

Physical activity and the environment

Review Two:

URBAN PLANNING AND DESIGN

NICE guideline PH8 (published January 2008) has been updated and replaced by NG90.

New recommendations have been added on strategies, policies and plans to increase physical activity in the local environment (1.1.1 to 1.1.3); active travel (1.2.1 to 1.2.4 and 1.2.6 to 1.2.9); public open spaces (1.3.1 to 1.3.3). NICE has deleted some recommendations from the 2008 guideline because the evidence has been reviewed and the recommendations have been updated.

This evidence review is relevant to the updated guideline.

See the [guideline](#) for more details.

Executive Summary

This report examines the evidence for the effectiveness of urban planning and design interventions in increasing physical activity.

Studies were included in the review if they assessed the effect of an intervention involving a modification to the physical urban environment. This included studies that aimed to change, for example, the spatial-physical configuration, aesthetic qualities, land use, amenities, and/or provision of specific facilities for physical activity (e.g. trails, street parks, green space) within an urban area. Studies varied in scale from street level changes, a few city parks to a comparison on the scale of whole suburbs. The outcome of the intervention had to include a measure of physical activity behaviour or use (including walking/ cycling/ pedestrian counts).

Only intervention study designs were included, studies that examined the association (correlations) between physical activity and urban design and planning were excluded.

Thirteen studies were included, comprising 1 quasi-experimental study, 7 before and after studies (2 of which used a control area), and 5 studies presenting after intervention measures only.

The studies covered six main areas:

1. Urban Infrastructure – Street Level

The evidence from four studies (three (2-) quality and one (3-) quality), tends to suggest that interventions to change the urban structure at the street level can lead to increased levels of pedestrian activity in the short-term. The evidence from two studies (one (3-) quality and one (2-) quality) tends to suggest that interventions changing the urban structure at the

street level can lead to increased levels of children out in the areas in the long-term.

However, the evidence from two (2-) quality studies reported no changes in various measures of activity in the short-term in either children or adults, and one (2-) quality study reported decreased pedestrian flow in the short-term.

From this diverse body of evidence it is difficult to interpret any clear trends in how the content of the intervention may have influenced effectiveness. It does appear however that in most cases, a multi-faceted approach was taken to re-designing the urban environment giving priority to the needs of pedestrians.

There is some indication that urban change interventions may have a differential affect on different sub population groups, however there is insufficient evidence to assess this issue in any detail.

Overall the evidence tends to suggest that other outcomes such as perception of safety, and fear of crime and perception of attractiveness, pollution (air and noise) can be favourably changed as a result of street-level urban change interventions.

2. Urban Infrastructure – Community Level

The evidence from one (2+) quality quasi-experimental study suggests that the composition of the built environment at the community level may have a positive impact upon levels of walking and cycling.

3. Trails

The evidence from two (3+) quality studies tends to suggest that trails can lead to self-reported increases in physical activity in the short term (Gordon et al., 2004) and long term (Brownson et al., 2000).

Overall, based on two (3+) studies, the evidence tends to suggest that trail surface, length and maintenance influence trail use (Brownson et al., 2000) and attitudes towards trails (Gordon et al, 2004).

On the basis of two (3+) quality post only studies there is insufficient evidence to assess any differential effect of the interventions by socio-demographic or cultural factors.

Overall, there is some evidence from two (3+) studies that trails can be perceived as safe places to use for physical activity, specifically walking.

4. Urban Parks

Overall, based on one (2+) quality controlled before and after study the evidence suggests that modification and promotion of parks may increase walking and can raise the awareness of parks.

5. Building Placement

The evidence from one (3-) quality post only study suggests that building shopping malls at the fringes of cities may lead to a reduction in the number of shopping trips made per month and a tendency for increased use of motorised vehicles and decreased pedestrian travel as the mode to access the shopping mall.

6. Foreshore

Overall, the evidence from one (3-) quality post only study suggests that building a boardwalk along a foreshore may increase levels of self-reported physical activity, particularly in people previously active.

Included studies

Brownson RC, Housemann RA, Brown DR, Jackson-Thompson J, King AC, Malone BR, Sallis JF. (2000) Promoting physical activity in rural communities: Walking trail access, use, and effects. *Am J Prev Med* 18(3):235-241.

Gordon PM, Zizzi SJ, Pauline J. (2004) Use of a community trail among new and habitual exercisers: a preliminary assessment. *Preventing Chronic Disease* 1(4):A11.

Handy S, Cao XY, Mokhtarian PL. (2006) Self-selection in the relationship between the built environment and walking - Empirical evidence from northern California. *J Am Planning Ass.* 72(1):55-74.

Layfield R, Chinn L, Nicholls D. (2003) Pilot home zone schemes: evaluation of The Methleys, Leeds. Transport Research Laboratory, UK.

Mangham C, Viscount PW. (1997) Along the boardwalk: effects of a boardwalk on walking behaviour within a Nova Scotia community. *Can J Pub Health*, 88(5): 325-326.

New South Wales (NSW) Health Department. (2002) Walk it: active local parks: the effect of park modifications and promotion on physical activity participation: summary report. North Sydney; Australia: NSW Health Department.

Newby L, Sloman L. (1996) Small steps, giant leaps. A review of the Feet First project and the practice and potential of promoting walking. *Environ*, Leicester (GB); Transport 2000 Trust, London (GB).

Newmark GL, Plaut PO, Garb Y. (2004) Shopping travel behaviors in an era of rapid economic transition - Evidence from newly built malls in Prague, Czech Republic. *Transportation Research Record: Journal of the Transportation Research Board*, (1898):165-174.

Painter K. (1996) The influence of street lighting improvements on crime, fear and pedestrian street use, after dark. *Landscape and Urban Planning*, 35: 193-201.

Skjoeveland O. (2001) Effects of street parks on social interactions among neighbors: a place perspective. *Journal of Architectural and Planning Research*, 8(2):131-47.

Space Syntax Ltd. (2002) Millennium Bridge and Environs: Pedestrian impact assessment study. Space Syntax Ltd, London: UK.

Space Syntax Ltd. (2004a) Trafalgar Square: Comparative study of space use patterns following the re-design of the public space. Space Syntax Ltd, London: UK.

Space Syntax Ltd. (2004b) Paternoster Square: Comparative study of pedestrian flows following the re-design of the public space. Space Syntax Ltd, London: UK.