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Activity-friendly neighborhoods for children

TNO | Knowledge for business

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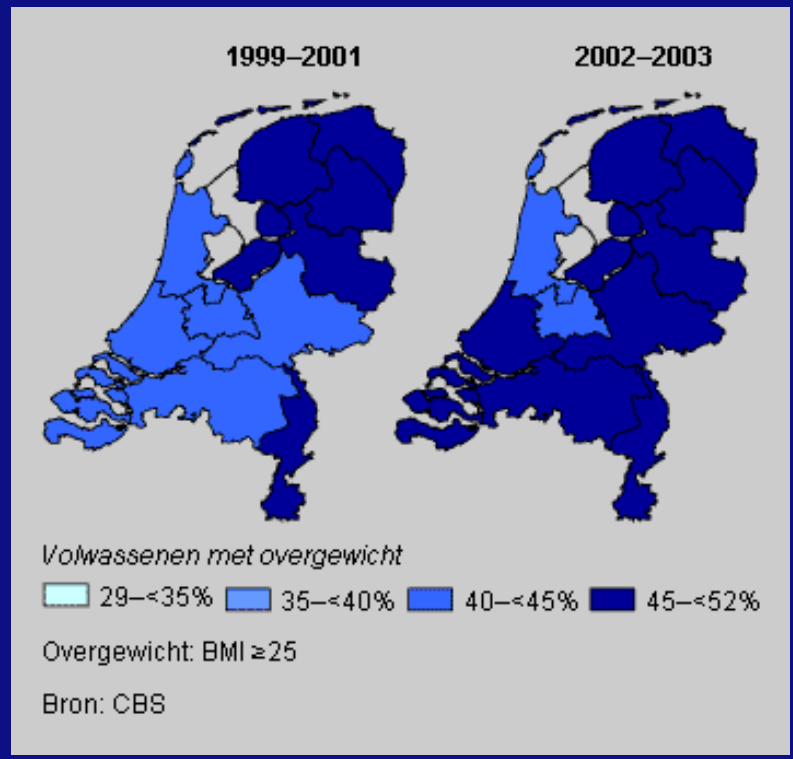
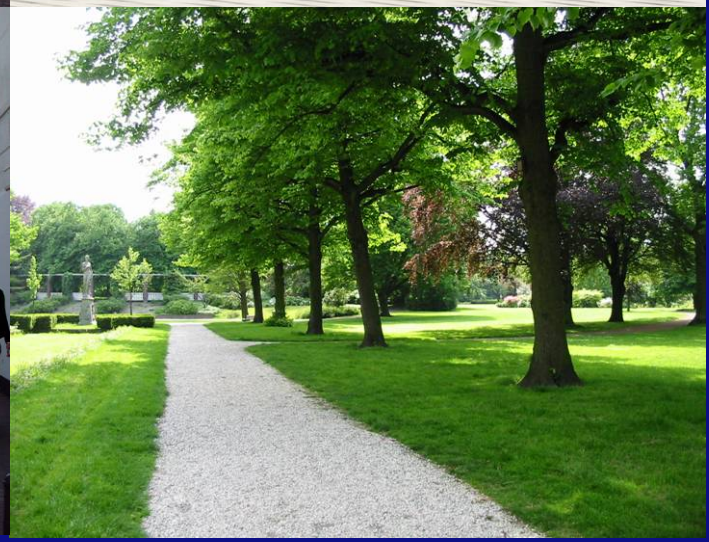
Background

- Rapid increase in the prevalence of overweight and obesity in The Netherlands
- No effective strategy to prevent obesity or to increase children's physical activity level
- (Re)modeling neighborhoods into 'activity-friendly' neighborhoods may be an effective strategy



It must be possible, convenient, and safe for children to be physically active in their neighborhood

The Netherlands



The Netherlands

- The Netherlands is one of the most densely populated countries in the world (483 people/ km2)
- Building offices, houses, and shopping centers often get higher priority in urban planning than realizing playgrounds (Wendel-Vos et al., 2005)
- Sports facilities have been moved out of city centers to their boundaries (Wendel-Vos et al., 2002)

SPACE study: purpose

Spatial Planning and Children's Exercise (SPACE) study

- To examine the association between factors of the built environment and children's physical activity level
  - How physically (in)active are children?
  - What is the energy-intake among children?
  - What is the prevalence of overweight among children?

