutions and community members to investigate how nature impacts individual health, and to use the findings to improve community health. We expected this vision would be successful because studies of community-engaged research unequivocally find that if populations implicated in the health outcomes of a community program are involved in its design, implementation, and evaluation, it will be more effective (Wallerstein and Duran 2010). Additionally, as noted above, engagement of community stakeholders helps with recruitment, retention, and biospecimen collection efforts (Samayoa et al. 2020).

In Phase I study we partnered with and enrolled participants from The Latina Center by engaging this community stakeholder through trust-building activities led by Latinx student investigators who were insider researchers. In fact, two members of the student research team grew up in Richmond and facilitated introductions to Latina Center leaders. Early on, these leaders requested a science outreach activity for youth. As a result, student investigators from the HER Lab conducted an educational outreach activity that introduced youth to the concept of DNA as the heritable material that connects all living organisms. The youth were provided with tools for extracting DNA from strawberries using reagents found

in most homes. Importantly, the educational outreach was conducted in Spanish and English, leading to its success on multiple fronts. First, community stakeholders felt heard because there was a direct response to their request for an educational science-based activity for their youth. Second, both the youth and Latina Center leaders recognized themselves in the HER Lab research team, solidifying their identification as insider researchers and thereby engendering trust. The lack of trust is a major barrier to clinical studies in communities of color (Corbie-Smith 1999), and, once sufficiently gained, the PASITO team worked diligently to maintain and bolster this trust.

To better understand how the study design, organization, and implementation of PASITO impacted the successful recruitment and retention of Latinx participants, we conducted phone interviews at the end of the study. These interviews were conducted in the language of and with the cultural norms of the Latinx community, and the responses transcribed, and if necessary translated, for qualitative analysis. Four crucial themes emerged: strong effects of insider researchers, a sense of community and belonging, accessible programming, and health-promoting activities. We postulate that the first three themes emerged due to the inclusion of insider researchers who are authentically committed to giving back to the communities they come from, and to improving the health of marginalized communities in general, through use of their community cultural capital. Yosso's Community Cultural Wealth Model (Figure 6) recognizes the capital that insider researchers bring to research teams. In fact, much of the work that was completed by academic partners (student and faculty investigators) of the PASITO research group was informed by the principles of this model. Specifically, student investigators were trained by faculty to recognize and leverage their community cultural wealth to improve community health.



Figure 6. Tara Yosso's six-part Cultural Wealth Model includes six types of capital that educational leaders may use to frame their interactions with students. This may be particularly useful to educators committed to increasing the number of students who remain in the P–20 academic pipeline (i.e., from earliest schooling through workforce training).

Given that the student investigators were the primary ambassadors for speaking to and connecting with community members, municipal parks stewards, and academic partners (across disciplinary fields) who participated in this community-engaged, transdisciplinary research, we posit that the students were the catalyst for the successful of Phase 1 of PASITO. Students had extensive in-depth knowledge of the community and the relevant health issues because of their insider status. Moreover, they were sensitive to social conditions and mindful of the barriers to, and facilitators of, study participation within the community. Lastly, these insider researchers were able to form strong relationships with research participants because of the innate trust and understanding of social norms that come with being part of a particular community (Fitzpatrick et al. 2006).

Insider researchers also gained valuable opportunities for growth and learning. The community taught the insider researchers

about the inequities in access to nature, which include prohibitive park policies, as well as over-policing and racial/ethnic profiling in local green spaces. For example, community participants reported a jarring incident of being approached and intimidatingly questioned by park authorities mounted on horses. Here, we must call to mind the historical fact that the Spanish colonizers of California used the horses they brought from Europe to capture land in battles, and to maintain order among the native Indigenous people who lived or worked on their haciendas. Consequently, the approach of horse-mounted authorities questioning the presence of the community members in a public park is similarly a cause for fear, and emblematic of terrorizing experiences of people of color in nature. Taken together, the lessons learned from the community, and the uniquely brutal times we find ourselves in, prompt us to concentrate on activism-focused science to achieve equitable access to healing in nature for communities of color.

Racial reckoning, COVID-19 and healing in nature

Despite park policies that grant access to nature for all populations, barriers to full participation in these healing spaces exist for communities of color. This fact is best illustrated by the brutal incidents experienced by two men of color in public parks, Alejandro Nieto and Christian Cooper. Fourteen bullets ripped through Alejandro Nieto's head and body in 2014 while he was taking his break at a San Francisco hilltop park. As a practicing Buddhist, Nieto often frequented the park to meditate, and on this occasion a bystander called the police to report that Nieto seemed to be a physical threat. Responding officers shot and killed him. Similarly, in May 2020 a white woman walking in New York City's Central Park threatened to call the police when she encountered a Black man, Christian Cooper, who was birding there. The woman threatened to call the police when Cooper calmly asked her to leash her dog to be in compliance with a park policy. Although she was the one clearly acting in violation of park policy, it was her threat to summon the

“Healing in Nature” community gatherings bring together leaders of community-based organizations on the frontlines of COVID-19 disparities and racial unrest.

police that called the presence of a Black man in nature into question. While this incident made national headlines, it is also emblematic of the recent and frequent experiences of members of the multiethnic PASITO research team at San Francisco State, and those of the community members we continue to engage in our work to reclaim nature for healing. Resisting such injustices is not only necessary to creating anti-racist spaces in nature to promote greater healing from the increasing reports of racist attacks, but for communities of color to cope with the strain of COVID-19.

