Evidence Portfolio – Cardiometabolic Health and Weight Management Subcommittee, Question 3

In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
- c. Does the relationship vary based on: frequency, duration, intensity, type (mode), or how physical activity is measured?

Sources of Evidence: Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis

Conclusion Statements and Grades

Strong evidence demonstrates a significant relationship between a higher volume of physical activity and lower incidence of type 2 diabetes. **PAGAC Grade: Strong.**

Strong evidence demonstrates that an inverse curvilinear dose-response relationship exists between the volume of physical activity and incidence of type 2 diabetes, with a decreasing slope at higher levels of physical activity. **PAGAC Grade: Strong.**

Moderate evidence indicates no effect modification by weight status. An inverse relationship exists between a higher volume of physical activity and lower incidence of type 2 diabetes for people who have normal weight, overweight, or obesity. **PAGAC Grade: Moderate.**

Limited evidence suggests that the relationship between a higher volume of physical activity and lower incidence of type 2 diabetes is not influenced by age, sex, or race/ethnicity. **PAGAC Grade: Limited.**

Insufficient evidence is available to determine whether the relationship between physical activity and the incidence of type 2 diabetes varies by socioeconomic status. **PAGAC Grade: Not assignable.**

Insufficient evidence is available to determine whether the relationship between physical activity and the incidence of type 2 diabetes varies by the frequency, intensity, duration, or type of physical activity, or how physical activity is measured. **PAGAC Grade: Not assignable.**

Description of the Evidence

An initial search for systematic reviews, meta-analyses, pooled analyses, and reports identified sufficient literature to answer the research question as determined by the Cardiometabolic Health and Weight Management Subcommittee. Additional searches for original research were not needed.

Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis

Overview

A total of 12 existing reviews were included: 4 systematic reviews,¹⁻⁴ 7 meta-analyses,⁵⁻¹¹ and 1 pooled analysis.¹² The reviews were published between 2007 and 2016.

The systematic reviews included a range of 5 to 20 studies that examined physical activity and type 2 diabetes. Reviews covered the following timeframes: 1950 to 2008,⁴ 1980 to May 2012,³ 1990 to May 2009,¹ and 1999 to August 2008.²

The meta-analyses included a range of 3 to 81 studies that examined physical activity and type 2 diabetes. The meta-analyses covered an extensive timeframe: inception to March 2015, ⁵ inception to June 2014, ⁷ inception to June 2012, ¹⁰ inception to March 2006, ⁸ 1980 to 2016, ⁹ 1981 to 2014, ¹¹ and 1989 to November 2011. ⁶

The pooled analysis included 2 studies that examined physical activity and type 2 diabetes.

Exposures

All included reviews examined physical activity. Four reviews assessed physical activity types such as leisure-time physical activity, active commuting, household, and occupational physical activity. ^{4-6, 9} One meta-analysis⁷ specifically examined leisure-time physical activity and 1 meta-analysis⁸ examined physical activity of moderate intensity.

Outcomes

All included reviews examined risk or incidence of type 2 diabetes as an outcome.

Populations Analyzed

The table below lists the populations analyzed in each article.

Table 1. Populations Analyzed by All Sources of Evidence

	Sex	Race/ Ethnicity	Age	Weight Status	Other
Aune, 2015			All ages		
Cloostermans, 2015			Adults 25–65	Normal/healthy weight (BMI: 18.5–24.9), Overweight (BMI: 25– 29.9), Obese (BMI: 30 and above)	
Fogelholm, 2010,			Adults ≥18	Normal weight vs. overweight vs. obese	
Huai, 2016			Not reported		
Jeon, 2007	Male, Female				U.S. vs. Non-U.S. cohorts
Kyu, 2016			Adults		
Merlotti, 2014			Not reported		
Qin, 2010			Not reported		
Reiner, 2013			Adults 18–85		
Wahid, 2016			Adults 19–79		
Warburton, 2010			Adults 19–65		
Xu, 2015	Male, Female	Asian	Ages 35–49, 50– 64, ≥65		Urban

Supporting Evidence

Existing Systematic Reviews, Meta-Analyses, and Pooled Analyses

Table 2. Existing Systematic Reviews, Meta-Analyses, and Pooled Analysis Individual Evidence Summary Tables

Meta-Analysis

Citation: Aune D, Norat T, Leitzmann M, Tonstad S, Vatten LJ. Physical activity and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis. *Eur J Epidemiol.* 2015;30(7):529-542. doi:10.1007/s10654-015-0056-z.

Purpose: To explore associations with	Abstract: We investigated the association between
specific types of PA, assess a possible	specific types of physical activity and the risk of type 2
dose-response relationship, and address	diabetes in a systematic review and meta-analysis of
potential confounding.	published studies. PubMed, Embase and Ovid databases
Timeframe: Inception–March 2015	were searched for prospective studies and randomized
Total # of Studies: 87 publications (81	trials up to 2nd of March 2015. Summary relative risks
studies)	(RRs) were calculated using a random effects model.
Exposure Definition: PA. Separate dose-	Eighty-one studies were included. The summary RRs for
response analyses for studies reporting	high versus low activity were 0.65 (95 % Cl 0.59-0.71,
metabolic equivalent (MET) hours per	I(2) = 18 %, n = 14) for total physical activity, 0.74 (95 %
week and studies reporting on kilocalories	Cl 0.70-0.79, l(2) = 84 %, n = 55) for leisure-time activity,
of energy expenditure. Subgroups include	0.61 (95 % Cl 0.51-0.74, l(2) = 73 %, n = 8) for vigorous
dose-response analysis of leisure-time PA	activity, 0.68 (95 % Cl 0.52-0.90, l(2) = 93 %, n = 5) for
and total PA; different intensities of PA,	moderate activity, 0.66 (95 % CI 0.47-0.94, I(2) = 47 %, n
including moderate (3–5.9 METs), vigorous	= 4) for low intensity activity, and 0.85 (95 % CI 0.79-
(≥6 METs), and low intensity PA (1.6–2.9	0.91, I(2) = 0 %, n = 7) for walking. Inverse associations
METs); walking; resistance exercise; and	were also observed for increasing activity over time,
occupational physical activity.	resistance exercise, occupational activity and for
Measures Steps: No	cardiorespiratory fitness. Nonlinear relations were
Measures Bouts: No	observed for leisure-time activity, vigorous activity,
Examines HIIT: No	walking and resistance exercise (p nonlinearity < 0.0001
Outcomes Addressed: Risk of type 2	for all), with steeper reductions in type 2 diabetes risk at
diabetes.	low activity levels than high activity levels. This meta-
Examine Cardiorespiratory Fitness as	analysis provides strong evidence for an inverse
Outcome: No	association between physical activity and risk of type 2
	diabetes, which may partly be mediated by reduced
	adiposity. All subtypes of physical activity appear to be
	beneficial. Reductions in risk are observed up to 5-7 h of
	leisure-time, vigorous or low intensity physical activity
	per week, but further reductions cannot be excluded
	beyond this range.
Populations Analyzed: All ages	Author-Stated Funding Source: Liaison Committee
	between the Central Norway Regional Health Authority
	and the Norwegian University of Science and
	Technology.

Meta-Analysis					
Citation: Cloostermans L, Wendel-Vos W,	, Doornbos G, et al. Independent and combined effects of				
physical activity and body mass index on	the development of type 2 diabetes—a meta-analysis of 9				
prospective cohort studies. Int J Behav No	utr Phys Act. Dec 2015:147. doi:10.1186/s12966-015-0304-3.				
Purpose: To examine both the	Abstract: BACKGROUND: The aim of this harmonized meta-				
independent and combined effects of	analysis was to examine the independent and combined				
PA and body mass index on the	effects of physical activity and BMI on the incidence of type				
development of type 2 diabetes.	2 diabetes. METHODS: Our systematic literature review in				
Timeframe: 1989–September 2011	2011 identified 127 potentially relevant prospective studies				
Total # of Studies: 9	of which 9 fulfilled the inclusion criteria (total N = 117,878,				
Exposure Definition: PA measures	56.2 % female, mean age = 50.0 years, range = 25-65				
(frequency, intensity, and duration),	years). Measures of baseline physical activity (low,				
leisure time PA (including walking,	intermediate, high), BMI-category [BMI < 18.4				
gardening, shopping, and home	(underweight), 18.5-24.9 (normal weight), 25.0-29.9				
maintenance), and active commuting.	(overweight), 30+ (obese)] and incident type 2 diabetes				
Minutes per week spent in low (sum of	were harmonized across studies. The associations between				
PA-minutes/week = 0), medium (0	physical activity, BMI and incident type 2 diabetes were				
minutes < sum of PA-minutes/week <	analyzed using Cox regression with a standardized analysis				
150 minutes), and high PA (sum of PA-	protocol including adjustments for age, gender,				
minutes/week ≥ 150 minutes)	educational level, and smoking. Hazard ratios from				
categorized.	individual studies were combined in a random-effects				
Measures Steps: No	meta-analysis. RESULTS: Mean follow-up time was 9.1				
Measures Bouts: No	years. A total of 11,237 incident type 2 diabetes cases were				
Examines HIIT: No	recorded. In mutually adjusted models, being overweight				
Outcomes Addressed: Incidence of	or obese (compared with normal weight) and having low				
type 2 diabetes: measured glucose	physical activity (compared with high physical activity)				
levels or self-report.	were associated with an increased risk of incident type 2				
Examine Cardiorespiratory Fitness as	diabetes (hazard ratios 2.33, 95 % Cl 1.95-2.78; 6.10, 95 %				
Outcome: No	CI: 4.63-8.04, and 1.23, 95 % CI: 1.09-1.39, respectively).				
	Individuals who were both obese and had low physical				
	activity had 7.4-fold (95 % Cl 3.47-15.89) increased risk of				
	type 2 diabetes compared with normal weight, high				
	physically active participants. CONCLUSIONS: This				
	harmonized meta-analysis shows the importance of				
	maintaining a healthy weight and being physically active in				
	diabetes prevention.				
Populations Analyzed: Adults 25–65,	Author-Stated Funding Source: Medical Research Council,				
Normal/healthy weight (BMI: 18.5–	British Heart Foundation, Economic and Social Research				
24.9), Overweight (BMI: 25–29.9),	Council (UK); Australian Government Department of				
Obese (BMI: 30 and above)	Health; American Cancer Society; National Institutes of				
	Health.				

