

Physical activity and incident type 2 diabetes in American Indians: The Strong Heart Study

AM Fretts, University of Washington, Seattle, WA; BV Howard, MedStar Research Institute, Washington, DC; AM Kriska, University of Pittsburgh, Pittsburgh, PA; NL Smith, T Lumley, University of Washington, Seattle, WA; ET Lee, University of Oklahoma, Oklahoma City, OK; D Siscovick, University of Washington, Seattle, WA.

Objective: To examine the association between total physical activity (occupational plus leisure-time) and incident diabetes in American Indians.

Methods: The study population included 1,651 participants in the Strong Heart Study who were free of diabetes, cardiovascular disease, cancer, and emphysema at baseline and participated in at least 1 follow-up exam. Total physical activity (metabolic equivalent task (MET) hrs/week) was estimated at baseline using a validated questionnaire. Incident diabetes was defined based on the 1999 WHO criteria. Discrete Cox models were used to examine the association between physical activity (in tertiles), compared to no physical activity, and incident diabetes, after adjustment for potential confounders.

Results: During 10 years of follow-up, we identified 454 incident cases of diabetes. Compared with participants who reported no physical activity, those who reported physical activity had a lower risk of diabetes: OR=0.67 (95% CI, 0.46-0.99); OR=0.67 (95% CI, 0.45-0.99) and OR=0.67 (95% CI, 0.45-0.99) for increasing tertile of physical activity, after adjustment for age, sex, site, education, smoking, alcohol use, hours of television viewing per week and family history of diabetes. Further adjustment for BMI and other potential mediators slightly attenuated the risk estimates (Table 1).

Conclusions: These data suggest that physical activity, compared to physical inactivity, is associated with a lower risk of incident diabetes in American Indians. However, the available data do not show differences in diabetes risk with increasing levels of physical activity. More studies are needed to address this issue.

Table 1. Odds Ratios (95% CI) of Type II Diabetes According to Total Physical Activity Category

	No Activity	<30 MET hrs/wk (median=12.1)	30-106 MET hrs/wk (median=69.0)	>106 MET hrs/wk (median=165.0)
No. cases	49	136	123	146
Total at risk	130	495	474	552
Age, Site, Sex Adj.	1.00	0.65 (0.44-0.94)	0.63 (0.43-0.93)	0.64 (0.44-0.94)
Multivariate†	1.00	0.67 (0.46-0.99)	0.67 (0.45-0.99)	0.67 (0.45-0.99)
Add. adj for BMI	1.00	0.74 (0.50-1.09)	0.74 (0.49-1.10)	0.71 (0.48-1.07)
Add. adj for mediators ‡	1.00	0.70 (0.46-1.03)	0.72 (0.47-1.08)	0.71 (0.47-1.07)

†Model includes age, site, sex, education (less than high school, high school, post-high school), cigarette smoking (never, ever, current), alcohol use (never, ever, current) television viewing (hrs/wk past year) and family history of type II diabetes.

‡Adjusts for all covariates in “multivariate†”, as well as the potential mediators systolic blood pressure, diastolic blood pressure, high density lipoprotein, low density lipoprotein, plasma fibrinogen and BMI as continuous variables.