

Active Living Research

Creating and Using Evidence to Support Childhood Obesity Prevention

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Abstract: The second phase of Active Living Research (ALR-2, 2007–2012) focused on advancing the Robert Wood Johnson Foundation (RWJF)'s goal of reversing the childhood obesity epidemic. The mission was to stimulate and support research to identify environmental factors and policies that influence physical activity for children and families to inform effective childhood obesity prevention strategies, with an emphasis on the lower-income and racial/ethnic communities with highest childhood obesity prevalence. The present report describes ALR activities undertaken to accomplish three goals.

The first goal—to build an evidence base—was furthered by funding 230 competitive grants to identify and evaluate promising environment and policy changes. More than 300 publications have been produced so far. The second goal—to build an interdisciplinary and diverse field of investigators—was supported through annual conferences and linked journal supplements, academic outreach to multiple disciplines, and grants targeting young investigators and those representing groups historically disadvantaged or underrepresented in RWJF-funded research. The third goal—to use research to inform policy and practice—was advanced through research briefs; webinars; research-translation grants supporting ALR grantees to design communications tailored to decision-maker audiences; active engagement of policymakers and other stakeholders in ALR program meetings and annual conferences; ALR presentations at policy-related meetings; and broad outreach through a widely used website, e-mailed newsletters, and social media. ALR-2 findings and products have contributed to a rapid increase in the evidence base and field of active living research, as documented by an independent program evaluation.

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Introduction

The childhood obesity epidemic is one of the most serious health challenges of our time, because it is a leading cause of increases in adult obesity, type 2 diabetes, and related chronic diseases.¹ Since the 1980s,

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prevalence of overweight and obesity has increased dramatically in the U.S. Approximately one third of youth are overweight or obese, and prevalence is higher among Native American, African American, Latino, and lower-income subgroups.² Because obesity is recalcitrant to treatment, primary prevention is seen as the most promising approach.^{1,3} There is a consensus among major scientific, public health, medical, and philanthropic groups that multi-sectoral environmental and policy changes are essential to create sustainable improvements in the eating and physical activity behaviors believed to be primarily responsible for the current epidemic.^{1,4–6}

When the IOM recommended urgent action be taken in schools, communities, and homes to create policies and environments more supportive of active living, healthy eating, and “energy balance,”¹ there was limited research to identify the most promising strategies. Active

Living Research (ALR) was initiated as a National Program by the Robert Wood Johnson Foundation (RWJF) in 2001 to build an evidence base to inform environmental and policy solutions to the epidemic of inactive lifestyles in the entire population—adults and children.⁷ Independent evaluations indicated that substantial progress had been made during the 6 years of ALR Phase 1 on building an evidence base, nurturing an interdisciplinary field of researchers, and leveraging additional resources for active living research. However, it was difficult to document cases in which the research had led to specific policy changes.^{8,9} Coinciding with RWJF's commitment of \$500 million in 2007 to reverse the childhood obesity epidemic through a combination of research, action, and advocacy, ALR was funded for a Phase 2 (ALR-2) and changed its focus to studying the environmental and policy factors of most relevance to youth, especially those in populations at highest risk for childhood obesity. A parallel program, Healthy Eating Research, was begun in 2005 to accelerate research on food environments and policies, focusing on groups at high risk for childhood obesity.¹⁰ The present paper provides an overview and update of ALR-2's activities and outcomes related to this change of focus. A companion paper in this issue reports an independent evaluation of ALR-2's (2007–2012) progress toward its goals.¹¹

Mission and Goals of Active Living Research

In 2007, ALR-2 was integrated into RWJF's Childhood Obesity portfolio and began a targeted effort to develop evidence to inform the prevention of obesity and physical inactivity among youth aged 3–18 years, especially in the lower-income and racial/ethnic populations and communities most severely affected by the epidemic. The IOM progress report on childhood obesity prevention¹² identified evaluation of policy and environmental changes as the highest research priority and helped inform ALR's new research agenda.

The new ALR-2 mission was to stimulate and support research to identify environmental factors and policies that influence physical activity for children and families and to inform effective childhood obesity prevention strategies, particularly in lower-income and racial/ethnic communities at highest risk. The program's main goals were to (1) establish a strong research base to identify and evaluate solutions to reverse childhood obesity; (2) build a vibrant interdisciplinary and diverse field of researchers; and (3) facilitate the use of research to guide and accelerate effective policy and practice change.

Figure 1 illustrates the goals, program activities, and intermediate and longer-term outcomes of ALR-2. The

“golden thread” that linked all three ALR goals was the emphasis on interdisciplinary teams that both improved the quality of research by combining expertise from multiple fields and enhanced the impact by linking researchers with practitioners, decision makers, and advocates in numerous sectors of society. One indicator of the value of the ALR-1 field-building activities was that virtually all the disciplines and sectors involved in ALR-1 were relevant to ALR-2. However, ALR-2's greater focus on high-risk populations required intensified efforts to target these groups, engage more researchers with unique expertise in doing so, and develop relationships with additional end users of research.

Goal 1: Building the Evidence Base

Calls for Proposals: Identifying Research Priorities

With a \$15.4-million budget for research grants, the primary mechanism for building the evidence base was to fund grants solicited via an open call for proposals (CFP) process. Each CFP included specific study topics and research questions identified as high priority. With the stated intention of building actionable evidence, CFPs were based on input from leading researchers and end users (e.g., policymakers and practitioners). Twelve CFPs were released during ALR-2, with priority topics that included methods and measures, environmental correlates, population-specific findings, policy analyses and evaluations, economic studies, and meta-analyses. The study topics for each CFP during ALR-2 are listed in Table 1.