Systematic Review					
Citation: Fogelholm M. Physical activity, fitness and fatness: relations to mortality, morbidity and					
disease risk factors. A systematic review. Obes Rev. 2010;11(3):202-221. doi:10.1111/j.1467-					
789X.2009.00653.x.					
Abstract: The purpose of this systematic review was to study the					
relative health risks of poor cardio-respiratory fitness (or physical					
inactivity) in normal-weight people vs. obesity in individuals with					
good cardio-respiratory fitness (or high physical activity). The core					
inclusion criteria were: publication year 1990 or later; adult					
participants; design prospective follow-up, case-control or cross-					
sectional; data on cardio-respiratory fitness and/or physical					
activity; data on BMI (body mass index), waist circumference or					
body composition; outcome data on all-cause mortality,					
cardiovascular disease mortality, cardiovascular disease incidence,					
type 2 diabetes or cardiovascular and type 2 diabetes risk factors.					
Thirty-six publications filled the criteria for inclusion. The data					
indicate that the risk for all-cause and cardiovascular mortality					
was lower in individuals with high BMI and good aerobic fitness,					
compared with individuals with normal BMI and poor fitness. In					
contrast, having high BMI even with high physical activity was a					
greater risk for the incidence of type 2 diabetes and the					
prevalence of cardiovascular and diabetes risk factors, compared					
with normal BMI with low physical activity. The conclusions of the					
present review may not be applicable to individuals with BMI > 35.					
Author-Stated Funding Source: Not reported.					

Meta-Analysis					
Citation: Huai P, Han H, Reilly KH, Guo X, Zhang J, Xu A. Leisure-time physical activity and risk of type 2					
diabetes: a meta-analysis of prospective cohort studies. <i>Endocrine</i> . 2016;52(2):226-230.					
doi:10.1007/s12020-015-0769-5.					
Purpose: To determine the relationship	Abstract: Published articles reported controversial				
between leisure-time physical activity	results about the association between leisure-time				
(LTPA) and type 2 diabetes.	physical activity (LTPA) and risk of type 2 diabetes. A				
Timeframe: Inception–June 2014	meta-analysis of prospective cohort studies was				
Total # of Studies: 8	conducted to explore the effect of LTPA on the incidence				
Exposure Definition: LTPA. For studies	of type 2 diabetes. PubMed and Embase databases were				
with ≥3 levels of PA, the lowest level was	searched from its inception to June 13, 2014. Fixed or				
defined as low-level LTPA, the highest	random effects models were used to calculate the				
level as high-level LTPA, and all categories	pooled effect sizes based on between-study				
in-between as moderate level LTPA. For	heterogeneity that was examined by the Q test and I (2)				
studies that reported 2 levels of LTPA,	statistic. A total of eight studies, including 296,395				
LTPA was categorized into low-level and	participants and 10,815 incident cases, were included in				
high-level.	this study. Both high-level LTPA [high vs. low: hazard				
Measures Steps: No	ratio (HR) 0.69, 95 % confidence interval (CI) 0.61-0.78]				
Measures Bouts: No	and moderate-level LTPA (moderate vs. low: HR 0.79, 95				
Examines HIIT: No	% CI 0.70-0.89) were associated with decreased				
Outcomes Addressed: Type 2 diabetes.	incidence of type 2 diabetes. In conclusion, LTPA was				
Examine Cardiorespiratory Fitness as	significantly associated with decreased risk of diabetes;				
Outcome: No	high-level LTPA is more beneficial in decreasing the				
	incidence of type 2 diabetes than moderate-level LTPA.				
Populations Analyzed: Not reported	Author-Stated Funding Source: Risk Factor and				
	Intervention Strategy of Life Expectancy in Shandong				
	Province.				

Meta-Analysis Citation: Jeon CY, Lokken RP, Hu FB, van Dam RM. Physical activity of moderate intensity and risk of type 2 diabetes: a systematic review. *Diabetes Care*. 2007;30(3):744-752. doi:10.2337/dc06-1842. Purpose: To systematically review Abstract: OBJECTIVE: To systematically evaluate the evidence for the epidemiological evidence on an association between physical activity of moderate intensity the association between PA of and risk of type 2 diabetes. RESEARCH DESIGN AND METHODS: moderate intensity and risk of We searched EMBASE and Medline through March 2006 and examined reference lists of retrieved articles. We excluded type 2 diabetes. **Timeframe:** Inception–March studies that did not assess physical activity of moderate intensity independent of activities of vigorous intensity (more than six 2006 times the resting metabolic rate). Information on study design, Total # of Studies: 10 participant characteristics, assessment of physical activity, and **Exposure Definition:** Moderately outcomes and estimates of associations were extracted intense PA, defined as requiring a independently by two investigators. We calculated summary metabolic equivalent task score relative risks (RRs) using a random-effects model for the highest of 3.0-6.0. Typical activity of versus the lowest reported duration of activities. RESULTS: We moderate intensity is "brisk" identified 10 prospective cohort studies of physical activity of walking at 5.6 km/h on a flat moderate intensity and type 2 diabetes, including a total of surface, playing golf, leisure 301,221 participants and 9,367 incident cases. Five of these bicycling at <10 km/h, and studies specifically investigated the role of walking. The summary gardening. RR of type 2 diabetes was 0.69 (95% CI 0.58-0.83) for regular Measures Steps: No participation in physical activity of moderate intensity as Measures Bouts: No compared with being sedentary. Similarly, the RR was 0.70 (0.58-Examines HIIT: No Outcomes Addressed: Incidence 0.84) for regular walking (typically > or = 2.5 h/week brisk walking) as compared with almost no walking. The associations and prevalence of type 2 remained significant after adjustment for BMI. Similar diabetes. associations were observed in men and women and in the U.S. **Examine Cardiorespiratory** and Europe. CONCLUSIONS: These findings indicate that Fitness as Outcome: No adherence to recommendations to participate in physical activities of moderate intensity such as brisk walking can substantially reduce the risk of type 2 diabetes. Populations Analyzed: Male, Author-Stated Funding Source: Not reported. Female, U.S. vs. Non-U.S. cohorts

Meta-Analysis

Citation: Kyu HH, Bachman VF, Alexander LT, et al. Physical activity and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events: systematic review and dose-response meta-analysis for the Global Burden of Disease Study 2013. *BMJ*. 2016;354:i3857. doi:10.1136/bmj.i3857.

Purpose: To quantify the dose-response associations between total PA and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events.

Timeframe: 1980–2016 Total # of Studies: 174 (55 for diabetes)

Exposure Definition: Total PA in metabolic equivalent (MET) minutes/week were estimated from all included studies. Continuous and categorical dose-response between PA and outcomes conducted. Categorical compared insufficiently active (<600 MET minutes/week), low active (600-3,999 MET minutes), moderately active (4,000-7,999 MET minutes), and highly active (≥8,000 MET minutes). Measures Steps: No Measures Bouts: No Examines HIIT: No

Outcomes Addressed: Diabetes Examine Cardiorespiratory Fitness as Outcome: No Abstract: OBJECTIVE: To quantify the dose-response associations between total physical activity and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events. DESIGN: Systematic review and Bayesian dose-response metaanalysis. DATA SOURCES: PubMed and Embase from 1980 to 27 February 2016, and references from relevant systematic reviews. Data from the Study on Global AGEing and Adult Health conducted in China, Ghana, India, Mexico, Russia, and South Africa from 2007 to 2010 and the US National Health and Nutrition Examination Surveys from 1999 to 2011 were used to map domain specific physical activity (reported in included studies) to total activity. ELIGIBILITY **CRITERIA FOR SELECTING STUDIES: Prospective cohort studies** examining the associations between physical activity (any domain) and at least one of the five diseases studied. RESULTS: 174 articles were identified: 35 for breast cancer, 19 for colon cancer, 55 for diabetes, 43 for ischemic heart disease, and 26 for ischemic stroke (some articles included multiple outcomes). Although higher levels of total physical activity were significantly associated with lower risk for all outcomes, major gains occurred at lower levels of activity (up to 3000-4000 metabolic equivalent (MET) minutes/week). For example, individuals with a total activity level of 600 MET minutes/week (the minimum recommended level) had a 2% lower risk of diabetes compared with those reporting no physical activity. An increase from 600 to 3600 MET minutes/week reduced the risk by an additional 19%. The same amount of increase yielded much smaller returns at higher levels of activity: an increase of total activity from 9000 to 12 000 MET minutes/week reduced the risk of diabetes by only 0.6%. Compared with insufficiently active individuals (total activity <600 MET minutes/week), the risk reduction for those in the highly active category (>/=8000 MET minutes/week) was 14% (relative risk 0.863, 95% uncertainty interval 0.829 to 0.900) for breast cancer; 21% (0.789, 0.735 to 0.850) for colon cancer; 28% (0.722, 0.678 to 0.768) for diabetes; 25% (0.754, 0.704 to 0.809) for ischemic heart disease; and 26% (0.736, 0.659 to 0.811) for ischemic stroke. CONCLUSIONS: People who achieve total physical activity levels several times higher than the current recommended minimum level have a significant reduction in the risk of the five diseases studied. More studies with detailed quantification of total physical activity will help to find more

precise relative risk estimates for different levels of activity.Populations Analyzed: AdultsAuthor-Stated Funding Source: Bill and Melinda Gates Foundation.

