

Cardiovascular disease

Standing more and sitting less may benefit cardiometabolic health

Spending less time sitting and more time standing, stepping, or both, improves markers of cardiometabolic health, a study from Australia has shown.

The researchers studied participants from the 2011/12 Australian Diabetes, Obesity, and Lifestyle Study who wore the posture-based activPAL3 monitor. This activity monitor has been shown to be highly accurate and directly measures posture from the thigh position. There were 698 adults in this subsample aged 36-80 years (mean 57.9) of which 57% were women.

Using data collected from postural sensors the authors modelled cross-sectional associations with cardiometabolic risk biomarkers of reallocating time (2h/day) from sitting to standing or to stepping.

Association of activPAL3 derived mean daily time sitting, standing and stepping with the following parameters was examined: BMI, waist circumference, BP, HbA_{1c}, fasting glucose and lipids (HDL cholesterol, LDL cholesterol, total:HDL cholesterol ratio, and triglycerides), and 2-hour plasma glucose.

After adjusting for confounding factors, each 2h/day sitting to standing reallocation was significantly associated with:

- 2% lower fasting plasma glucose
- 11% lower triglycerides
- 6% lower total:HDL cholesterol ratio
- 0.06 mmol/L higher HDL cholesterol

Each 2 h/day sitting to stepping reallocation was significantly associated with:

- 11% lower BMI

- 7.5 cm smaller waist circumference
- 11% lower 2-h plasma glucose
- 14% lower triglycerides
- 0.10 mmol/L higher HDL cholesterol

Standing to stepping reallocations were significantly associated with:

- 10% lower BMI
- 7 cm smaller waist circumference
- 11% lower 2-h plasma glucose

The healthy lifestyle message is generally well understood and our patients know that they should avoid smoking, exercise frequently and eat healthily. However, our lives are increasingly sedentary and perhaps the risk of excessive sitting time is less well documented.

The authors conclude that sitting reduction strategies targeting increased standing, stepping, or both, may benefit cardiometabolic health. Standing is a feasible alternative to sitting and they feel this warrants further examination in prospective and intervention studies.

This is a simple message and should encourage us all to get out of our chairs more even if just to stand while making that phone call.

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- Healy GN, Winkler EAH, Owen N et al. Replacing sitting time with standing or stepping: associations with cardio-metabolic risk biomarkers. *Eur Heart J*. DOI: <http://dx.doi.org/10.1093/eurheartj/ehv308>

Diabetes

Low birthweight combined with unhealthy lifestyle boosts diabetes risk

A recently published study in the *BMJ* has supported a synergistic effect between low birthweight and poor lifestyle on the risk of developing

type 2 diabetes in adults.

The study used pooled data from three continuing long-term prospective cohort studies that had gathered data on health and lifestyle. The Health Professionals Follow-Up Study, the Nurses' Health Study and Nurses' Health Study II were started in 1986, 1980 and 1991 respectively. Participants completed a food frequency questionnaire at the beginning of each study that was used as a baseline for this study. The food frequency questionnaires were repeated at approximately four-year intervals.

The study was concerned with adult modifiable lifestyle habits on type 2 diabetes, so the scoring for risk did not include raised blood pressure, or adverse lipid profiles. The five factors selected were: diet, body mass index, physical activity, smoking, and alcohol consumption. Patients were scored 0 or 1 according to absence or presence of the risk factor.

New incident cases of diabetes were obtained by self-reporting, validated on a supplementary questionnaire. This methodology has been shown to be accurate. Birthweight was also based on self-reporting at the commencement of the studies.

Self-reporting of birthweight is not quite as accurate as the self-reporting of diabetes, but the average error margin was known and adjustments could be made.

In total the pooled studies gave 149,794 participants who were free of cardiovascular disease, cancer or diabetes at entry to the study, and with no missing data on lifestyle.

For each of the three cohorts the participants were divided into categories according to birthweight. Prevalence of the lifestyle variables was similar across each weight category in all three cohorts.

In the 20-30 years of follow-up, 11,709 new cases of diabetes were documented.

The authors found a consistent association between low birthweight and risk of type 2 diabetes in all three cohorts. After adjustment for current BMI, the relative risk for those with the lowest birthweight (< 2.5 kg) compared with those in the middle birthweight category (3.18-3.82 kg) was 1.55 (95% CI:1.46-1.64).

After adjusting for confounding variables, the results showed a consistent relationship between each unhealthy risk factor and the risk of developing diabetes, which was again