Both informal and formal methods were used to prioritize research topics. A central function of ALR's National Advisory Committee (NAC) and Senior Advisors was to recommend research topics, edit CFPs, and assist in the distribution of CFPs to diverse disciplinary groups. Consultations with other RWJF childhood obesity programs provided valuable input from both practice (e.g., Healthy Kids Healthy Communities) and policy (e.g., Leadership for Healthy Communities) perspectives. ALR staff attended grantee meetings for multiple programs, providing opportunities for interaction and input. The research briefs, syntheses, and commissioned papers supported by ALR included research recommendations that were sometimes adopted as CFP research topics. Three Research and Policy Forum teleconferences of selected policymakers and researchers were organized to gain input on research priorities for the topics of parks and recreation, school physical activity, and transportation. These forums opened a dialogue between researchers and policymakers on the latest findings and information gaps of special relevance to policymakers.

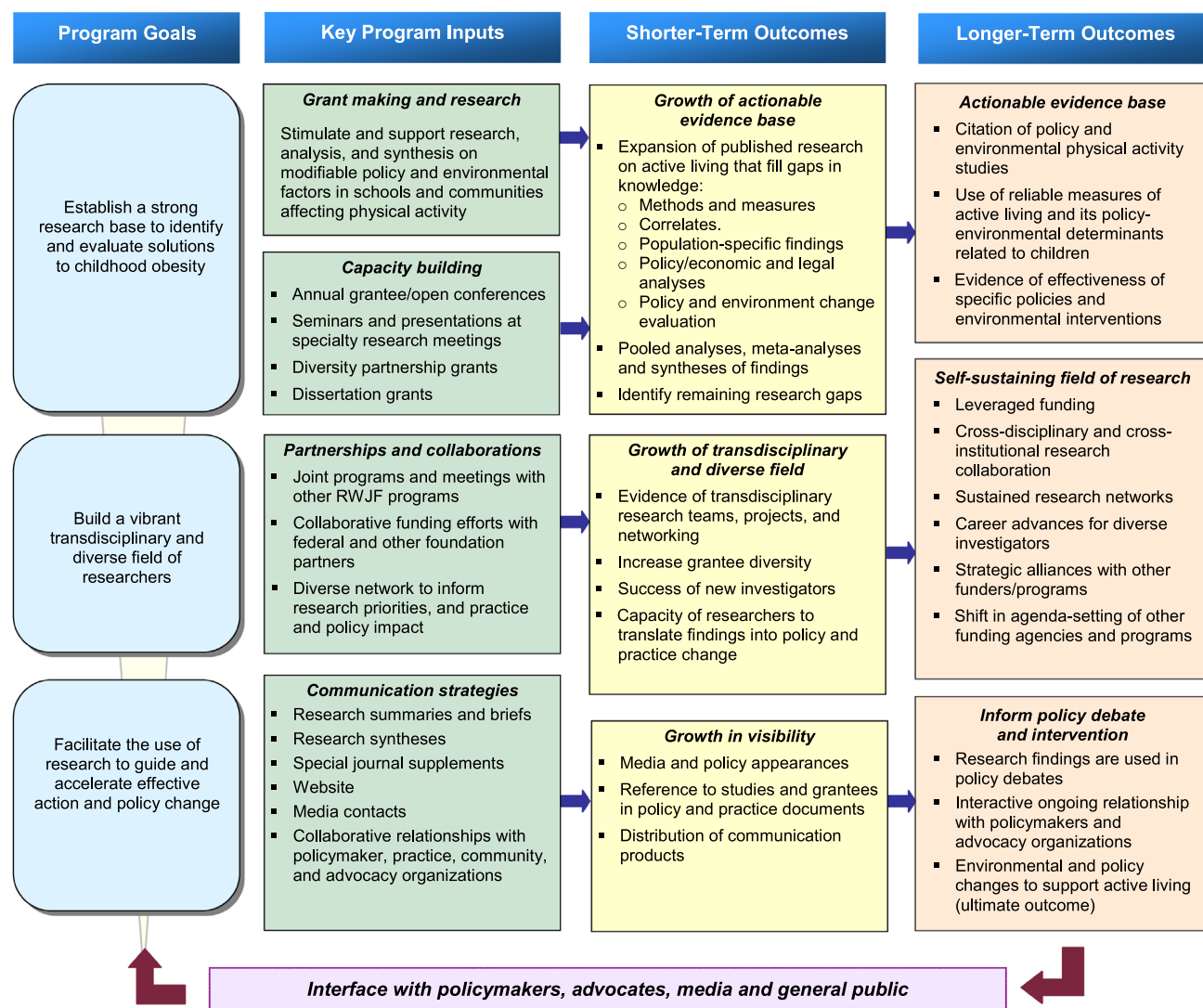


Figure 1. Active Living Research-2-2 logic model

Other grant mechanisms complemented the annual CFPs. Because ALR-1 dissertation grants proved an excellent investment in field building, publication, and funds leveraged, they were continued throughout ALR-2. In addition, a new targeted ALR-2 grant program was created to increase the diversity of grantees through ALR-New Connections grants awarded through ALR in partnership with RWJF's larger, cross-team New Connections program (www.rwjf-newconnections.org). These awards were intended to bring new perspectives to ALR-2 research by supporting early career investigators who could offer professional and personal expertise in the high-risk population groups. A second new funding mechanism—Rapid Response Grants—was initiated to allow for timely evaluation of policy and environmental changes already occurring (i.e., natural experiments). Rapid Response Grants elevated the rigor of studies from the emphasis on cross-sectional designs funded in ALR-1.