Meta-Analysis

Citation: Merlotti, C, Morabito, A, Pontiroli, AE. Prevention of type 2 diabetes; a systematic review and meta-analysis of different intervention strategies. Diabetes Obes Metab. 2014. 16(8):719-27

Purpose: To evaluate the	Abstract: AIM: Different intervention strategies can prevent type 2
effectiveness of different	diabetes (T2DM). Aim of the present systematic review and meta-
strategies in prevention of	analysis was to evaluate the effectiveness of different strategies.
type 2 diabetes mellitus.	METHODS: Studies were grouped into 15 different strategies: 1: diet
Timeframe: Inception–June	plus physical activity; 2: physical activity; 3-6: anti-diabetic drugs
2012	[glitazones, metformin, beta-cell stimulating drugs (sulphanylureas,
Total # of Studies: 71 (20 with	glinides), alfa-glucosidase inhibitors]; 7-8: cardiovascular drugs (ACE
PA)	inhibitors, ARB, calcium antagonists); 9-14 [diets, lipid-affecting
Exposure Definition: PA	drugs (orlistat, bezafibrate), vitamins, micronutrients, estrogens,
(grouped into diet + PA and	alcohol, coffee]; 15: bariatric surgery. Only controlled studies were
PA or education).	included in the analysis, whether randomized, non-randomized,
Measures Steps: No	observational studies, whether primarily designed to assess incident
Measures Bouts: No	cases of diabetes, or performed with other purposes, such as
Examines HIIT: No	control of hypertension, of ischemic heart disease or prevention of
Outcomes Addressed:	cardiovascular events. Appropriate methodology [preferred
Incidence of type 2 diabetes	reporting items for systematic reviews and meta-analyses (PRISMA)
(as a means to develop an	statement] was used. Seventy-one studies (490 813 subjects),
odds ratio and evaluate	published as full papers, were analysed to identify predictors of new
likelihood of development as a	cases of T2DM, and were included in a meta-analysis (random-
product of exposure	effects model) to study the effect of different strategies.
effectiveness).	Intervention effect (new cases of diabetes) was expressed as odds
Examine Cardiorespiratory	ratio (OR), with 95% confidence intervals (C.I.s). Publication bias was
Fitness as Outcome: No	formally assessed. RESULTS: Body mass index was in the overweight
	range for 13 groups, obese or morbidly obese in lipid-affecting drugs
	and in bariatric surgery. Non-surgical strategies, except for beta-cell
	stimulating drugs, estrogens and vitamins, were able to prevent
	T2DM, with different effectiveness, from 0.37 (C.I. 0.26-0.52) to 0.85
	(C.I. 0.77-0.93); the most effective strategy was bariatric surgery in
	morbidly obese subjects [0.16 (C.I. 0.11,0.24)]. At meta-regression
	analysis, age of subjects and amount of weight lost were associated
	with effectiveness of intervention. CONCLUSIONS: These data
	indicate that several strategies prevent T2DM, making it possible to
	make a choice for the individual subject.
Populations Analyzed: Not	Author-Stated Funding Source: Not reported.
reported	

Systematic Review

Citation: Qin L, Knol MJ, Corpeleijn E, Stolk RP. Does physical activity modify the risk of obesity for type 2 diabetes: a review of epidemiological data. *Eur J Epidemiol.* 2010;25(1):5-12. doi:10.1007/s10654-009-9395-v.

Populations Analyzed: Not reported	Author-Stated Funding Source: Not reported.
Outcome: No	
Examine Cardiorespiratory Fitness as	
weight and physically active individuals).	interaction.
individuals relative to the risk in normal	depending on what method is used to assess
(the risk in obese and physically inactive	review clearly showed that results can differ
joint effect of obesity and physical inactivity	interaction between both factors. Furthermore, this
individuals), the relative risk representing the	preventing the cases that were caused by the
risk in normal weight and physically active	independent effect of this factor, but also by
physically inactive individuals relative to the	only reduces the risk of diabetes by taking away the
inactivity (the risk in normal weight and	prevention of either obesity or physical inactivity, not
representing the individual effect of physical	interact on an additive scale. This means that
physically active individuals), the relative risk	results show that obesity and physical inactivity
relative to the risk in normal weight and	the individual effects, in other studies it was less. The
obese and physically active individuals	studies the joint effect was more than the product of
the individual effect of obesity (the risk in	there was inconsistent statistical interaction; in some
diabetes mellitus: relative risk representing	than the sum of the individual effects. However,
Outcomes Addressed: Relative risk of type 2	interaction, meaning that the joint effect was more
Examines HIIT: No	interaction. All studies showed positive biological
Measures Bouts: No	included of which five were suitable to calculate
Measures Steps: No	interaction in these studies. Eight studies were
MFT hours/week.	We calculated both biological and statistical
and physically inactive was defined as <2.1	activity on the risk of type 2 diabetes were included.
active was defined as ≥ 21.8 MET hours/week	investigated the effects of obesity and physical
metabolic equivalent (MET) hours. Physically	studies, published between 1999 and 2008, that
status) were reported in categories or	of interaction for the studies in our review. Cohort
inactivity and PA (in tandem with obesity	different results. Therefore, we calculated both types
Exposure Definition: Self-reported physical	statistical and biological interaction, which could give
Total # of Studies: 8	Two types of interaction have been discerned,
Timeframe: 1999–August 2008	on this interaction by conducting a systematic review
diabetes.	interact. In this study, we summarized the evidence
inactivity as they contribute to risk of type 2	associated, it has been suggested that they might
interaction between obesity and physical	factors for type 2 diabetes. Since they are strongly
Purpose: To summarize the evidence on the	Abstract: Obesity and physical inactivity are both risk

Systematic Review

Citation: Reiner M, Niermann C, Jekauc D, Woll A. Long-term health benefits of physical activity—a systematic review of longitudinal studies. *BMC Public Health.* Sept 2013:813. doi:10.1186/1471-2458-13-813.

Purpose: To review long-term	Abstract: BACKGROUND: The treatment of noncommunicable				
effects of PA on the development	diseases (NCD), like coronary heart disease or type 2 diabetes				
of weight gain and obesity,	mellitus, causes rising costs for the health system. Physical				
coronary heart disease, and type 2	activity is supposed to reduce the risk for these diseases. Results				
diabetes mellitus in healthy adults.	of cross-sectional studies showed that physical activity is				
Timeframe: 1980–May 2012	associated with better health, and that physical activity could				
Total # of Studies: 18 (5 type 2	prevent the development of these diseases. The purpose of this				
diabetes mellitus outcome)	review is to summarize existing evidence for the long-term (>5				
Exposure Definition: Self-reported	years) relationship between physical activity and weight gain,				
intentional PA or intentional	obesity, coronary heart disease, type 2 diabetes mellitus,				
activities of daily living over the	Alzheimer's disease and dementia. METHODS: Fifteen longitudinal studies with at least 5-year follow up times and a				
long term (5 or more years).					
Measures Steps: No	total of 288,724 subjects (>500 participants in each study), aged				
Measures Bouts: No	between 18 and 85 years, were identified using digital				
Examines HIIT: No	databases. Only studies published in English, about healthy				
Outcomes Addressed: Incident	adults at baseline, intentional physical activity and the listed				
risk of type 2 diabetes mellitus.	NCDs were included. RESULTS: The results of these studies show				
Examine Cardiorespiratory Fitness	that physical activity appears to have a positive long-term				
as Outcome: No	influence on all selected diseases. CONCLUSIONS: This review				
	revealed a paucity of long-term studies on the relationship				
	between physical activity and the incidence of NCD.				
Populations Analyzed: Adults 18–	Author-Stated Funding Source: Not reported.				
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Meta-Analysis

Citation: Wahid A, Manek N, Nichols M, et al. Quantifying the association between physical activity and cardiovascular disease and diabetes: a systematic review and meta-analysis. *J Am Heart Assoc.* 2016;5(9). pii:e002495. doi:10.1161/JAHA.115.002495.

Purpose: Draw together the	Abstract: BACKGROUND: The relationships between physical				
epidemiological studies that	activity (PA) and both cardiovascular disease (CVD) and type 2				
assesses the independent	diabetes mellitus (T2DM) have predominantly been estimated				
association between PA levels and	using categorical measures of PA, masking the shape of the				
both cardiovascular disease and	dose-response relationship. In this systematic review and				
type 2 diabetes mellitus outcomes,	meta-analysis, for the very first time we are able to derive a				
using a single continuous metric	single continuous PA metric to compare the association between PA and CVD/T2DM, both before and after adjustment				
and adjusting for body weight.					
Timeframe: 1981–2014	for a measure of body weight. METHODS AND RESULTS: The				
Total # of Studies: 36 (3 related to	search was applied to MEDLINE and EMBASE electronic				
type 2 diabetes)	databases for all studies published from January 1981 to March				
Exposure Definition: Exposure data	2014. A total of 36 studies (3 439 874 participants and 179 393				
for PA was converted to a common	events, during an average follow-up period of 12.3 years) were				
continuous metric of metabolic	included in the analysis (33 pertaining to CVD and 3 to T2DM).				
equivalent hours per week.	An increase from being inactive to achieving recommended PA				
Measures Steps: No	levels (150 minutes of moderate-intensity aerobic activity per				
Measures Bouts: No	week) was associated with lower risk of CVD mortality by 23%,				
Examines HIIT: No	CVD incidence by 17%, and T2DM incidence by 26% (relative				
Outcomes Addressed: Type 2	risk [RR], 0.77 [0.71-0.84]), (RR, 0.83 [0.77-0.89]), and (RR, 0.74				
diabetes mellitus	[0.72-0.77]), respectively, after adjustment for body weight.				
Examine Cardiorespiratory Fitness	CONCLUSIONS: By using a single continuous metric for PA				
as Outcome: No	levels, we were able to make a comparison of the effect of PA				
	on CVD incidence and mortality including myocardial infarct				
	(MI), stroke, and heart failure, as well as T2DM. Effect sizes				
	were generally similar for CVD and T2DM, and suggested that				
	the greatest gain in health is associated with moving from				
	inactivity to small amounts of PA.				
Populations Analyzed: Adults 19–	Author-Stated Funding Source: British Heart Foundation.				
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Systematic Review

Citation: Warburton DE, Charlesworth S, Ivey A, Nettlefold L, Bredin SS. A systematic review of the evidence for Canada's Physical Activity Guidelines for Adults. *Int J Behav Nutr Phys Act.* 2010;7:39. doi:10.1186/1479-5868-7-39.9

