

Table 3: Description of studies on the association between physical activity and type 2 diabetes mellitus.

Author Year	Study	Baseline – measuring points	Follow up time	Baseline sample; Age at Baseline	Drop out	Sample in Survey	Variables – PA; Outcome	Results	Limitations
Hu et al 1999 [26]	Nurses' Health Study	Baseline: 1979 - 1986	7 years	121 700 female registered nurses; 30 – 55 years	51 597 women	70 103	<p><i>PA:</i> Average number of hours spend each week with certain activities; Asking about their usual walking speed – weekly energy index was calculated</p> <p><i>Outcome:</i> Diagnosis of diabetes</p>	<p>The physical activity score is inversely associated with the risk of type 2 diabetes mellitus</p> <p>- Relative Risk [with 95% Confidence Interval] for t2dm in addition to energy expenditure</p> <p>1<sup>st</sup> Quintile = 1.00 (Ref.) 2<sup>nd</sup> Quintile = 0.77 [0.66–0.90] 3<sup>rd</sup> Quintile = 0.75 [0.65–0.88] 4<sup>th</sup> Quintile = 0.80 [0.69–0.93] 5<sup>th</sup> Quintile = 0.54 [0.45–0.64]</p>	<ul style="list-style-type: none"> <li>- Results just for women</li> <li>- Self-reported answers about diabetes</li> <li>- Just leisure time physical activity – no leisure time physical activity may also be important for diabetes prevention</li> </ul>
Berenzen et al 2007 [27]	Copenhagen City Heart Study	Baseline: 1976/1978 - 1981/1983 - 1991 - 1998/2000	24 years	5 531 men; Median age 19 years	4 878 men	653 men – (299 obese and 354 control group)	<p><i>PA:</i> One question about physical activity habits: inactivity – moderate activity – high activity – very high activity</p> <p><i>Outcome:</i> Diagnosis of diabetes – WHO standardized</p>	<p>Leisure time physical activity reduces the risk of insulin resistance and impaired glucose tolerance</p> <p>- odds ratios [with 95% Confidence Interval] for impaired glucose tolerance in addition to intensity of activity</p> <p>Active = 1.00 (Ref.) Moderate Active = 1.72 [1.09–2.72] Inactive = 4.13 [ 1.96–8.86]</p>	<ul style="list-style-type: none"> <li>- results just for men</li> <li>- high dropout rate</li> <li>- drop out people are less active and had lightly higher BMI</li> <li>- insulin sensitivity only measured at follow-up</li> <li>- BMI inaccurate measure for body composition</li> </ul>

PA = physical activity, BMI = body mass index; WHO = World Health Organization; MET = metabolic equivalent of task

							oral glucose tolerance test		
Katzmarzyk et al 2007 [29]	Physical Activity Longitudinal Study	Baseline: 1981 or 1988 - 2002/2004	16 – 21 years	4 900 men and women; 18 - 69 years	3 357 men and women	1,543 persons - 709 men and 834 women	PA: Maximal Oxygen consumption - Canadian Aerobic Fitness Test Outcome: Self-reported physician diagnosed diabetes	Physical activity, physical fitness and obesity are related to incidence of type 2 diabetes mellitus - Odds Ratios [with 95% Confidence Interval] for t2dm in addition to obesity measurements  BMI = 2.02 [1.63-2.50] Waist = 2.56 [1.93-3.43] Circumference Waist-Hip Ratio = 3.00 [2.03-4.46] Skin fold thickness = 2.14 [1.61-2.85] Physical activity = 0.77 [0.58-1.00] Max. MET = 0.28 [0.14-0.57] Physical fitness = 0.38 [ 0.23-0.62]	- self-reported physician-diagnosed diabetes - high dropout rate
Mozaffarin et al 2009 [30]	Cardiovascular Health Study	Baseline: 1989/ 1990 - 1992/1993 - annual to 1999 – semi-annual by telephone - end 2005	16 years	5 888 men and women; 65 years and older	1 005 men and women	4,883 persons – 34,539 person-years	PA: Usual walking habits (average pace and distance) - modified Minnesota Leisure-Time Activities questionnaire Outcome: Incidence of diabetes	Lifestyle factors are associated with reduced risk of type 2 diabetes mellitus - Hazard Ratios [with 95% Confidence Interval] for t2dm in addition to number of risk factors  2 factors = 0.54 [0.38-0.76] 3 factors – never smoke = 0.42 [0.25-0.71] 3 factors – no alcohol use = 0.32 [0.18-0.55] 4 factors = 0.18 [0.06-0.56] 5 factors = 0.11 [ 0.01-0.76]	limited time points for fasting and post challenge glucose levels - misclassification of diabetes cases less lifestyle factors as mediator or moderators
Demakakos et al 2010 [28]	English Longitudinal Study of Ageing	Baseline: 1998/2001 – 2004/2005 – 2006/2007	9 years	11 523 men and women; 50 years and older	4 057 men and women	7 466 men and women	PA: How often taking part in three different types of physical activity – vigorous,	Increasing physical activity intensity decreases the risk of type 2 diabetes mellitus - Hazard Ratios [with 95% Confidence Interval] for t2dm in addition to intensity of activity  No physical activity = 1.00 (Ref.) Low intensity = 0.68 [0.46-1.01] Moderate / vigorous = 0.41 [0.28-0.59]	- Results just for people 50 years and older - Use of self-reported physical activity - Self-reported diabetes data

PA = physical activity, BMI = body mass index; WHO = World Health Organization; MET = metabolic equivalent of task

								moderate, low intensity <i>Outcome:</i> Incidence of self-reported doctor- diagnosed diabetes		intensity	
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