Grants Funded

Active Living Research-2 continued most types of studies funded in ALR-1, and the range of studies was expanded to include specialized investigations relevant to childhood obesity policy and practice impact, including legal analyses, economic analyses, conceptual studies, and health impact assessments. ALR conceptualized two types of policy-relevant research. The more usual approach was research to identify environmental and policy solutions to childhood obesity and inactivity. The second approach was to provide information related to evidence-based solutions important in decision making. For example, policymakers routinely requested economic information, such as costs of interventions and cost effectiveness, as well as evaluation of health impact assessments.

As an example of a rationale for specific study topics, ALR-2's first CFP (CFP7) solicited proposals on children's and parents' perceptions of environments as being

Table 1. Call for proposals (CFP) during ALR-2, with study topics or statement of purpose

CFP round	Topic(s)
Round 7 (2007)	<ul style="list-style-type: none"> ● Children’s and parents’ perceptions of community and recreation environments ● Evaluations of policy interventions in schools ● Dissertation awards
Round 8 (2008)	<ul style="list-style-type: none"> ● Evaluations of policy or environmental interventions and strategies for increasing physical activity and/or reducing sedentary behaviors among youth ● Studies of the interactive effects of built environment and social/cultural factors on youth physical activity and/or sedentary behaviors in populations at high risk for obesity ● Studies of the economic determinants and/or impacts of environments and policies that affect youth physical activity and/or sedentary behaviors ● Analyses of macro-level policies and environmental-change strategies with the potential to increase physical activity and/or reduce sedentary behaviors among youth ● Dissertation awards
Round 9 (2009)	<ul style="list-style-type: none"> ● Evaluations of policy or environmental interventions and strategies for increasing physical activity and/or reducing sedentary behaviors among youth ● Studies of the economic determinants and/or impacts of environments and policies that affect youth physical activity or sedentary behaviors ● Analyses of macro-level policies and environmental change strategies with strong potential to increase physical activity and/or reduce sedentary behaviors among youth ● Pooled analyses of associations between the built environment and physical activity or the built environment and obesity ● Measurement development and evaluation ● Health impact assessments ● Dissertation awards
Round 10 (2010)	<ul style="list-style-type: none"> ● Evaluations of policy or environmental interventions and strategies for increasing physical activity or reducing sedentary behaviors among youths ● Economic analyses to assess feasibility and advisability of policy or environmental interventions that affect youth physical activity or sedentary behaviors ● Analyses of macro-level policies and environmental change strategies with strong potential to increase physical activity or reduce sedentary behaviors among youths ● Quantitative meta-analyses of the relationships between built environment or social environment variables and physical activity; built environment or social environment variables and sedentary behavior; or built environment or social environment variables and obesity ● Evaluations of youth advocacy efforts to support active living ● Case studies of active living policy changes in communities at high risk for childhood obesity, including those with high rates of childhood obesity; those that represent the ethnic and racial groups at greatest risk; and underresourced, lower-income, or rural communities. ● Dissertation awards
Healthy Eating Research Supplements, Round 1 (2007)	<p>The primary purpose of this special solicitation was to provide financial supplements to existing Healthy Eating Research Round 1 grantees conducting childhood obesity-related studies. The supplements were specifically meant to help these grantees add to their studies measures and analyses of school wellness policies designed to promote physical activity.</p>
Healthy Eating Research Supplements, Round 2 (2007)	<p>The purpose of this special solicitation was to provide financial supplements to newly funded Healthy Eating Research Round 2 grantees who were collecting new data on preschool and child care food policies and environments to inform efforts to prevent childhood obesity. The supplements were specifically intended to support the addition of measures and analyses of physical activity policies and environments in preschool and child care settings—expanding the scope of Healthy Eating Research grants to include the policy and environmental determinants of physical activity in these settings.</p>
New Connections (3 Rounds: 2008, 2009, 2010)	<p>RWJF’s New Connections program is designed to expand the diversity of perspectives that inform RWJF programming and introduce new researchers and scholars to the Foundation, while simultaneously helping to analyze data that measures progress toward programming objectives. The New Connections program invites junior investigators and senior consultants from historically disadvantaged and underrepresented communities to address specific questions posed by one of the Foundation’s programming areas.</p>
Rapid Response (3 Rounds: 2008, 2009, 2010)	<p>Rapid Response grants were designed to support opportunistic studies that evaluate natural experiments that occur when important policy and environmental changes take place in real-world environments.</p>

activity-friendly. This topic addressed the lack of research on the perceived safety, comfort, convenience, attractiveness, and cultural relevance of community environments that may independently affect the willingness of parents to use recreation spaces or neighborhood streets or allow their children to use such places. In CFP8, analyses of policies and environmental change strategies to increase physical activity were solicited. Understanding upstream factors with the greatest influence and multi-level impact required applicants to identify and work with policy or advocacy organizations to help define the focus of the analyses and develop plans to communicate results. CFP9 featured evaluation of youth advocacy efforts to support active living and obesity prevention. Youth advocacy programs were being implemented and had the potential to be a powerful approach to policy change, but they had not been evaluated.

Each CFP invited evaluation of policy or environmental strategies for increasing physical activity among youth and how these differ across population subgroups. Gaining a greater understanding of social/cultural correlates of youth physical activity was also of interest. Social environment was defined as acculturation, cultural identity, social cohesion, collective efficacy, crime and fear of crime, traffic, and incivilities like graffiti and trash (CFP8). Many schools were implementing environment and policy interventions, so evaluating these efforts was a high priority.

Rapid Response Grants were a new feature in ALR-2, designed to evaluate real-world changes during a short window of opportunity. Examples included policy changes to create active environments, such as improving physical education requirements and improving crosswalks and bikeways to access safe places to play. Evaluations of real-

world changes provide evidence that is credible to both researchers and policymakers, but such studies sometimes require baseline data to be collected on short notice. A total of 27 Rapid Response Grants were funded.