Purpose: Examine critically the	Abstract: This systematic review examines critically the scientific				
current literature to determine	basis for Canada's Physical Activity Guide for Healthy Active				
whether or not a dose-response	Living for adults. Particular reference is given to the dose-				
relationship exists between	response relationship between physical activity and premature				
habitual PA and chronic disease.	all-cause mortality and seven chronic diseases (cardiovascular				
Timeframe: 1950–2008	disease, stroke, hypertension, colon cancer, breast cancer, type 2				
Total # of Studies: 254 (70 with	diabetes (diabetes mellitus) and osteoporosis). The strength of				
type 2 diabetes as an outcome)	the relationship between physical activity and specific health				
Exposure Definition: Any form of	outcomes is evaluated critically. Literature was obtained through				
PA/exercise measurement (e.g.,	searching electronic databases (e.g., MEDLINE, EMBASE), cross-				
self-report, pedometer,	referencing, and through the authors' knowledge of the area. For				
accelerometer, maximal aerobic	inclusion in our systematic review articles must have at least 3				
power [VO2 max]) was eligible for	levels of physical activity and the concomitant risk for each				
inclusion. High vs. lower levels of	chronic disease. The quality of included studies was appraised				
PA/fitness were used as	using a modified Downs and Black tool. Through this search we				
exposure.	identified a total of 254 articles that met the eligibility criteria				
Measures Steps: No	related to premature all-cause mortality (N = 70), cardiovascular				
Measures Bouts: No	disease (N = 49), stroke (N = 25), hypertension (N = 12), colon				
Examines HIIT: No	cancer (N = 33), breast cancer (N = 43), type 2 diabetes (N = 20),				
Outcomes Addressed: Type 2	and osteoporosis (N = 2). Overall, the current literature supports				
diabetes	clearly the dose-response relationship between physical activity				
Examine Cardiorespiratory	and the seven chronic conditions identified. Moreover, higher				
Fitness as Outcome: No	levels of physical activity reduce the risk for premature all-cause				
	mortality. The current Canadian guidelines appear to be				
	appropriate to reduce the risk for the seven chronic conditions				
	identified above and all-cause mortality.				
Populations Analyzed: Adults 19–	Author-Stated Funding Source: Public Health Agency of Canada.				
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Pooled Analysis					
Citation: Xu F, Wang Y, Ware RS, et al. Joint impact of physical activity and family history on the					
development of diabetes among urban adults in Main	land China: a pooled analysis of community-				
based prospective cohort studies. Asia Pac J Public He	alth. 2015;27(2):NP372-381.				
doi:10.1177/1010539512443700.					
Purpose: To examine the joint effect of PA and	Abstract: To examine the joint influences of				
parental history of diabetes on the risk of	physical activity (PA) and family history (FH) of				
developing type if diabetes by pooling data from 2	diabetes on subsequent type 2 diabetes (12D),				
community-based conorts of urban adults living in a	the authors pooled and analyzed data from 2				
Targe regional city in Mannand China.	community-based urban adult prospective				
Total # of Studies: 2	Among 4550 urbon participants, the 2 year				
Exposure Definition: Self-reported frequency and	Among 4550 urban participants, the 3-year				
duration of PA using Chinese short version of	cumulative incidence of 12D was 5.1%. After				
International Physical Activity Questionnaire. Total	compared with those with FH+ and insufficient				
PA time was calculated as the sum of the time spent					
performing moderate PA plus double the time spent	PA, the adjusted odds ratio (95% confidence				
in vigorous PA. Total PA time equal to or greater	Interval) of developing 12D was 0.42 (0.18, 0.98) for participants with sufficient PA and FH+, 0.32 (0.22, 0.46) for participants with insufficient PA and FH-, and 0.15 (0.08, 0.28) for participants with sufficient PA and FH Such significant graduated associations				
than 150 minutes/week was classified as sufficient					
PA, and less than 150 minutes/week was classified					
as insufficient PA.					
Measures Steps: No					
Measures Bouts: No					
Examines HIIT: No	between PA/FH and risk of developing T2D				
Outcomes Addressed: Type II diabetes mellitus;	were also identified in either men or women,				
odds ratio of incident risk of type II diabetes.	separately. Sufficient PA and FH- may jointly				
Examine Cardiorespiratory Fitness as Outcome: No	reduce the risk of developing T2D in urban				
	Chinese adults.				
Populations Analyzed: Male; Female; Asian; Ages	Author-Stated Funding Source: Nanjing				
35–49, 50–64, ≥65; Urban	Medical Science and Technique Development				
Foundation and Jiangsu Provincial Science and					
	Technology Foundation.				

Table 3. Existing Systematic Reviews, Meta-Analyses, and Pooled Analyses Quality Assessment Chart

AMSTARExBP: SR/MA						
	Aune, 2015	Clooster mans, 2015	Fogelhol m, 2010	Huai, 2016	Jeon, 2007	Kyu, 2016
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	Yes	Yes	No	No	Yes	Yes
Was a comprehensive literature search performed?	Yes	Partially Yes	Partially Yes	Yes	Yes	Yes
Duplicate study selection and data extraction performed.	No	No	No	Yes	Yes	Yes
Search strategy clearly described.	Yes	Yes	Yes	Yes	Yes	Yes
Relevant grey literature included in review.	No	No	No	No	No	No
List of studies (included and excluded) provided.	Yes	No	No	No	No	No
Characteristics of included studies provided.	Yes	Yes	Yes	No	Yes	Yes
FITT defined and examined in relation to outcome effect sizes.	Yes	No	N/A	No	No	Yes
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	No	No	Partially Yes	No	Yes
Results depended on study quality, either overall, or in interaction with moderators.	Yes	N/A	N/A	No	N/A	Yes
Scientific quality used appropriately in formulating conclusions.	Yes	N/A	N/A	No	N/A	Yes
Data appropriately synthesized and if applicable, heterogeneity assessed.	Yes	Yes	N/A	Yes	Yes	Yes
Effect size index chosen justified, statistically.	Yes	Partially Yes	N/A	Yes	Yes	Yes
Individual-level meta-analysis used.	No	No	N/A	No	No	No
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	Yes	No	No	Yes	Yes	Yes
Conflict of interest disclosed.	Yes	Yes	No	Yes	No	Yes

AMSTARExBP: SR/MA						
	Merlotti, 2014	Qin, 2010	Reiner, 2013	Wahid, 2016	Warburt on, 2010	Xu, 2015
Review questions and inclusion/exclusion criteria delineated prior to executing search strategy.	Yes	Yes	Yes	Yes	Yes	Yes
Population variables defined and considered in methods.	Yes	Yes	No	Yes	Yes	Yes
Was a comprehensive literature search performed?	Yes	Partially Yes	Partially Yes	Yes	Yes	N/A
Duplicate study selection and data extraction performed.	Yes	No	No	Yes	Yes	N/A
Search strategy clearly described.	Yes	Yes	Yes	Yes	Yes	N/A
Relevant grey literature included in review.	Yes	No	No	No	No	N/A
List of studies (included and excluded) provided.	No	No	No	Yes	No	N/A
Characteristics of included studies provided.	Yes	Yes	Yes	Yes	Yes	No
FITT defined and examined in relation to outcome effect sizes.	No	N/A	N/A	No	N/A	No
Scientific quality (risk of bias) of included studies assessed and documented.	Yes	No	No	Yes	Yes	No
Results depended on study quality, either overall, or in interaction with moderators.	No	N/A	N/A	Yes	Yes	N/A
Scientific quality used appropriately in formulating conclusions.	Yes	N/A	N/A	Yes	Yes	N/A
Data appropriately synthesized and if applicable, heterogeneity assessed.	Yes	N/A	N/A	Yes	N/A	No
Effect size index chosen justified, statistically.	Yes	N/A	N/A	Yes	N/A	No
Individual-level meta-analysis used.	No	N/A	N/A	No	N/A	No
Practical recommendations clearly addressed.	Yes	Yes	Yes	Yes	Yes	Yes
Likelihood of publication bias assessed.	Yes	No	No	Yes	No	N/A
Conflict of interest disclosed.	No	No	No	Yes	Yes	Yes

Appendices

Appendix A: Analytical Framework

Topic Area

Cardiometabolic Health and Weight Management

Systematic Review Question

In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
- c. Does the relationship vary based on frequency, duration, intensity, type (mode), or how physical activity is measured?

Population

Adults, ages 18 and older without diabetes

Exposure

All types and intensities of physical activity, including lifestyle activities, leisure activities, and sedentary behavior

Comparison

Adults who participate in varying levels of physical activity, including no reported physical activity

Endpoint Health Outcomes

Type 2 diabetes

Key Definitions

- Non-diabetic/normal: Having an A1C below 5.7%, fasting blood glucose less than 100 mg/dL, and an OGTT 2-hour blood glucose lower than 140 mg/dL.
- Prediabetes: Having an A1C of 5.7%–6.4%, fasting blood glucose of 100–125 mg/dl, and an OGTT 2-hour blood glucose of 140 mg/dL– 199 mg/dL.
- Diabetes: Having an A1C of 6.5% or higher, fasting blood glucose of 126 mg/dL or higher, and an OGTT 2-hour blood glucose of 200 mg/dL or higher.

Appendix B: Final Search Strategy

Search Strategy: PubMed (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: PubMed; Date of Search: 5/11/17; 972 results

Set	Search Strategy
Limit: Language	(English[lang])
Limit: Exclude animal only	NOT ("Animals"[mh] NOT ("Animals"[mh] AND "Humans"[mh]))
Limit: Exclude child only	NOT (("infant"[mh] OR "child"[mh] OR "child, preschool"[mh] OR
	"adolescent"[mh]) NOT (("infant"[mh] OR "child"[mh] OR "child,
	preschool"[mh] OR "adolescent"[mh]) AND "adult"[mh]))
Limit: Publication Date	AND ("2006/01/01"[PDAT] : "3000/12/31"[PDAT])
(Systematic Reviews/Meta-	
Analyses)	AND (sustamaticish) OD mate analysicist) OD "sustamatic
Limit: Publication Type Include	AND (systematic[sb] OR meta-analysis[pt] OR systematic
(Systematic Reviews/Ivieta-	metaanalycis[tiah] OR "meta analycis"[tiah] OR metaanalyces[tiah]
Analyses	OR "meta analysis [tiab] OR "nooled analysis [tiab] OR "nooled
	analyses"[fiab] OR "pooled data"[fiab])
Limit: Publication Type Exclude	NOT ("comment" [Publication Type] OR "editorial" [Publication
(Systematic Reviews/Meta-	Type])
Analyses)	
Physical Activity	AND (("Aerobic endurance"[tiab] OR "Bicycl*"[tiab] OR "Endurance
	training"[tiab] OR "Exercise"[mh] OR "Exercise"[tiab] OR
	"Exercises"[tiab] OR "Free living activities"[tiab] OR "Free living
	activity"[tiab] OR "Functional training"[tiab] OR "Leisure-time
	physical activity"[tiab] OR "Lifestyle activities"[tiab] OR "Lifestyle
	activity"[tiab] OR "Muscle stretching exercises"[mh] OR "Physical
	activity [tiab] OR Qi gong [tiab] OR Recreational activities [tiab]
	"Pupping"[tiph] OP "Sedentary lifectyle"[mh] OP "Speed
	training [tiab] OR "Strength training"[tiab] OR "Tai chi"[tiab] OR
	"Tai ii"[mh] OR "Tai ii"[tiab] OR "Training duration"[tiab] OR
	"Training frequency"[tiab] OR "Training intensity"[tiab] OR
	"Treadmill"[tiab] OR "Walking"[tiab] OR "Weight lifting"[tiab] OR
	"Weight training"[tiab] OR "Yoga"[mh] OR "Yoga"[tiab]) OR
	(("Aerobic activities"[tiab] OR "Aerobic activity"[tiab] OR
	"Cardiovascular activities"[tiab] OR "Cardiovascular activity"[tiab]
	OR "Endurance activities"[tiab] OR "Endurance activity"[tiab] OR
	"Physical activities"[tiab] OR "Physical conditioning"[tiab] OR
_	"Sedentary"[tiab]) NOT medline[sb]))
Outcome	AND ("Diabetes"[tiab] OR "diabetes mellitus"[mh])

