ANTHROPOMETRY, PHYSICAL ACTIVITY, AND ENDO- 
METRIAL CANCER RISK: RESULTS FROM THE NETHERLANDS 
COHORT STUDY
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Obesity has been identified as a major risk factor for endometrial 
cancer in many studies. Evidence, however, with respect to height, 
body mass in adolescence, weight change since adolescence, and 
physical activity is less extensive(1). In 1986, the Netherlands Cohort 
Study on Diet and Cancer was initiated. A self-administered ques-
tionnaire on dietary habits and other risk factors for cancer was com-
pleted by 62,573 women. Data were processed and analyzed using 
the case-cohort approach, enumerating the cases for the entire 
cohort, and estimating the person years at risk in the cohort, using 
a subcohort(2). Follow-up for cancer was established by annual 
record linkages with the Netherlands Cancer Registry(3). After 9.3 
years of follow-up, 226 incident cases of invasive epithelial endome-
trial cancer and 1739 subcohort members (with an intact uterus at 
baseline and complete data on anthropometry and confounders) 
were available for analysis. Rate ratios (RRs) and corresponding 95% 
confidence intervals (95% CI) were estimated using Cox propor-
tional hazard models. Multivariate RRs were adjusted for age, age at men-
arche, use of oral contraceptives, age at menopause, parity, cigarette 
smoking, body mass index (BMI) (in the models for height and phys-
ical activity), and physical activity (in the models for BMI).

In multivariate analysis and compared to women with a BMI 
between 20 and 23 kg/m², the RRs of endometrial cancer with BMI 
up to 25, 27, 30, and >30 kg/m² were 1.55, 1.93, 2.17, and 4.50, 
respectively (95% CI for the top category, 0.95–7.72; P for trend 
<0.01). The RR of endometrial cancer with a body mass of 20 kg/m² 
or less at baseline was 1.41 (95% CI, 0.60–3.30). The risk of women 
taller than 175 cm compared to women shorter than 160 cm was 2.57 
(95% CI, 1.32–4.99) with P trend = 0.09. BMI at age 20 of years was 
weakly associated with risk of endometrial cancer. Women with 
a body mass at age 20 of years of 20 kg/m² or less had a RR of 0.67 
(95% CI, 0.45–0.98) compared to women with a BMI between 20 and 
23 kg/m². A BMI of 25 kg/m² and higher at age 20 of years was 
associated with a RR of 1.33 (95% CI, 0.77–2.30). Gain in BMI since 
age 20 of years is positively associated with risk of endometrial can-
cer. Women with a lower BMI at baseline compared to age 20 of 
years experienced a decreased risk (RR 0.50; 95% CI, 0.25–0.97) com-
pared to women with no or only a small increase in body mass (0–
<4 kg/m²). For women with an increase of BMI of 8 kg/m² or more 
had a RR of 2.38 (95% CI, 1.48–3.84) compared to the same reference 
category. Higher physical activity was associated with a decreased 
risk of endometrial cancer. Compared to women who spent less 
than 30 min per day on recreational physical activity, the RRs of 
endometrial cancer for recreational activity up to 60, 90, and >90 
min per day were 0.81, 0.59, and 0.54 (95% CI for the top category, 
0.34–0.85; P trend, 0.002). Daily biking and walking explained most 
of the observed effect of physical activity.

Height at baseline and BMI at age 20 of years are possibly related 
to an increased risk of endometrial cancer. Gain in body mass since 
age 20 and BMI at baseline are strongly associated with an increased 
risk, and physical activity is associated with a decreased risk of 
endometrial cancer(4).

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