Grant Applications, Review Process, and Grantee Support

All CFPs defined priority topics and detailed the application requirements. As described previously,⁷ there was a two-stage review process of internal and external reviews, with external reviewers from multiple disciplines. The National Advisory Committee, composed of leaders in diverse fields (Table 2), made funding recommendations to RWJF, which reviewed and approved them on the basis of scientific merit and adherence to RWJF programmatic goals and funding guidelines. The grant process was highly competitive, and funding rates ranged from 9% to 24%.

Successful proposals were distinguished by a focus on modifiable environmental characteristics and policies with the potential to affect children, interdisciplinary teams whose expertise was well matched with study aims, substantial inclusion of diverse and disadvantaged populations, use of objective and best-available measures, and suitable study designs.

Once funded, ALR provided technical assistance to grantees. This included referral to resources, encouraging use of common measures, arranging consultations with experts, facilitating collaborations with other grantees, and working closely with RWJF program staff and communications teams to coordinate announcements of grantee results and publications.

Table 2. National Advisory Committee members and senior advisors (2007–2012)

Name	Institution	Department
William Ascher	Claremont McKenna College	Government and Economics
Robert Cervero (chair)	University of California, Berkeley	City and Regional Planning
Cecilia A. Conrad	Pomona College	Economics
Carlos J. Crespo	Portland State University	Community Health
Karla A. Henderson	North Carolina State University	Parks, Recreation, and Tourism Management
Ming (Frances) Kuo	University of Illinois, Urbana-Champaign	Natural Resources and Environmental Sciences
Anne Vernez Moudon	University of Washington	Urban Design and Planning
Wendell C. Taylor	University of Texas Health Science Center at Houston	Health Promotion and Behavioral Sciences
Senior Advisors		
Richard Catalano	University of Washington	School of Social Work
Kevin Patrick	University of California, San Diego	Family and Preventive Medicine
Thomas L. Schmid	CDC	Physical Activity and Health Branch

Changes in Content of Funded Grants from ALR-1 to ALR-2

The change in ALR-2's emphasis is illustrated by reductions in measurement and correlational studies, and increases in the policy analysis, intervention evaluation, and economic analysis categories. Table 3 shows the distribution of study types and Table 4 the distribution of study topics funded by ALR-1 and ALR-2. Under study topics, the biggest reductions were in community design and transportation studies, which were offset by increases in school and social environment studies, as well as studies funded in concert with Healthy Eating Research. Table 5 shows the target populations of grants, with large increases in ALR-2 among studies of youth, low-income, high-risk, and ethnic/racial communities, with a focus on African-American and Latino populations.

Grantee Publications

From 2001 to 2012, ALR grantees published 242 articles based on research grants, 51 journal articles from dissertation grants, 6 book chapters, and 10 reports or manuals.

Commissioned Analyses

Commissioned analyses filled gaps when quantitative information was lacking and where simulations and reviews of the gray literature could help to inform policy

Table 3. Number and percent of competitive grants by study types, in ALR-1 and ALR-2^{a,b}

Study type	ALR Phase I (n=91)	ALR Phase II (n=123)
Measure development	20 (22)	14 (11)
Conceptual studies	3 (3)	6 (5)
Correlational studies	48 (53)	33 (27)
Policy analysis	20 (22)	45 (37)
Intervention evaluation	14 (15)	49 (40)
Case studies	13 (14)	4 (3)
Economic analyses	0 (0)	10 (8)
Health impact assessment evaluation	0 (0)	5 (4)
Legal analysis	0 (0)	3 (2)
Pooled or meta-analysis	0 (0)	3 (2)
Prospective studies	1 (1)	2 (2)

^aThe following competitive grant programs are included: CFP Rounds 1-10 (including dissertations), Obesity and the Built Environment supplements, Diversity Partnership supplements, Healthy Eating Research supplements, Rapid Response, and New Connections

^bGrants could be coded in multiple categories

Table 4. Number and percent of competitive grants by topic area^{a,b}

	Phase I (n=91)	Phase II (n=123)
Architecture and building design	6 (7)	9 (7)
Community design and transportation	65 (71)	49 (40)
Health and nutrition ^c	4 (4)	30 (24)
Parks and recreation	24 (26)	27 (22)
Schools	18 (20)	71 (58)
Social environment (including crime)	11 (12)	31 (25)

^aThe following competitive grant programs are included: CFP Rounds 1-10 (including dissertations), Obesity and the Built Environment supplements, Diversity Partnership supplements, Healthy Eating Research supplements, Rapid Response, and New Connections

^bGrants could be coded in multiple categories

^cThese include ALR-2 grants conducted in concert with Healthy Eating Research

discussions. In 2011, ALR began to support commissioned analyses to provide information targeted to policymakers and practitioners. Examples of commissioned analyses included quantitative estimates of physical activity effects of school-based strategies, case studies of complete streets adoptions, cost analysis of bicycle and pedestrian facilities, economic performance of walkable shopping areas, physical activity effects of school sports policies, and analysis of promoting sedentary behavior through the media.

Goal 2: Building the Field

The second goal of ALR was to build interdisciplinary and demographically diverse teams of researchers. Proactive efforts were needed to recruit professionals from diverse disciplines to form research teams, and the interdisciplinary teams needed to be supported after funding. In ALR-1, key disciplines traditionally linked

Table 5. Number and percent of competitive grants by target population^{a,b}

	Phase I (n=91)	Phase II (n=123)
Youth	38 (42)	110 (89)
Low income	18 (20)	73 (59)
High-risk racial/ethnic populations and communities	24 (26)	82 (67)

^aThe following competitive grant programs are included: CFP Rounds 1-10 (including dissertations), Obesity and the Built Environment supplements, Diversity Partnership supplements, Healthy Eating Research supplements, Rapid Response, and New Connections

^bGrants could be coded in multiple categories

to public health were behavioral and exercise sciences, and key disciplines in traditionally nonhealth fields included transportation, city planning, education, leisure studies, geography, policy studies, and economics. In ALR-2, additional disciplines were targeted, including pediatrics, urban studies, and obesity research. There was a continuing emphasis on attracting investigators with both professional expertise and personal experience in the populations at highest risk for childhood obesity.