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Search Strategy: CINAHL (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: CINAHL; Date of Search: 5/11/17; 29 results Terms searched in title or abstract

Set	Search Terms
Physical Activity	("Aerobic endurance" OR "Bicycl*" OR "Endurance training" OR "Exercise" OR "Exercises" OR "Free living activities" OR "Free living activity" OR "Functional training" OR "Leisure-time physical activity" OR "Lifestyle activities" OR "Lifestyle activity" OR "Muscle stretching exercises" OR "Physical activity" OR "Qi gong" OR "Recreational activities" OR "Recreational activity" OR "Resistance training" OR "Running" OR "Sedentary lifestyle" OR "Speed training" OR "Strength training" OR "Tai chi" OR "Tai ji" OR "Tai ji" OR "Training duration" OR "Training frequency" OR "Training intensity" OR "Treadmill" OR "Walking" OR "Weight lifting" OR "Weight training" OR "Yoga" OR "Aerobic activities" OR "Aerobic activity" OR "Cardiovascular activities" OR "Cardiovascular activity" OR "Endurance activities" OR "Endurance activity" OR "Physical activities" OR "Physical conditioning" OR "Sedentary")
Outcomes	AND ("Diabetes" OR "diabetes mellitus")
Systematic Reviews and Meta- Analyses	("systematic review" OR "systematic literature review" OR metaanalysis OR "meta analysis" OR metanalyses OR "meta analyses" OR "pooled analysis" OR "pooled analyses" OR "pooled data")
Limits	2006–present English language Peer reviewed Exclude Medline records Human

Search Strategy: Cochrane (Systematic Reviews, Meta-Analyses, Pooled Analyses, and High-Quality Reports)

Database: Cochrane; Date of Search: 5/11/17; 123 results Terms searched in title, abstract, or keywords

Set	Search Terms
Physical Activity	("Aerobic endurance" OR "Bicycl*" OR "Endurance training" OR "Exercise" OR "Exercises" OR "Free living activities" OR "Free living activity" OR "Functional training" OR "Leisure-time physical activity" OR "Lifestyle activities" OR "Lifestyle activity" OR "Muscle stretching exercises" OR "Physical activity" OR "Qi gong" OR "Recreational activities" OR "Recreational activity" OR "Resistance training" OR "Running" OR "Sedentary lifestyle" OR "Speed training" OR "Strength training" OR "Tai chi" OR "Tai ji" OR "Tai ji" OR "Training duration" OR "Training frequency" OR "Training intensity" OR "Treadmill" OR "Walking" OR "Weight lifting" OR "Weight training" OR "Yoga" OR "Aerobic activities" OR "Aerobic activity" OR "Cardiovascular activities" OR "Cardiovascular activity" OR "Endurance activities" OR "Endurance activity" OR "Physical activities" OR "Physical conditioning" OR "Sedentary")
Outcomes	AND ("Diabetes" OR "diabetes mellitus")
Limits	2006–present Word variations not searched
	Cochrane Reviews and Other Reviews

Appendix C: Literature Tree

Existing Systematic Reviews, Meta-Analyses, Pooled Analyses, and Reports Literature Tree



Appendix D: Inclusion/Exclusion Criteria

Cardiometabolic Health and Weight Management Subcommittee

Systematic Review Question: In adults without diabetes, what is the relationship between physical activity and type 2 diabetes?

- a. Is there a dose-response relationship? If yes, what is the shape of the relationship?
- b. Does the relationship vary by age, sex, race/ethnicity, socio-economic status, or weight status?
- c. Does the relationship vary based on frequency, duration, intensity, type (mode), or how physical activity is measured?

Category	Inclusion/Exclusion Criteria	Notes/Rationale
Publication	Include:	
Language	 Studies published with full text in English 	
Publication Status	Include:	
	 Studies published in peer-reviewed journals 	
	 Reports determined to have appropriate suitability 	
	and quality by PAGAC	
	Exclude:	
	 Grey literature, including unpublished data, 	
	manuscripts, abstracts, conference proceedings	
Research Type	Include:	
	Original research: Prospective (concurrent;	
	longitudinal) cohort studies; randomized	
	controlled trials	
	• Meta-analyses	
	• Systematic reviews	
	Pooled analyses Departs determined to have any provide the life.	
	• Reports determined to have appropriate suitability	
Study Subjects		
Study Subjects	• Human subjects	
Age of Study		
Subjects	 Adults ages 18 and older 	
	When data are analyzed by age groups only data	
	with lower age range of 18 may be included (e.g.	
	in a study with individuals 13–21 where data are	
	presented for multiple age groups, only data for 18	
	and older may be included)	
Health Status of	Include:	
Study Subjects	 Healthy adults without diabetes 	
	 People who are overweight or obese 	
	 Adults with pre-diabetes or impaired glucose 	
	tolerance	
	Exclude:	

	Studies of adults with any chronic condition	
	(obesity is ok)	
	Hospitalized patients	
	• Smokers only	
Comparison	Include:	
•	• Adults who participate in varying levels of physical	
	activity, including no reported physical activity	
	Recreational athletes (marathons ok as long as the	
	study looks at a diverse group of runners—not just	
	the elites)	
	Exclude:	
	High-performance athletes	
	Studies comparing athletes to non-athletes	
	• Studies comparing athlete types (e.g., comparing	
	runners to soccer players)	
Date of	Include:	
Publication	Original research published from 2006 to 2017	
	• Systematic reviews and meta-analyses published	
	from 2006 to 2017	
Study Design	Include:	
	Randomized trials	
	 Prospective cohort studies 	
	Systematic reviews	
	Meta-analyses	
	Pooled analyses	
	PAGAC approved reports	
	Exclude:	
	 Non-randomized trials 	
	 Retrospective cohort studies 	
	Case-control studies	
	 Before-After studies 	
	Narrative reviews	
	Commentaries	
	Editorials	
	 Cross-sectional studies 	
	Time series	
Intervention/	Include studies in which the exposure or	
Exposure	intervention is:	
	 All types and intensities of physical activity, 	
	including lifestyle activities, leisure activities, and	
	sedentary behavior	
	Exclude:	

	• Studies that do not include physical activity (or the lack thereof) as the primary exposure variable or used solely as a confounding variable	
	 Studies missing physical activity (mental games such as Sudoku instead of physical activities) 	
Outcome	Include studies in which the outcome is:	
	• Type 2 diabetes	
Study Duration (Original Research)	 Minimum 1 year for observational studies 	

Appendix E: Rationale for Exclusion at Abstract or Full-Text Triage for Existing Systematic Reviews, Meta-Analyses, Pooled Analyses, and Reports

The table below lists the excluded articles with at least one reason for exclusion, but may not reflect all possible reasons.

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Abdulameer SA, Sulaiman SA, Hassali MA, Subramaniam K, Sahib MN. Osteoporosis and type 2 diabetes mellitus: what do we know, and what we can do? <i>Patient Prefer</i> <i>Adherence</i> . 2012;6:435-448. doi:10.2147/PPA.S32745.		x				
Abubakari AR, Bhopal RS. Systematic review on the prevalence of diabetes, overweight/obesity and physical inactivity in Ghanaians and Nigerians. <i>Public Health</i> . 2008;122(2):173-182. doi:10.1016/j.puhe.2007.06.012.				Х		
Abubakari AR, Lauder W, Jones MC, Kirk A, Agyemang C, Bhopal RS. Prevalence and time trends in diabetes and physical inactivity among adult West African populations: the epidemic has arrived. <i>Public Health</i> . 2009;123(9):602-614. doi:10.1016/j.puhe.2009.07.009.				x		
Adeniyi AF, Adeleye JO, Adeniyi CY. Diabetes, sexual dysfunction and therapeutic exercise: a 20 year review. <i>Curr</i> <i>Diabetes Rev.</i> 2010;6(4):201-206. doi:10.2174/157339910791658907.		Х				
Afable A, Karingula NS. Evidence based review of type 2 diabetes prevention and management in low and middle income countries. <i>World J Diabetes</i> . 2016;7(10):209-229. doi:10.4239/wjd.v7.i10.209.		х				
Aguiar EJ, Morgan PJ, Collins CE, Plotnikoff RC, Callister R. Efficacy of interventions that include diet, aerobic and resistance training components for type 2 diabetes prevention: a systematic review with meta- analysis. <i>Int J Behav Nutr Phys Act</i> . Jan 2014:2. doi:10.1186/1479-5868-11-2.				х		
Ahmad S, Shanmugasegaram S, Walker KL, Prince SA. Examining sedentary time as a risk factor for cardiometabolic diseases and their markers in South Asian adults: a systematic review. <i>Int J Public Health</i> . 2017;62(4):503-515. doi:10.1007/s00038- 017-0947-8.				x		
Al Tunaiji H, Davis JC, Mackey DC, Khan KM. Population attributable fraction of type 2 diabetes due to physical inactivity in adults:	х					