SPACE study: setting and sample

6 Dutch cities (> 70.000 inhabitants)

- Amersfoort, Haarlem, Hengelo, Rotterdam, Schiedam/ Vlaardingen

10 neighborhoods:

- 5 neighborhoods that will be restructured in the near future
- 5 matched neighborhoods

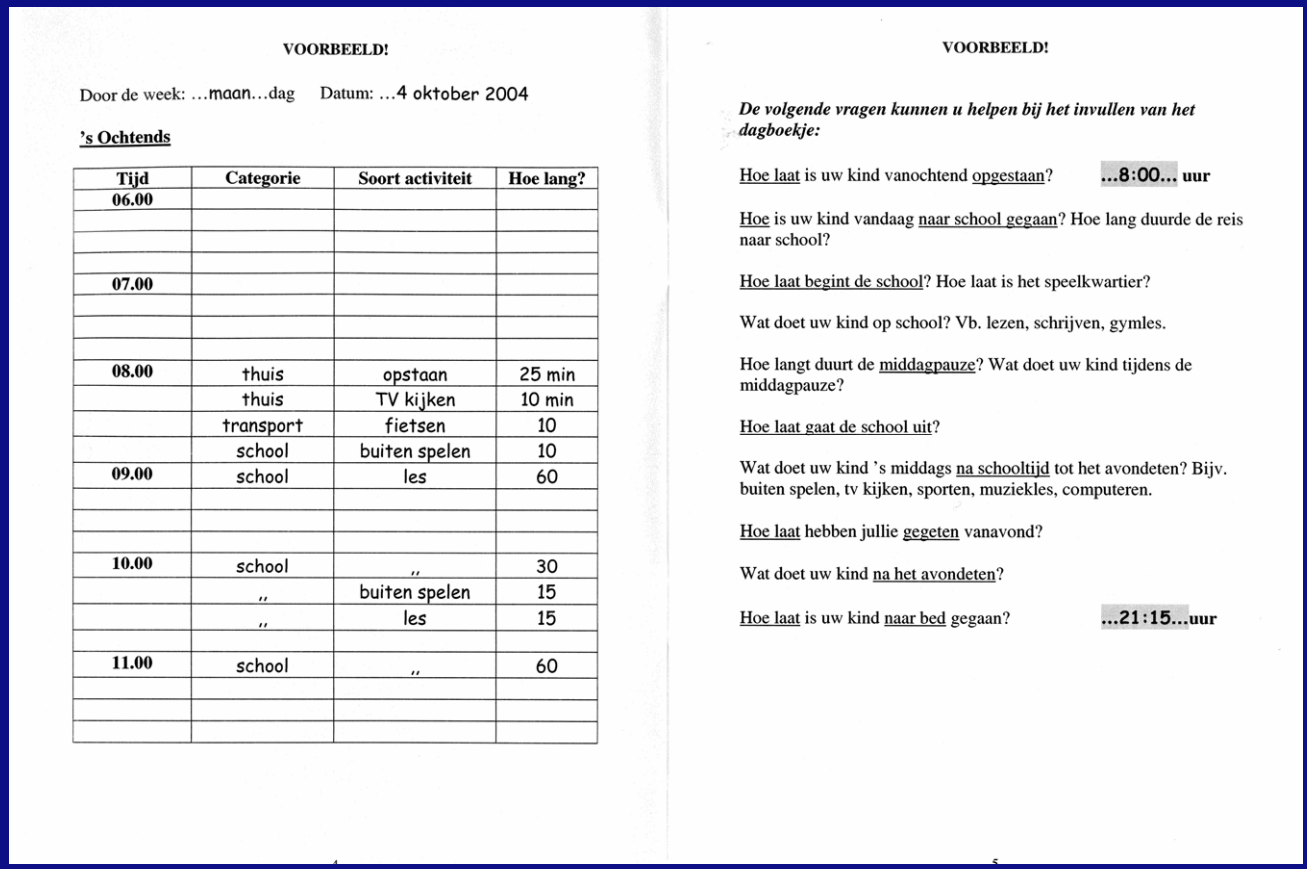
20 elementary schools:

- 2 schools per neighborhood

1228 6- to 11-yr old children

Neighborhoods

7-day physical activity dairy



VOORBEELD!

Door de week: …maan…dag Datum: …4 oktober 2004

's Ochtends

Tijd	Categorie	Soort activiteit	Hoe lang?
06.00			
07.00			
08.00	thuis	opstaan	25 min
	thuis	TV kijken	10 min
	transport	fietsen	10
	school	buiten spelen	10
09.00	school	les	60
10.00	school	,,	30
	,,	buiten spelen	15
	,,	les	15
11.00	school	,,	60

VOORBEELD!

De volgende vragen kunnen u helpen bij het invullen van het dagboekje:

Hoe laat is uw kind vanochtend opgestaan? **…8:00… uur**

Hoe is uw kind vandaag naar school gegaan? Hoe lang duurde de reis naar school?

Hoe laat begint de school? Hoe laat is het speelkwartier?

Wat doet uw kind op school? Vb. lezen, schrijven, gymles.

Hoe langt duurt de middagpauze? Wat doet uw kind tijdens de middagpauze?

Hoe laat gaat de school uit?

Wat doet uw kind 's middags na schooltijd tot het avondeten? Bijv. buiten spelen, tv kijken, sporten, muziekles, computeren.