Seminars for Academics

To increase interest in this field of study, workshops or symposia on active living topics at professional conferences were developed in collaboration with professional organizations. Seminars were used to enhance methodologic skills, build interest and capacity for interdisciplinary collaboration, and recruit researchers to study active living topics. Seminars were conducted with these disciplines: recreation and leisure studies, obesity, education, criminology, environmental justice, urban planning, pediatrics, prevention research, policy studies, and transportation. These seminar programs attracted more than 1000 attendees. In a related field-building activity, ALR supported meetings of the Physical Activity Interest Group of the American Public Health Association.

New Connections Program

To increase support of researchers from historically underrepresented research communities, several new investigators were funded by ALR-2 in collaboration with RWJF's New Connections program. In addition to the technical assistance offered to all ALR grantees, New Connections grantees had identified mentors and attended New Connections career development workshops.

Active Living Research Annual Conferences

Annual Conferences were designed to build interest in the new field because there was no other convening for people from the many disciplines involved in environmental and policy studies. Held since 2004, the conferences were central to all of ALR's goals. The research presentations helped build the evidence (Goal 1), and the most highly rated abstracts were invited to submit manuscripts to a special journal issue. Goal 2 of building capacity and diversity of investigators was supported by ensuring a wide range of topics were presented and creating opportunities for networking. Goal 3 of using research to shape policy was achieved through presentations by policymakers, opportunities to interact with policymakers, and workshops on communicating with decision makers.

The conference grew from 175 researchers to a more diverse audience of up to 350 researchers, active living practitioners, and policymakers. The ALR Conferences have been evaluated favorably, and evidence of achievement of conference goals since 2008 is shown in Table 6.

To recognize teams or individuals who have used research to achieve policy or environmental change relevant to youth physical activity, the ALR Translating Research to Policy Award was initiated in 2008. Nominations were invited, and awardees were selected by a committee of ALR staff, advisors, and external reviewers. Award winners included collaborators on the following: Arkansas Act 1220: legislation to reduce BMI of school children; incorporating public health in the long range transportation plans for Wasatch Front Regional Plan (Utah); Texas CATCH (Coordinated Approach to Child Health); New York City Active Design Guidelines; and a Health Impact Assessment in Clark County WA.

Grantee Meeting

In an effort for continued learning and collaboration, ALR held annual grantee meetings for active and non-active grantees. This closed meeting was held on the day prior to the larger ALR conference. The main activities were a keynote speaker or panel and roundtable discussions, with topics selected by a grantee program committee. The overall quality of the grantee meeting was rated good or excellent by an average of 91% of participants.

Journal Supplements and Special Issues

Sponsored journal supplements were begun in 2005 to provide researchers with an annual collection of papers, and to attract higher quality submissions to the ALR conference. The supplement or special issue featured the best papers presented at each annual conference, along with commentaries and commissioned papers. The supplements and special issues from 2008 to 2013 are listed in Table 7 along with guest co-editors. Beginning in 2012, most of the papers in the supplement were accompanied by an Article Summary to aid in translating research results for nonscientific audiences (12 produced in 2012 and 21 in 2013). To facilitate further accessibility of information, ALR provided free open access to the full-text papers published in the supplements, which can be found at www.activelivingresearch.org/resourcesearch/journalspecialissues. ALR-2 supported other special issues, including the *Journal of Health Policy, Politics and Law* collection of policy case studies (June 2008); *American Journal of Preventive Medicine*, Active Living Research: A Six-Year Report (February 2009); *Journal of Adolescent Health*, childhood obesity theme issue (with Healthy Eating Research, September 2009); and

Table 6. Evaluation of Active Living Research annual conferences, based on participant surveys, % unless otherwise noted

	2008	2009	2010	2011	2012
Number of attendees (excluding program staff)	320	286	301	340	325
Response rate to evaluation survey	52	60	54	58	53
Overall: 4 or 5 on 5-point scale	96	95	90	92	92
Meeting stimulated new ideas that are likely to lead to changes in my research or practice	82	82	76	78	82
I learned new concepts/ideas from another discipline that are likely to enhance my future work	82	81	79	83	77
The meeting provided an opportunity to make new contacts that might lead to future collaborations	84	84	89	88	86
Success in meeting goals of conference : 4 or 5 rating					
To provide an opportunity for researchers from multiple fields to present and hear the latest studies on environmental and policy issues related to physical activity ^a	92	89	81	88	85
To build the network and capacity of researchers to conduct excellent transdisciplinary studies on active living	92	89	75	85	87
To explore how current and future research can be used to shape policy decisions	89	77	69	76	68

^aQuestion reworded in 2012: To provide an opportunity for professionals from multiple fields to present and learn the latest advancements on environmental and policy issues related to active living

Preventive Medicine, physical activity theme issue (October 2009).

To determine the impact of the supplements, a citation analysis was performed in August 2011. Regular articles (not commentaries) in ALR-sponsored special issues from 2005 to 2010, and each preceding regular issue, were tracked for number of citations using Scopus. Issues not available on Scopus were tracked using Google Scholar. Overall, papers in ALR supplements were more likely to be cited compared to articles in previous regular issues. The *American Journal of Preventive Medicine* (2005) volume 28(2S2) supplement had the highest number, a mean of 82 citations per paper, compared to a mean of 23 citations for the preceding issue (Table 8).