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de	Other
			J		novo search	
a systematic review. BMC Public Health.						
May 2014:469. doi:10.1186/14/1-2458-14-						
469.						
Aljasir B, Bryson M, Al-Shehri B. Yoga						
practice for the management of type II						
diabetes mellitus in adults: a systematic		х				
review. Evid Based Complement Alternat						
Med. 2010;7(4):399-408.						
doi:10.1093/ecam/nen027.						
Alothman S, Yahya A, Rucker J, Kluding PM.						
Effectiveness of interventions for						
promoting objectively measured physical						
activity of adults with type 2 diabetes: a		Х				
systematic review. J Phys Act Health.						
2017;14(5):408-415.						
doi:10.1123/jpah.2016-0528.						
Alouki K, Delisle H, Bermudez-Tamayo C,						
Jhori M. Lifestyle interventions to prevent						
type 2 diabetes: a systematic review of	х					
economic evaluation studies. J Diabetes						
<i>Res.</i> Jan 2016:2159890.						
doi:10.1155/2016/2159890.						
Alsairafi ZK, Taylor KM, Smith FJ, Alattar AT.						
Patients' management of type 2 diabetes in						
Middle Eastern countries: review of	x					
studies. Patient Prefer Adherence. June	A					
2016:1051-1062.						
doi:10.2147/PPA.S104335.						
American Diabetes Association. Prevention						
or delay of type 2 diabetes. <i>Diabetes Care.</i>			х			
2015;(38)(suppl 1):S31-S32.			~			
doi:10.2337/dc15-S008.						
Angermayr L, Melchart D, Linde K.						
Multifactorial lifestyle interventions in the						
primary and secondary prevention of						
cardiovascular disease and type 2 diabetes				х		
mellitus—a systematic review of						
randomized controlled trials. Ann Behav						
Med. 2010;40(1):49-64.						
doi:10.1007/s12160-010-9206-4.						
Antunes LC, Levandovski R, Dantas G,						
Caumo W, Hidalgo MP. Obesity and shift						
work: chronobiological aspects. Nutr Res				Х		
<i>Rev.</i> 2010;23(1):155-168.						
doi:10.1017/S0954422410000016.						
Appuhamy JA, Kebreab E, Simon M, Yada R,						
Milligan LP, France J. Effects of diet and						
exercise interventions on diabetes risk						
factors in adults without diabetes: meta-				Х		
analyses of controlled trials. Diabetol						
Metab Syndr. Nov 2014:127.						
doi:10.1186/1758-5996-6-127.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Arambepola C, Ricci-Cabello I, Manikavasagam P, Roberts N, French DP,						
Farmer A. The impact of automated brief						
messages promoting lifestyle changes						
delivered via mobile devices to people with		X				
type 2 diabetes: a systematic interature						
trials I Med Internet Res 2016:18(A):e86						
doi:10 2196/imir 5425						
Avery L. Elvnn D. Dombrowski SU. van						
Wersch A. Sniehotta FF. Trenell MI.						
Successful behavioural strategies to						
increase physical activity and improve		х				
glucose control in adults with type 2						
diabetes. Diabet Med. 2015;32(8):1058-						
1062. doi:10.1111/dme.12738.						
Avery L, Flynn D, Wersch A, Sniehotta FF,						
Trenell MI. Changing physical activity						
behavior in type 2 diabetes: a systematic						
review and meta-analysis of behavioral		Х				
interventions. <i>Diabetes Care</i> .						
2012;35(12):2681-2689. doi:10.233//dc11-						
2452.						
Baskerville R, Ricci-Cabello I, Roberts N,						
radimer A. Impact of accelerometer and						
glycaemic control in people with type 2						
diabetes: a systematic review and meta-		Х				
analysis. Digbetic Medicine.						
2017;34(5):612-620.						
doi:10.1111/dme.13331.						
Bhurji N, Javer J, Gasevic D, Khan NA.						
Improving management of type 2 diabetes						
in South Asian patients: a systematic		x				
review of intervention studies. BMJ Open.		~				
2016;6(4):e008986. doi:10.1136/bmjopen-						
2015-008986.						
Bian RR, Platt GA, Sen A, et al. The effect of						
interventions on weight a mote analysis (v		
Mod Internet Pac. 2017:10(2):o76				~		
doi:10 2196/imir 4709						
Biswas A. Oh PI. Faulkner GF. et al.						
Sedentary time and its association with risk						
for disease incidence, mortality, and						
hospitalization in adults: a systematic				х		
review and meta-analysis. Ann Intern Med.						
2015;162(2):123-132. doi:10.7326/M14-						
1651.						
Blaha MJ, Bansal S, Rouf R, Golden SH,						
Blumenthal RS, Defilippis AP. A practical						
"ABCDE" approach to the metabolic				Х		
syndrome. Mayo Clin Proc. 2008;83(8):932-						
941. doi:10.4065/83.8.932.						

Citation	Outcome	Population	Study	Exposure	Not ideal fit for replacement of de	Other
			Design		novo search	
Bosomworth NJ. Approach to identifying						
and managing atherogenic dyslipidemia: a						
metabolic consequence of obesity and				Х		
diabetes. Can Fam Physician.						
2013;59(11):1169-1180.						
Bravata DM, Smith-Spangler C, Sundaram						
V, et al. Using pedometers to increase						
physical activity and improve health: a	х					
systematic review. JAMA.						
2007;298(19):2296-2304.						
doi:10.1001/Jama.298.19.2296.						
Brinks R, Hoyer A, Kuss O, Rathmann W.						
Projected effect of increased active travel						
In German urban regions on the risk of type			Х			
2 diabetes. PLOS ONE.						
2015;10(4):e0122145. doi:10.1271/journal.none.0122145						
Brocklobank I A Falconor CL Page AS Porry						
BIOCKIEDATIK LA, FAICOTET CL, Page AS, Petry						
sedentary time and cardiometabolic						
biomarkers: a systematic review. <i>Brev Med</i>	х					
doi:10.1016/i.vpmed 2015.04.013						
Brown SA Garcia AA Brown A et al						
Biobebayioral determinants of glycemic						
control in type 2 diabetes: a systematic						
review and meta-analysis Patient Educ		Х				
Cours 2016:99(10):1558-1567						
doi:10.1016/i.pec.2016.03.020.						
Brunton SA Bolla AB Implementing						
intensified treatment strategies for						
patients with type 2 diabetes mellitus. J		Х				
Fam Pract. 2007:56(11)(suppl):S9-S16.						
Brunton SA. The changing shape of type 2						
diabetes. <i>Medscape J Med</i> . 2008:10(6):143:		х				
quiz 143.						
Byrne H, Caulfield B, De Vito G. Effects of						
self-directed exercise programmes on						
individuals with type 2 diabetes mellitus: a						
systematic review evaluating their effect						
on HbA1c and other metabolic outcomes,		х				
physical characteristics, cardiorespiratory						
fitness and functional outcomes. Sports						
Med. 2017;47(4):717-733.						
doi:10.1007/s40279-016-0593-y.						
Caffrey MK. Evidence builds on yoga, but						
no reimbursement yet. Am J Manag Care.			Х			
2014;20(8 Spec No.):E5.						
Cai H, Li G, Zhang P, Xu D, Chen L. Effect of						
exercise on the quality of life in type 2						
diabetes mellitus: a systematic review.		х				
Qual Life Res. 2017;26(3):515-530.						
doi:10.1007/s11136-016-1481-5.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Cai X, Qiu SH, Yin H, et al. Pedometer						
and obeco adults with type 2 diabetes: a						
moto analysis. Diabet Med		х				
2016.33(8).1035-1044						
doi:10.1111/dme.1310/						
Cayley WF The role of exercise in patients						
with type 2 diabetes Am Fam Physician		x				
2007:75(3):335-336		~				
Cevsens G Bouiller D Boulvain M Exercise						
for diabetic pregnant women Cochrane						
Database Syst Rev. 2006:(3):Cd004225.		Х				
doi:10.1002/14651858.CD004225.pub2.						
Chapman A. Meyer C. Renehan E. Hill KD.						
Browning CJ. Exercise interventions for the						
improvement of falls-related outcomes						
among older adults with diabetes mellitus:		х				
a systematic review and meta-analyses. J						
Diabetes Complications. 2017;31(3):631-						
645. doi:10.1016/j.jdiacomp.2016.09.015.						
Chen L, Pei JH, Kuang J, et al. Effect of						
lifestyle intervention in patients with type 2						
diabetes: a meta-analysis. <i>Metabolism</i> .		х				
2015;64(2):338-347.						
doi:10.1016/j.metabol.2014.						
Christensen J, Valentiner LS, Petersen RJ,						
Langberg H. The effect of game-based						
interventions in rehabilitation of diabetics:		v				
a systematic review and meta-analysis.		^				
Telemed J E Health. 2016;22(10):789-797.						
doi:10.1089/tmj.2015.0165.						
Chudyk A, Petrella RJ. Effects of exercise on						
cardiovascular risk factors in type 2						
diabetes: a meta-analysis. Diabetes Care.		Х				
2011;34(5):1228-1237. doi:10.2337/dc10-						
1881.						
Cigolle CT, Blaum CS, Halter JB. Diabetes						
and cardiovascular disease prevention in						
older adults. Clin Geriatr Med.		Х				
2009;25(4):607-641, vii-viii.						
doi:10.1016/j.cger.2009.09.001.						
Colberg SR, Grieco CR. Exercise in the						
treatment and prevention of diabetes. Curr		х				
Sports Med Rep. 2009;8(4):169-175.						
doi:10.1249/JSR.0b013e3181ae0654.						
Colberg SR, Sigal RJ, Fernhall B, et al.;						
American College of Sports Medicine;						
American Diabetes Association. Exercise						
and type 2 diabetes: the American College	v					
Disports integration: isint position	X					
statement executive summary Disheter						
Statement executive summary. Diabetes						
doi:10.2337/dc10-15/2						
aoniio.2007/acio 1040.		1			1	

