

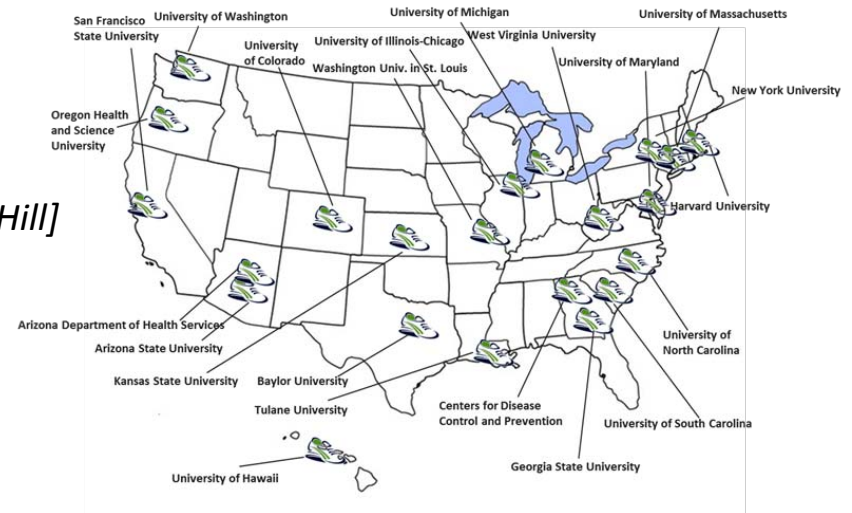
Physical activity-related policy and environmental strategies to prevent obesity in rural communities

A SYSTEMATIC REVIEW

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Background

- 16% of Americans live in rural areas encompassing 72% of land in the U.S.
- Rural residents consistently have greater health disparities as compared with urban residents
 - Higher rates of chronic disease, including obesity
- Evidence supports the effectiveness of environmental and policy approaches to prevent obesity and promote health equity
- In 2009, the CDC recommended 24 evidence-based strategies for communities to use in planning and monitoring obesity-related environmental and policy changes
 - Common Community Measures for Obesity Prevention (COCOMO)



Common Community Measures for Obesity Prevention

COCOMO

- 12 strategies focused on physical activity to “*encourage physical activity or limit sedentary activity among children and youth*”¹ or “*create safe communities that support physical activity*”²

Strategy #	Strategy Description
12	Require physical education in schools ¹
13	Increase the amount of physical activity in physical education programs in schools ¹
14	Increase opportunities for extracurricular physical activity ¹
15	Reduce screen time in public service venues ¹
16	Improve access to outdoor recreational facilities ²
17	Enhance infrastructure supporting bicycling ²
18	Enhance infrastructure supporting walking ²
19	Support locating schools within easy walking distance of residential areas ²
20	Improve access to public transportation ²
21	Zone for mixed use development ²
22	Enhance personal safety in areas where persons are or could be physically active ²
23	Enhance traffic safety in areas where persons are or could be physically active ²

Objectives

- Evidence supporting environmental and policy strategies is largely derived from research conducted in urban and suburban settings
- Objective #1 – conduct a systematic literature review
- Objective #2 – describe physical activity-related policy and environmental strategies being implemented in rural communities
- Objective #3 – describe how physical activity-related COCOMO strategies have been applied in rural communities



Methods: *Search Strategy*

- A primary and secondary literature search was conducted in PubMed, PsychInfo, Web of Science, CINHAL, and PAIS databases for articles published between 2002 and 2013, in English
 - Findings from physical activity-related policy and/or environmental interventions
- Search terms: **rural AND (physical activity or exercise or sedentary or inactivity) AND (community or environment or policy)**
- Searches were repeated
 - Using search terms representing Native American communities (“tribal” OR “reservation” OR “Native American” OR “Indigenous”)
 - For predominantly rural states (n = 19), Rural-to-Urban Continuum Codes, OBM maps, or frontier map where substantial portions of the state were frontier/rural.
- Relevant references cited in each of the identified studies were also included
- Methods mirror a sister review conducted by the CDC-funded Nutrition and Obesity Policy Research and Evaluation Network (NOPREN) to help provide a more complete picture of obesity prevention in rural communities

Methods: *Inclusion and Exclusion Criteria*

- At least two researchers reviewed titles, abstracts, and texts of articles
 - Inclusion Criteria:
 - An article had to report findings from empirical formative, process, or outcome research with strategies aimed to change policy and/or environments to support physical activity in rural North American communities
 - Exclusion Criteria (no studies were excluded a priori based on study design or location):
 - If both rural and urban communities were included, but rural-specific findings were not reported
 - The primary focus was on instrument development or individual-level behavioral change
 - If descriptive studies were not associated with an intervention
 - If the study took place outside of North America