Commissioned Papers

To further discussion on environment and policies that could help to increase children's physical activity, leading scholars were invited to write papers to be published in ALR journal supplements. These papers were primarily literature reviews that included research priorities, and they are listed in Table 7.

Active Living Research Literature Database

The ALR literature database (www.activelivingresearch.com/litdb) is a publicly accessible, searchable online database of published papers that examine the relationship between environments and physical activity/obesity for people of all ages. Papers in the database were selected through semiannual systematic literature searches using PubMed, ISI Web of Science, and SPORTDiscus. Users can search by the characteristics of papers (e.g., author, year, country), methodologic details (e.g., study design, sampling, measurement mode), or environmental attributes (e.g., sidewalk, street connectivity, graffiti, crime). The corresponding author of each paper was invited to provide approval or corrections on the paper's coding. The number of papers included in the ALR literature database has seen a steady increase (Figure 2) for both total papers and papers on children and adolescents. The database was the basis for one published review¹³ and one meta-analysis in progress.

Goal 3: Informing Policy and Practice

The ALR program was created as an explicitly applied research program. Thus, ALR's third goal was to use research to inform changes in policy and practice expected to increase physical activity and reduce risk of obesity. Recognizing the many barriers to the application of research,^{9,14} a multi-pronged strategy was pursued.

Table 7. Active Living Research–sponsored journal supplements and special issues based on conferences and the commissioned papers published in each

Supplements and special issues, journal and theme	Guest editors	Commissioned papers
Am J Prev Med 2008 Theme: Active Living in Diverse and Disadvantaged Communities	Floyd MF, Crespo CC, Sallis JF	Nasar JL. Assessing perceptions of environments for active living
J Public Health Policy 2009 Theme: Connecting Active Living Research to Policy Solutions	Schilling JM, Giles-Corti B, Sallis JF	Whitt-Glover MC, Taylor WC, Floyd MF, Yore MM, Yancey AK, Matthews CE. Disparities in physical activity and sedentary behaviors among U.S. children and adolescents: Prevalence, correlates, and intervention implications
Prev Med 2010 No theme	Lee SM, Biddle SJH, Sallis JF	Frank LD, Greenwald MJ, Winkelman S, Chapman J, Kavage S. Carbonless footprints: Promoting health and climate stabilization through active transportation Pucher J, Dill J, Handy S. Infrastructure, programs, and policies to increase bicycling: An international review
J Phys Act Health 2011 Theme: Engaging Communities to Create Active Living Environments	Fullilove MT, Lee C, Sallis JF	No commissioned papers were included in this supplement
Health Place 2012 Theme: Partnerships for Progress in Active Living: From Research to Action	Mendoza JA, Salmon J, Sallis JF	Pollack KM, Kercher C, Frattaroli S, Peek-Asa C, Sleet D, Rivara FP. Toward environments and policies that promote <i>injury-free</i> active living—it wouldn't hurt
Ann Behav Med 2013 Theme: Disparities in Environments and Policies that Support Active Living	Whitt-Glover MC, Bennett GG, Sallis JF	No commissioned papers were included in this supplement

Methods of communicating research to end users (i.e., research briefs, website, communications training and support, and coordination with other RWJF programs) were begun during ALR-1.⁷ Those methods continued and were enhanced during ALR-2. Additional methods of translating research to policy and practice were implemented during ALR-2, including YouTube videos, webinars, and social media.

Several purposes of research, beyond advancing science, are considered. The goals are for active living research to

- answer questions that are being asked by policy-makers;
- raise new questions and provide answer to reshape policy debates;
- increase the value of evidence in public and policy debates to reduce the role of rhetoric and ideology; and
- create tipping points for action when evidence can no longer be ignored.

Science generally consists of two parts. The obvious first part is the *doing* of science: collecting data, testing hypotheses, and writing reports. The second part is less obvious; *communicating* science to nonscientists.¹⁵ ALR-2 grantees were encouraged to communicate their results

to decision-makers, either directly or by working with other groups.

Accuracy is highly valued in legislative research, as it is in the scientific arena, so policymakers learn to assess the scientific quality of resources.¹⁶ ALR's communications efforts were designed to overcome challenges inherent in scientific communications to nonscientists, based on the following principles:

- Publication in a peer-reviewed journal is still the gold standard for credibility.
- A single study, regardless of how rigorous or comprehensive, seldom represents definitive evidence on a topic.
- A sizeable time lag exists between consensus in science and the resulting policy changes that could be based on that consensus.
- Policymakers do not read scientific journals, nor can they understand the technical terms.
- Scientific publishing is a long process that is rarely, if ever, synchronized with policy debates.

An important role of ALR-2 was to summarize scientific information in specific topic areas, make the content accessible to nonscientists, and distribute the materials widely. Some of the primary mechanisms

Table 8. Citations for ALR special journal issues compared to the preceding regular issue^{a,b}

Journal ^c	M	Median	Highest no.
Prev Med 2010 (Vol. 50, No. S1)*	3.50	2.5	14
Prev Med 2009 (Vol. 49, No. 6)	1.68	1	9
J Adolesc Health 2009 (Vol. 45, No. 3S)* (jointly with Healthy Eating Research)	6.91	7	12
J Adolesc Health 2009 (Vol. 45, No. 3)	3.63	3.5	13
J Public Health Policy 2009 (Vol. 30, No. S1)*	5.79	6	12
J Public Health Policy 2008 (Vol. 29, No. 4)	1.20	0.5	7
Am J Prev Med 2008 (Vol. 34, No. 4)	13.31	10	24
Am J Prev Med 2008 (Vol. 34, No. 3)	14.30	14.5	33
J Health Polit Law 2008 (Vol. 33, No. 3) (case studies)	1.78	2	4
J Health Polit Law 2008 (Vol. 33, No. 2)	4.50	4.5	8
Am J Health Promot 2007 (Vol. 21, No. 4S)*	22.38	15	54
Am J Health Promot 2007 (Vol. 21, No. 4)	7.80	6	25
J Phys Act Health 2006 (Vol. 3, No. S1)*	37.60	27	102
J Phys Act Health 2005 (Vol. 2, No. 4)	11.25	6.5	40
Am J Prev Med 2005 (Vol. 28, No. 2S2)*	82.00	55	224
Am J Prev Med 2005 (Vol. 28, No. 2)	22.79	17	60