Citation			Study		Not ideal fit for	
	Outcome	Population	Design	Exposure	replacement of de novo search	Other
Conn VS, Hafdahl AR, Cooper PS, Brown						
LM, Lusk SL. Meta-analysis of workplace						
physical activity interventions. Am J Prev	х					
Med. 2009;37(4):330-339.						
doi:10.1016/j.amepre.2009.06.008.						
Conn VS, Hafdahl AR, Mehr DR, LeMaster						
JW, Brown SA, Nielsen PJ. Metabolic effects						
of interventions to increase exercise in		v				
adults with type 2 diabetes. Diabetologia.		X				
2007;50(5):913-921. doi:10.1007/s00125-						
007-0625-0.						
Conn VS, Koopman RJ, Ruppar TM, Phillips						
LJ, Mehr DR, Hafdahl AR. Insulin sensitivity						
following exercise interventions:						
systematic review and meta-analysis of	х					
outcomes among healthy adults. J Prim						
Care Community Health. 2014;5(3):211-						
222. doi:10.1177/2150131913520328.						
Cradock KA, ÓLaighin G, Finucane FM,						
Gainforth HL, Quinlan LR, Ginis KA.						
Behaviour change techniques targeting						
both diet and physical activity in type 2		v				
diabetes: a systematic review and meta-		X				
analysis. Int J Behav Nutr Phys Act.						
2017;14(1):18. doi:10.1186/s12966-016-						
0436-0.						
Cramer H, Lauche R, Haller H, Steckhan N,						
Michalsen A, Dobos G. Effects of yoga on						
cardiovascular disease risk factors: a	v	v				
systematic review and meta-analysis. Int J	^	^				
Cardiol. 2014;173(2):170-183.						
doi:10.1016/j.ijcard.2014.02.017.						
Cramer H, Langhorst J, Dobos G, Lauche R.						
Yoga for metabolic syndrome: a systematic						
review and meta-analysis. Eur J Prev	х					
Cardiol. 2016;23(18):1982-1993.						
doi:10.1177/2047487316665729.						
Cui J, Yan JH, Yan LM, Pan L, Le JJ, Guo YZ.						
Effects of yoga in adults with type 2						
diabetes mellitus: a meta-analysis. J		Х				
Diabetes Investig. 2017;8(2):201-209.						
doi:10.1111/jdi.12548.						
Davies B, Cramp F, Gauntlett-Gilbert J,						
Wynick D, McCabe CS. The role of physical						
activity and psychological coping strategies						
in the management of painful diabetic		Х				
neuropathy—a systematic review of the						
literature. Physiotherapy. 2015;101(4):319-						
326. doi:10.1016/j.physio.2015.04.003.						
de Rezende LF, Rodrigues Lopes M, Rey-						
Lopez JP, Matsudo VK, Luiz Odo C.				Y		
Sedentary behavior and health outcomes:				^		
an overview of systematic reviews. PLoS						

31

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
<i>One</i> . 2014;9(8):e105620. doi:10.1371/journal.pone.0105620.						
Dempsey PC, Owen N, Biddle SJ, Dunstan						
DW. Managing sedentary behavior to						
reduce the risk of diabetes and			x			
cardiovascular disease. Curr Diab Rep.			~			
2014;14(9):522. doi:10.1007/s11892-014-						
0522-0.						
Desveaux L, Beauchamp M, Goldstein R,						
Brooks D. Community-based exercise						
programs as a strategy to optimize function	х					
in chronic disease: a systematic review.						
Med Care. 2014;52(3):216-226.						
doi:10.1097/MLR.0000000000000065.						
diabatos in soniors and implications for its						
management. Consult Pharm				Х		
2000:24(suppl B):E 10						
Duan Portor W. Goldstein K. McDuffie L et						
al Manning the evidence: sex effects in						
high-impact conditions for women						
veterans—depression diabetes and	x					
chronic pain VA Evidence-Based Synthesis	A					
Program Reports. Washington, DC:						
Department of Veterans Affairs; 2015.						
Duan-Porter W, Goldstein KM, McDuffie JR,						
et al. Reporting of sex effects by systematic						
reviews on interventions for depression,	v					
diabetes, and chronic pain. Ann Intern Med.	^					
2016;165(3):184-193. doi:10.7326/M15-						
2877.						
Duclos M, Oppert JM, Verges B, et al.; SFD						
diabetes and physical activity working						
group. Physical activity and type 2 diabetes.						
Recommendations of the SFD			х			
(Francophone Diabetes Society) diabetes						
and physical activity working group.						
Diabetes Metab. 2013;39(3):205-216.						
UUI:10.1016/J.Clabet.2013.03.005.						
bucios M, Virally ML, Dejager S. Exercise In						
mellitus: what are the hepofits and how						
does it work? Phys Sportsmed		Х	Х			
2011:39(2):98-106						
doi:10.3810/psm.2011.05.1899.						
Dunkley AJ, Bodicoat DH, Greaves CJ. et al.						
Diabetes prevention in the real world:						
effectiveness of pragmatic lifestyle						
interventions for the prevention of type 2						
diabetes and of the impact of adherence to	Х					
guideline recommendations: a systematic						
review and meta-analysis. Diabetes Care.						
2014;37(4):922-933. doi:10.2337/dc13-						
2195.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Dunkley AJ, Charles K, Gray LJ, Camosso-						
Stefinovic J, Davies MJ, Khunti K.						
Effectiveness of interventions for reducing						
diabetes and cardiovascular disease risk in						
people with metabolic syndrome:				х		
systematic review and mixed treatment						
comparison meta-analysis. Diabetes Obes						
Metab. 2012;14(7):616-625.						
doi:10.1111/j.1463-1326.2012.01571.x.						
Ekelund U, Brage S, Griffin SJ, Wareham NJ,						
ProActive UK Research Group. Objectively						
measured moderate- and vigorous-						
intensity physical activity but not sedentary			х			
time predicts insulin resistance in high-risk						
individuals. Diabetes Care.						
2009;32(6):1081-1086. doi:10.2337/dc08-						
1895.						
Everson-Hock ES, Johnson M, Jones R, et al.						
Community-based dietary and physical						
activity interventions in low socioeconomic						
groups in the UK: a mixed methods	х					
systematic review. Prev Med.						
2013;56(5):265-272.						
doi:10.1016/J.ypmed.2013.02.023.						
Fasanmade OA, Dagogo-Jack S. Diabetes						
	х					
doi:10.1016/i.aogh.2015.12.012						
Field T. Yoga research review. Complement						
Ther Clin Pract Aug 2016:145-161			x			
doi:10.1016/i.ctcp.2016.06.005			~			
Figueira FR. Umpierre D. Cureau FV. et al.						
Association between physical activity						
advice only or structured exercise training						
with blood pressure levels in patients with						
type 2 diabetes: a systematic review and		Х				
meta-analysis. Sports Med.						
2014;44(11):1557-1572.						
doi:10.1007/s40279-014-0226-2.						
Franz MJ, Boucher JL, Rutten-Ramos S,						
VanWormer JJ. Lifestyle weight-loss						
intervention outcomes in overweight and						
obese adults with type 2 diabetes: a		v				
systematic review and meta-analysis of		^				
randomized clinical trials. J Acad Nutr Diet.						
2015;115(9):1447-1463.						
doi:10.1016/j.jand.2015.02.031.						
Freire MD, Alves C. Therapeutic Chinese						
exercises (qigong) in the treatment of type		_				
2 diabetes mellitus: a systematic review.		Х				
Diabetes Metab Syndr. 2013;7(1):56-59.						
doi:10.1016/j.dsx.2013.02.009.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Frost J, Garside R, Cooper C, Britten N. A qualitative synthesis of diabetes self- management strategies for long term medical outcomes and quality of life in the UK. <i>BMC Health Serv Res</i> . 2014;14:348. doi:10.1186/1472-6963-14-348.		х				
Funk M, Taylor EL. Pedometer-based walking interventions for free-living adults with type 2 diabetes: a systematic review. <i>Curr Diabetes Rev.</i> 2013;9(6):462-471. doi:10.2174/15733998113096660084.		Х				
Gallagher R, Armari E, White H, Hollams D. Multi-component weight-loss interventions for people with cardiovascular disease and/or type 2 diabetes mellitus: a systematic review. <i>Eur J Cardiovasc Nurs</i> . 2013;12(4):320-329. doi:10.1177/1474515112471002.				x		
Gilinsky AS, Kirk AF, Hughes AR, Lindsay RS. Lifestyle interventions for type 2 diabetes prevention in women with prior gestational diabetes: a systematic review and meta- analysis of behavioural, anthropometric and metabolic outcomes. <i>Prev Med Rep</i> . 2015;2:448-461. doi:10.1016/j.pmedr.2015.05.009.		х				
Gillett M, Royle P, Snaith A, et al. Non- pharmacological interventions to reduce the risk of diabetes in people with impaired glucose regulation: a systematic review and economic evaluation. <i>Health Technol</i> <i>Assess.</i> 2012;16(33):1-236, iii-iv. doi:10.3310/hta16330.				х		
Gkrania-Klotsas E, Ye Z, Cooper AJ, et al. Differential white blood cell count and type 2 diabetes: systematic review and meta- analysis of cross-sectional and prospective studies. <i>PLoS One</i> . 2010;5(10):e13405. doi:10.1371/journal.pone.0013405.				Х		
Gong QH, Kang JF, Ying YY, et al. Lifestyle interventions for adults with impaired glucose tolerance: a systematic review and meta-analysis of the effects on glycemic control. <i>Intern Med</i> . 2015;54(3):303-310. doi:10.2169/internalmedicine.54.2745.	x					
Gonnelli S, Caffarelli C, Giordano N, Nuti R. The prevention of fragility fractures in diabetic patients. <i>Aging Clin Exp Res</i> . 2015;27(2):115-124. doi:10.1007/s40520- 014-0258-3.		Х				
Gordon BA, Benson AC, Bird SR, Fraser SF. Resistance training improves metabolic health in type 2 diabetes: a systematic review. <i>Diabetes Res Clin Pract</i> .		Х				