Hoe laat hebben jullie gegeten vanavond?

Wat doet uw kind na het avondeten?

Hoe laat is uw kind naar bed gegaan? **…21:15…uur**

Time of the day, category, activity, duration in minutes

Neighborhood observations

- Checklist of 54 items in 8 categories
  - Type of residences
  - Sports facilities
  - Recreation facilities and playgrounds
  - Green space and water
  - Garbage and dirt
  - Walking and cycling facilities
  - Traffic safety
  - General impression of activity-friendliness of the neighborhood
- Two trained observers walked through the neighborhoods

Analyses

- Univariate linear regression analyses
  - Crude analyses
  - Analyses adjusted for age, gender, BMI and SES
- Multivariate linear regression analyses
  - Which factors of the built environment explain most of the variance in children's PA?
- 32 factors of the built environment were included in the analyses

SPACE study: results

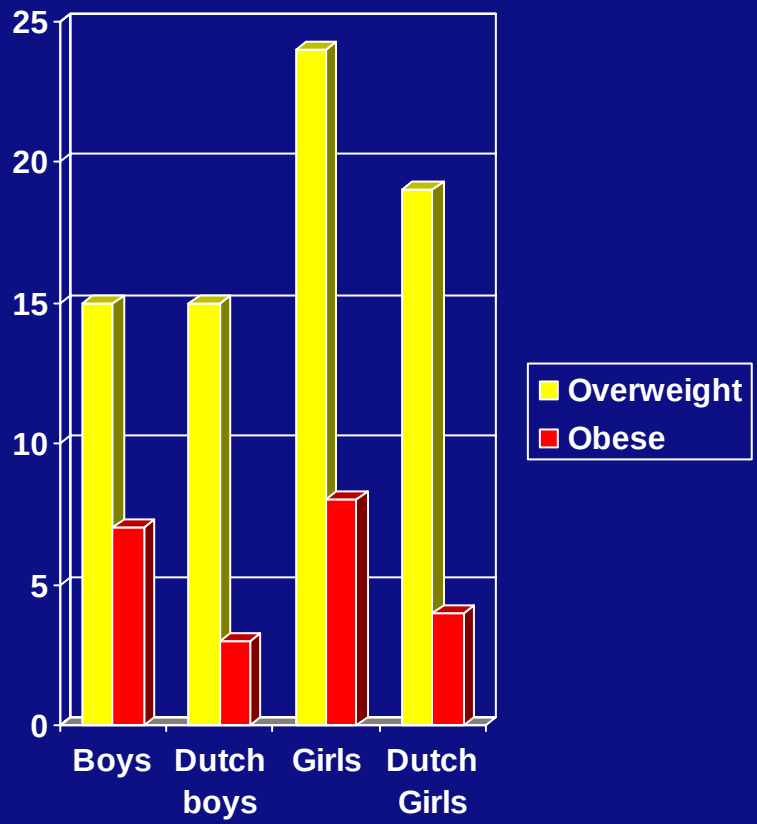
422 6- to 11-yr old children

49% boys, 51% girls

22% of the boys and 32% of the girls were overweight or obese

boys spent 12.2 (5.9) h/wk in PA (> 3 METs)

girls spent 11.5 (6.3) h/wk in PA (> 3 METs)



(Van den Hurk et al., 2005)

SPACE study: results univariate models

- Positive associations:

- Residential density
- Terraced houses
- Blocks of flats < 6 stories
- Water
- Green space
- Cycle-tracks
- 30-km zones
- Sports fields

SPACE study: results univariate models

- Positive associations:

- Parallel parking places
- Parking lots
- General impression of activity-friendliness

SPACE study: results univariate models

- Negative associations:

- Upstairs flats/ apartments
- Unoccupied houses
- Heavy traffic
- Heavy bus and lorry traffic
- Intersections
- Dog shit

- Paved playgrounds

SPACE study: results multivariate model

Children's physical activity was best predicted by:

The existence of parking lanes in the neighborhood and the general impression of the activity-friendliness of the neighborhood

These factors explained 11% of the variance in children's physical activity in addition to age, gender, BMI, and SES (total: 19%)

SPACE study: conclusion and discussion

- Children's PA is associated with certain modifiable factors of the built environment
- The general rating of the activity-friendliness of the neighborhoods seems to be a fairly good predictor of children's physical activity
- Parallel parking places and parking lots can be used for playing during working hours. Furthermore, they are frequently found in areas with 30-km zones, sports fields, and less heavy traffic

SPACE study: limitations/ future studies

- Cross-sectional design

  The SPACE study will be repeated after spatial restructuring of 5 of the 10 neighborhoods

- Limited variance between the neighborhoods

  Future studies should be extended to more rural areas to add variance

- No association between the quantity of sports and recreation facilities in the neighborhood and children's PA

  (Perceived) quality seems important to consider

Thank you for your attention!

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