Not surprising to those immersed in health disparities research, in 2020 we find ourselves in the midst of a global pandemic caused by a novel coronavirus, Sars-Cov2. The resulting disease, COVID-19, disproportionately affects communities of color. The differences in health outcomes for populations suffering from severe COVID-19 disease are striking, with Black Americans and Latinx being overrepresented in the number of cases, hospitalizations, and deaths (Price-Haywood et al. 2020). For example, in San Francisco, Latinx make up 15% of the population, but 51% of the COVID-19 cases. They also make up many of the 781 deaths by police nationwide reported as of this writing in 2020. However, it is well known that the greatest death toll in the US has been on Black lives. Consequently, the PASITO team stands in strong solidarity with the Black Lives Matter movement, and responding to our call to action below is one way to stand with us. The COVID-19 pandemic and civil unrest in the US necessitates an increase in accessible community programs with a focus on promoting health equity. Anti-racist community green spaces and culturally relevant outdoor activities can provide optimal settings for physical distancing, healthy exercise, and nature-based stress reduction. However, the creation of these spaces in nature requires the critical recognition

that communities of color often perceive and experience natural environments differently than their white counterparts. Consequently, reclamation of natural spaces in the Bay Area must be informed by Indigenous forms of nature-based knowledge. Unfortunately, the sacred tenets of Indigenous knowledge of nature have been systematically suppressed by colonizing forces, and in our ongoing work the PASITO team is working to gather the wisdom of our ancestors by collecting the voices of their descendants. This is being accomplished through “Healing in Nature” community gatherings that bring together leaders of community-based organizations on the frontlines of COVID-19 disparities and racial unrest.

Conclusion and call to action for green space researchers

Nature and healing are connected in many ways. They are connected through cultural practices, spiritual teachings, and ceremonies that in combination with other factors can prevent and treat disease (Koithan and Farrell 2010). For many Latinx, healing practices in nature are grounded in the knowledge of Indigenous ancestors who viewed nature as a sacred space for connection. This connection is lacking in these uniquely brutal times of COVID-19 disparities and racial reckoning, requiring reclamation of natural spaces. We posit that this is best achieved by research approaches in which community voices are centered and communities are treated as equal partners.

Phase I of our PASITO study used a community-engaged, transdisciplinary approach and relied on insider researchers (Yoshino et al. 2018). Our success in contributing to greater understanding of the domains of influence in relation to the physical and sociocultural environments (Figure 2) is readily attributable to strategic inclusion of culturally concordant student investigators.

These insider researchers used their community cultural wealth (Figure 5) to build on the inherent trust conferred on them by the community to achieve robust recruitment, retention, and biospecimen accrual outcomes. More importantly, the lessons learned from Phase I of PASITO are currently being used in the design of a healing in nature program for the alleviation of stress caused by COVID-19 disparities and heightened interpersonal racism in communities of color plagued by systemic racism.

Our ongoing efforts center on community engagement, advocacy, and activism. Our community engagement efforts will collect the data necessary to create public health interventions using community-informed values, culturally relevant activities, and anti-racist practices to reclaim colonized lands that make up our park systems. This approach is capacity-building and sustainable because of its reliance on community-engaged practices, and it honors the legacy of George Meléndez Wright, whose namesake organization states that sustainability requires “connecting people, places, knowledge and ideas.” This statement underpins our call to action in linking the people, places, knowledge, and scholarly ideas this journal seeks to highlight (e.g., climate adaptation, public health, education, jobs, Indigenous sovereignty, and environmental justice) to critical race discourse for the purposes of creating and implementing anti-racist policies and practices for equitable participation in nature.

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The Interdisciplinary Journal of Place-based Conservation

Co-published by the [Institute for Parks, People, and Biodiversity](#), University of California, Berkeley and the [George Wright Society](#). ISSN 2688-187X

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Citation for this article

Johnson, Eric, Cathy Samayoa, Rebecca Mendez, Miriam Wong, Edgar Velazquez, and Leticia Márquez-Magaña. 2021. Insider community-engaged research for Latinx healing in nature: Reflections on and extensions from Phase 1 of the Promoting Activity and Stress Reduction in the Outdoors (PASITO) project. *Parks Stewardship Forum* 37(1): 34–45.

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The journal continues *The George Wright Forum*, published 1981–2018 by the George Wright Society.

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