Methods: *Extraction Process*

- Each article was extracted independently by 2 researchers
- Results were recorded using a customized *Qualtrics* online survey
- Extraction results were compared and discrepancies were resolved by consensus
- Cochrane and GRADE bias risk assessments were used to examine study quality
 - Risk of Bias was rated as low, high, or unclear
 - Overall risk of bias scores were calculated and categorized as low, medium, or high

Results

- Searches returned 9,879 articles
- 2,002 were identified as relevant for further screening based on title and abstract
- Duplicates were removed, leaving 488 records for full-text screening
- 443 of these did not meet inclusion criteria
- 45 articles, representing 41 distinct studies remained
- 15 additional articles were excluded during the extraction phase
 - Exclusion reasons: conducted outside of the US or Canada, not truly rural, descriptive not linked to an intervention, not a primary source, focused on instrument development, description too vague to determine what occurred in the intervention, or did not report results
- Thus 30 articles, representing 26 distinct studies were extracted



Study Design and Study Quality

- 3 studies were RCTs
 - 2 had High Risk of Bias
 - 1 had Medium Risk of Bias
 - 0 had Low Risk of Bias
- 23 were non-RCTs
 - 17 had High Risk of Bias
 - 3 had Medium Risk of Bias
 - 3 had Low Risk of Bias
- Evaluation Type:
 - Formative (n=7)
 - Process (n=16)
 - Outcome (n=20)
 - 15 studies included ≥ 2 types of evaluation

Intervention Settings

Study Setting	n
Childcare setting	1
Church	1
Community	10
Home	2
School-based change effecting students	14
School-based change – facility for community use	3
School-based change effecting employees	1
Worksite (industry)	5

- *5 interventions targeted multiple settings*



COCOMO Strategies Applied

Strategy #	Strategy Description	# of studies
12	Require physical education in schools	6
13	Increase the amount of physical activity in physical education programs in schools	7
14	Increase opportunities for extracurricular physical activity	10
15	Reduce screen time in public service venues	3
16	Improve access to outdoor recreational facilities	5
17	Enhance infrastructure supporting bicycling	3
18	Enhance infrastructure supporting walking	9
19	Support locating schools within easy walking distance of residential areas	1
20	Improve access to public transportation	2
21	Zone for mixed use development	1
22	Enhance personal safety in areas where persons are or could be physically active	3
23	Enhance traffic safety in areas where persons are or could be physically active	2

- 1 study applied all 12; 5 studies did not apply any COCOMO strategies
- Mean = 2.00 COCOMO strategies applied (SD=2.35)



Non-COCOMO Environment or Policy Strategies Applied (n=28 / n=20 studies)

Non-COCOMO Strategy Description	# of studies
Access to public buildings after hours	3
Increasing physical activity opportunities at school (e.g., activity breaks...)	8
Increasing physical activity equipment / access to equipment / improve current equipment	6
Promotion of physical activity resources (e.g., signage...)	6
Reduce sedentary time	1
Reduce screen time at home	1
School-based policies	1
Worksite policies or practices	2

- 6 studies incorporated ≥ 2 non-COCOMO strategies
- 5 studies incorporated only Non-COCOMO strategies
- Mean Non-COCOMO strategies applied = 1.08 (SD = 0.84)
- Mean COCOMO & Non-COCOMO strategies applied = 3.08 (SD=2.37)

Intervention Effects

- 65.38% reported a positive environment result (n=17)
- 73.08% reported a positive policy result (n=19)
- 2 studies were formative without environmental or policy results

Discussion

- Relatively few studies have incorporated many COCOMO strategies to date.
- Non-COCOMO policy and environmental approaches are also being implemented in rural communities and should be further examined and considered.
- Most strategies are being applied at school and community settings, which might have the greatest reach within rural areas given geographic dispersion.
- Current evaluations of policy and environmental approaches have high risk of bias.
- Stronger study designs and methods to reduce these high bias risks are needed.
- Many environment and policy results are lacking specificity.
- Defining “rural” is inconsistent: stated “rural”, “small town”, or “remote” (73%, n=19), population density provided (15%, n=4), tribal or reservation (12%, n=3).

Conclusions

- Rural and urban communities are distinct geographically, demographically, economically, and in terms of health.
- Given these distinctions it is possible that associated policy and environmental characteristics also differ between rural and urban communities.
- Most Active Living work in rural areas to date takes what we have learned in urban communities and tries to “fit” these strategies into rural communities... is this really the best approach?
- Further understanding of appropriate policy and environmental strategies for rural areas can help policy makers and community leaders with decisions for resource allocations and COCOMO-related efforts in their communities.
- Further research is also needed to better understand which COCOMO and non-COCOMO strategies are most applicable and effective in rural communities.