^aReported by Scopus as of August 2011
^bTable only includes empirical and review articles
^cALR special issue in bold; regular issue in normal font
*Indicates ALR supported supplement
ALR, Active Living Research

were research briefs, reviews and syntheses, and comprehensive and peer-reviewed lay summaries of evidence on specific topics (21 produced during ALR-2). They provide actionable research results and suggest potential policy implications. Issue briefs and fact sheets were short summaries compiled from the more detailed reviews or syntheses (six produced during ALR-2).

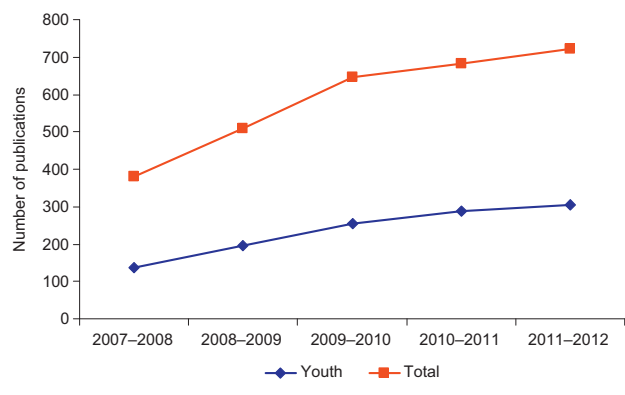


Figure 2. Cumulative number of publications in the ALR literature database by year of publication

Website for ALR

To reach the widest possible audience, the primary vehicle for dissemination of information is the program website (www.activelivingresearch.org). The site’s goal is to share the numerous program resources with both researchers and end users of the research. In April 2012, the ALR website was redesigned to enhance access to the resources, especially for nonresearchers. A sitewide search capability and new taxonomy were implemented to allow searches by keyword or a predefined taxonomy focused on the program’s four primary settings of interest: communities, transportation, schools, and parks and recreation. The integration of social media throughout the site allowed users to share materials with their networks while driving traffic to the ALR website.

Public interest in the ALR website has remained substantial since 2007, averaging just more than 8600 visits per month. Web analytics indicated that the most viewed pages were the Annual Conferences, tools and measures, and research briefs and syntheses. Visitors downloaded briefs, fact sheets, presentations, and tools and measures at an average frequency of more than 2500

files per month. As of December 2012, roughly 68% of site visits were new visitors, a testament to the program's effort in reaching new audiences.

Seminars for Practice/Policy Groups

During ALR-2, seminars became more focused on reaching policy and practitioner audiences, as well as researchers working among high-risk racial/ethnic populations and communities. The main purpose of the seminars was to present relevant research and encourage use of research in decision making. Audiences included African-American medical practitioners, environmental justice advocates, pedestrian and bicycling advocates, landscape architects, Latino advocates, and education policymakers (Table 9).

Webinars

Webinars are efficient at communicating with large groups at low cost. Ten webinars were produced to share evidence on such topics as the relationship between social justice and access to parks and recreation, community interventions to increase physical activity, walking and biking to school, creating active communities among Native Americans for shared use of schools and community facilities, assessing rural physical activity environments, and physical activity in schools and afterschool programs. ALR hosted most of these webinars with Dialogue4Health, a project of the Public Health Institute. This partnership allows each webinar to be promoted to 10,000 people. The average attendance for each webinar was 250–400. About 80% of respondents rated the overall quality of the web forums as good to excellent. An archive of web forums co-hosted with Dialogue4Health can be found at www.dialogue4health.org/php/activelivingresearch.html.

Social Media and E-newsletter

Social media can reach different audiences and communicate more quickly than other approaches. ALR established a social media presence for sharing evidence and other relevant news on a timely basis through Facebook and Twitter. In addition, ALR has the "Move!" blog on the website and ALR YouTube channel.

A bimonthly e-newsletter, *Active Living Research News*, shares research and news of interest to our growing mailing list of more than 5000. Each e-newsletter features

- new research from ALR grantees and others;
- examples of how research has informed policy, advocacy, and practice;
- media coverage of relevant research;
- events and other information related to physical activity and childhood obesity.

Research Translation Grants

It is a common challenge for investigators to communicate research effectively to nonresearchers, so in 2010 ALR created Research Translation Grants. These grants were intended to increase the capacity of grantees to make their findings compelling and actionable. These small, supplemental grants to previous RWJF and ALR grantees provided a mechanism to share their study results with specific audiences of decision makers and to create permanent communication products such as briefs, webinars, websites, and videos of value to non-researchers. As part of the grant, grantees were required to partner with national and state organizations that could use the products to help inform policy and facilitate dissemination to their constituencies. All research translation products are posted on the ALR website.

The first round of research translation awards funded six investigators, focusing on park design for youth physical activity, community use of schools, active transport to school, and school physical education. A second round of research translation awards began in 2013, covering safe routes to school, urban park disparities, school physical education policy, and school recess.

Next Steps for ALR

A third phase of ALR is being supported from 2012 to 2015, with the mission of contributing to RWJF's commitment to reverse childhood obesity by 2015. Because research begun after 2012 would not be expected to produce results that could inform policy and practice change before the target date, ALR-3 is no longer funding research grants. The current emphasis is on identifying the main lessons of the 230 funded ALR grants and the hundreds of papers that have been published, then communicating the findings to decision makers. Therefore, the single goal of ALR-3 is to translate the research into policy and practice on an accelerated timeline. Substantial effort will be focused on the RWJF childhood obesity priorities of street-scale built environment improvements (including sidewalks and safer intersections) and out-of-class physical activity (especially afterschool programs and policies).

The main methods for accomplishing the goal are to continue developing research reviews for nonscientists, expand Research Translation Grants, integrate practitioners into the ALR conference, target practitioners with webinars, expand partnerships with policy and practice organizations, and create new tools that communicate key lessons from the evidence. Commissioned analyses will be continued to provide new information and respond to current policy debates.

Table 9. ALR-2 seminars for policy and practice groups, 2007 to 2011

Organization	Title of session	Date	Link
NAASO/The Obesity Society	How to study the environmental determinates of obesity	October 20, 2007	www.softconference.com/obesity/slist.asp?C=1364
Native American Focus Group Meeting	Measuring Diabetes and Obesity	December 19, 2007	URL not found
American Educational Research Association (Research on Learning and Instruction in Physical Education Special Interest Group)	Policy Research on Schools and Physical Activity: Expanding the Active Living Research Field	March 23, 2008	convention2.allacademic.com/one/aera/aera08/
Second Annual Environmental Justice in America Conference	Inequalities in Resources and Environments for Active Living	May 23, 2008	URL not found
American Society of Criminology Annual Meeting	The Next Frontier: Criminology, Obesity, and Active Living	November 14, 2008	http://www.asc41.com/Annual_Meeting/programs/2008/2008Program.html
Urban Affairs Association: Contesting and Sustaining the City: Neighborhood, Region, or World	Social and Environmental Factors Influencing Physical Activity among Urban Children, Youth and Families	March 7, 2009	www.udel.edu/uaa/pdfs/2009_final_program.pdf
Society for Research on Child Development	Playgrounds, Parks, and Physical Activity: Active Living Research and Child Development in Denver	April 4, 2009	www.srcd.org/meeting/schedule/2009/
Community Indicators Consortium	Community Strategies to Support Health	October 2, 2009	www.communityindicators.net/events,cic-annual-conference
Transportation Research Board 89th Annual Meeting	Understanding the link between transportation and public health: Measuring travel behavior, the built environment , and physical activity outcomes	January 10, 2010	www.trb.org/AnnualMeeting2010/Public/AnnualMeeting2010.aspx
New Partners for Smart Growth 9th Annual Conference	Newest Research on Built Environment and Health	February 4, 2010	www.srcd.org/index.php?option=com_content&task=view&id=363&Itemid=640#2009
Annual Forum and Childhood Obesity Congress, National Institute for Children's Healthcare Quality	Disparities in Childhood Obesity and Physical Activity: Informing Children's Health Practitioners to Advocate for Policy and Environmental Change	March 8–10, 2011	www.nichq.org/conferences_training/annual_forum_2010/index.html
National Hispanic Medical Association Annual Meeting	Interventions that Reduce Obesity and Asthma among Hispanic Children	March 26, 2010	www.nhmamd.org/events/event-archives/past-conferences/73-nhama-14th-annual-conference-agenda
National Planning Conference of the APA	Designing Active Communities for Youth	April 11, 2010	www.planning.org/conference/previous/2010/virtualconference.htm
Society for Prevention Research	Active Living: Societal Approaches to Prevention Across Multiple Behaviors	June 2, 2010	www.preventionscience.org/meeting.php
National Medical Association (African-American focus)	Practitioners as Advocates: Promoting Environmental and Policy Change to Increase Physical Activity and Decrease Obesity among Low-Income and Racial and Ethnic Minority Children	July 21, 2010	URL not found
ProWalk/ProBike Annual Meeting	Federal Funding for Pedestrian and Bicycle Programs: What the Research Tells Us	September 17, 2010	www.bikewalk.org/2010conference/index.php

(continued on next page)

Table 9. (continued)

Organization	Title of session	Date	Link
Council of Educators in Landscape Architecture	Designing Healthy Urban Parks: Assessing and Applying the Research Evidence	March 30, 2011	arch-pubs.usc.edu/CELA2011/program/
American Society of Landscape Architects	Designing Community Recreation Spaces for Health and Wellbeing: Applying the Research Evidence	Scheduled for October 30, 2011	new.asla.org/annualmeetingandexpo.aspx
National Council of La Raza 2011 Annual Meeting	Policies and Environments to Promote Active Living and Healthy Eating in Latino Communities	July 23–26, 2011	www.ncir.org/index.php/events/ncir_annual_conference-1/
2011 National Forum on Education Policy, Education Commission of the States	The Importance of School-Based Physical Activity and How School Leaders Can Support Physical Activity Programs and Policies	July 7, 2011	ecs.force.com/ecsforum/nf11progsprk

Conclusion

Building on the development of an interdisciplinary field of research on policy and environment factors in physical activity in ALR-1, ALR-2 focused on contributing to preventing childhood obesity, with particular emphasis on high-risk racial/ethnic communities. From 2001 to 2012, ALR funded 230 competitive grants. ALR-2 grant-making was characterized by increased emphasis on evaluating environment and policy interventions, economic analyses, studies of schools and social environments, and more targeting of youth, low-income, and high-risk racial/ethnic populations. ALR grantees produced hundreds of publications, necessitating greater efforts to summarize and communicate results to policy and practice audiences. The ALR website, research briefs, webinars, and other communication products were widely used. Between 2012 and 2015, ALR is working to translate the considerable body of evidence to decision makers, so research can be used to guide policy and practice changes that will help children become more active, less likely to be obese, and healthier.

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