Citation	Outeeree	Denulation	Study	F	Not ideal fit for	Other
	Outcome	Population	Design	Exposure	novo search	Other
2009;83(2):157-175.						
doi:10.1016/j.diabres.2008.11.024.						
Gorman E, Chudyk AM, Madden KM, Ashe						
MC. Bone health and type 2 diabetes						
mellitus: a systematic review. Physiother		х				
Can. 2011;63(1):8-20.						
doi:10.3138/ptc.2010-23bh.						
Grace A, Chan E, Giallauria F, Graham PL,						
Smart NA. Clinical outcomes and glycaemic						
responses to different aerobic exercise						
training intensities in type II diabetes: a		Х				
systematic review and meta-analysis.						
Cardiovasc Diabetol. 2017;16(1):37.						
doi:10.1186/s12933-017-0518-6.						
Grontved A, Hu FB. Television viewing and						
risk of type 2 diabetes, cardiovascular						
disease, and all-cause mortality: a meta-				Х		
analysis. JAMA. 2011;305(23):2448-2455.						
doi:10.1001/jama.2011.812.						
Gu Y, Dennis SM. Are falls prevention						
programs effective at reducing the risk						
factors for falls in people with type-2						
diabetes mellitus and peripheral		х				
neuropathy: a systematic review with						
narrative synthesis. J Diabetes						
<i>Complications</i> . 2017;31(2):504-516.						
dol:10.1016/J.Jdlacomp.2016.10.004.						
Guo J, Chen JL, Whittemore R, Whitaker E.						
Postpartum mestyle interventions to						
with history of gostational diabotos: a						
systematic review of randomized clinical		Х				
trials / Womens Health (Larchmt)						
2016:25(1):38-49						
doi:10.1089/iwh.2015.5262						
Hamilton MT. Hamilton DG. Zderic TW.						
Sedentary behavior as a mediator of type 2						
diabetes. <i>Med Sport Sci.</i> 2014:60:11-26.			Х			
doi:10.1159/000357332.						
Havashino Y. Jackson JL. Fukumori N.						
Nakamura F, Fukuhara S. Effects of						
supervised exercise on lipid profiles and						
blood pressure control in people with type		v				
2 diabetes mellitus: a meta-analysis of		X				
randomized controlled trials. Diabetes Res						
Clin Pract. 2012;98(3):349-360.						
doi:10.1016/j.diabres.2012.10.004.						
Hayashino Y, Jackson JL, Hirata T, et al.						
Effects of exercise on C-reactive protein,						
inflammatory cytokine and adipokine in						
patients with type 2 diabetes: a meta-		Х				
analysis of randomized controlled trials.						
Metabolism. 2014;63(3):431-440.						
doi:10.1016/j.metabol.2013.08.018.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Hayes C, Kriska A. Role of physical activity						
in diabetes management and prevention. J			х			
Am Diet Assoc. 2008;108(4)(suppl 1):S19-						
S23. doi:10.1016/j.jada.2008.01.016.						
Health Quality Ontario. Behavioural						
interventions for type 2 diabetes: an		х				
Technel Assess Ser. 2000:0(21):1.45						
Technol Assess Ser. 2009;9(21):1-45.						
memory interventions for type 2						
diabatos: a systematic review. European		v				
Diabetes Nursing 2010.7(2):71-76		^				
doi:10.1002/edp.160						
Heiss V. Petosa B. Correlates of physical						
activity among adults with type 2 diabetes:						
a systematic literature review / Hegith		x				
Educ 2014:45(5):278-287		A				
doi:10.1080/19325037.2014.933139.						
Helou N. Dwyer A. Shaha M. Zanchi A.						
Multidisciplinary management of diabetic						
kidney disease: a systematic review and						
meta-analysis. JBI Database System Rev		Х				
Implement Rep. 2016;14(7):169-207.						
doi:10.11124/JBISRIR-2016-003011.						
Henson J, Dunstan DW, Davies MJ, Yates T.						
Sedentary behaviour as a new behavioural						
target in the prevention and treatment of			v			
type 2 diabetes. <i>Diabetes Metab Res Rev</i> .			X			
2016;32(suppl 1):213-220.						
doi:10.1002/dmrr.2759.						
Hopper I, Billah B, Skiba M, Krum H.						
Prevention of diabetes and reduction in						
major cardiovascular events in studies of						
subjects with prediabetes: meta-analysis of				х		
randomised controlled clinical trials. Eur J						
Cardiovasc Prev Rehabil. 2011;18(6):813-						
823. doi:10.1177/1741826711421687.						
Hovanec N, Sawant A, Overend TJ, Petrella						
RJ, Vandervoort AA. Resistance training and						
older adults with type 2 diabetes mellitus:		х				
strength of the evidence. J Aging Res.						
2012;2012:284635.						
doi:10.1155/2012/284635.						
Howells L, Musaddaq B, McKay AJ, Majeed						
A. Children impact of histories interventions						
of systematic reviews PMI Open				Х		
2016:6(12):e013806						
doi:10.1136/hmiopen-2016-013806						
Htoo 7W Hsu WW Rosenkranz R						
Systematic review and meta-analysis: is						
lifestyle modification effective for glycemic		х				
control among adults with type II diabetes		~				
in Southeast Asia? Diabetes Res Clin Pract.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de	Other
2016:122:148-153					novo search	
doi:10.1016/j.diabres.2016.10.008.						
Huang JP, Yeh ML. The qigong effect on						
blood glucose control in people with type 2						
diabetes: a systematic review and meta-						Х
analysis. Journal of Nursing and Healthcare						
Research. 2013;9(3):199-209.						
Huang XL, Pan JH, Chen D, Chen J, Chen F,						
Hu TT. Efficacy of lifestyle interventions in						
patients with type 2 diabetes: a systematic		х				
review and meta-analysis. Eur J Intern Med.						
2016;27:37-47.						
doi:10.1016/j.ejim.2015.11.016.						
Hudon C, Fortin M, Soubhi H. Single risk						
factor interventions to promote physical						
activity among patients with chronic		Х				
diseases: systematic review. Can Fam						
Physician. 2008;54(8):1130-1137.						
Humphreys BR, McLeod L, Ruseski JE.						
Physical activity and health outcomes:			х			
evidence from Canada. Health Econ.						
2014;23(1):33-54. doi:10.1002/hec.2900.						
Hwang MH, Kim S. Type 2 diabetes:						
endothelial dysfunction and exercise. J		х				
Exerc Nutrition Biochem. 2014;18(3):239-						
247. doi:10.5717/jenb.2014.18.3.239.						-
Innes KE, Selfe TK. Yoga for adults with type						
2 diabetes: a systematic review of		N.				
controlled trials. J Diabetes Res.		X				
2016;2016:69/93/0.						
doi:10.1155/2016/69/93/0.						
Innes KE, Vincent HK. The influence of						
yoga-based programs on risk profiles in						
adults with type 2 diabetes mellitus: a		х				
Alternat Mad 2007:4(4):460 486						
Anernal Mea. 2007;4(4):409-480.						
doi:10.1093/ecam/ner103.						
aversise improves glycoomic control in						
exercise improves give aeriic control in		v				
systematic roviow Aust I Physiother		^				
2009.55(A).237_246						
Ishiguro H. Kodama S. Horikawa C. et al. In						
search of the ideal resistance training						
program to improve glycemic control and						
its indication for patients with type 2		x				
diabetes mellitus: a systematic review and						
meta-analysis, Sports Med. 2016:46(1):67-						
77. doi:10.1007/s40279-015-0379-7						
Ites KL Anderson EL Cahill ML Kearney IA						
Post EC. Gilchrist LS. Balance interventions						
for diabetic peripheral neuropathy: a		х				
systematic review. J Geriatr Phys Ther.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
2011;34(3):109-116. doi:10.1519/JPT.0b013e318212659a.						
Jadhav RA, Hazari A, Monterio A, Kumar S,						
Maiya AG. Effect of physical activity						
intervention in prediabetes: a systematic						
review with meta-analysis. J Phys Act	х					
Health. 2017;14(9):745-755.						
doi:10.1123/jpah.2016-0632.						
Jelleyman C, Yates T, O'Donovan G, et al.						
The effects of high-intensity interval						
training on glucose regulation and insulin						
resistance: a meta-analysis. Obes Rev.	х					
2015;16(11):942-961.						
doi:10.1111/obr.12317.						
Jenkins F, Jenkins C, Gregoski MJ,						
Magwood GS. Interventions promoting						
physical activity in African American						
women: an integrative review. J Cardiovasc	х					
Nurs. 2017;32(1):22-29.						
doi:10.1097/JCN.000000000000298.						
Jiang Y, Ben Q, Shen H, Lu W, Zhang Y, Zhu						
J. Diabetes mellitus and incidence and						
mortality of colorectal cancer: a systematic		N.				
review and meta-analysis of cohort studies.		х				
Eur J Epidemiol. 2011;26(11):863-876.						
doi:10.1007/s10654-011-9617-y.						
Johnson M, Jones R, Freeman C, et al. Can						
diabetes prevention programmes be						
translated effectively into real-world						
settings and still deliver improved				х		
outcomes? A synthesis of evidence. Diabet						
Med. 2013;30(1):3-15.						
doi:10.1111/dme.12018.						
Johnson ST, Newton AS, Chopra M, et al. In						
search of quality evidence for lifestyle						
management and glycemic control in						
children and adolescents with type 2		Х				
diabetes: a systematic review. BMC						
Pediatr. 2010;10:97(2). doi:10.1186/1471-						
2431-10-97.						
Jones EJ, Fraley HE, Mazzawi J.						
Appreciating recent motherhood and						
culture: a systematic review of multimodal						
postpartum lifestyle interventions to				x		
reduce diabetes risk in women with prior						
gestational diabetes. Matern Child Health J.						
2017;21(1):45-57. doi:10.1007/s10995-						
016-2092-z.						
Joseph LM, Berry D, Jessup A. Management						
of type 2 diabetes in Asian Indians: a						
review of the literature. Clin Nurs Res.		Х				
2015;24(2):188-210.						
doi:10.1177/1054773814531600.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Kavookjian J, Elswick BM, Whetsel T. Interventions for being active among individuals with diabetes: a systematic review of the literature. <i>Diabetes Educ</i> . 2007;33(6):962-988; discussion 989-990. doi:10.1177/0145721707308411.		х				
Kelley GA, Kelley KS. Effects of aerobic exercise on lipids and lipoproteins in adults with type 2 diabetes: a meta-analysis of randomized-controlled trials. <i>Public Health</i> . 2007;121(9):643-655. doi:10.1016/j.puhe.2007.02.014.		х				
Kitahara CM, Platz EA, Beane Freeman LE, et al. Physical activity, diabetes, and thyroid cancer risk: a pooled analysis of five prospective studies. <i>Cancer Causes Control.</i> 2012;23(3):463-471. doi:10.1007/s10552- 012-9896-y.		х				
Kivimaki M, Virtanen M, Kawachi I, et al. Long working hours, socioeconomic status, and the risk of incident type 2 diabetes: a meta-analysis of published and unpublished data from 222 120 individuals. Lancet Diabetes Endocrinol. 2015;3(1):27- 34. doi:10.1016/S2213-8587(14)70178-0.				x		
Association between physical activity and risk of all-cause mortality and cardiovascular disease in patients with diabetes: a meta-analysis. <i>Diabetes Care</i> . 2013;36(2):471-479. doi:10.2337/dc12- 0783.		х				
Koivula RW, Tornberg AB, Franks PW. Exercise and diabetes-related cardiovascular disease: systematic review of published evidence from observational studies and clinical trials. <i>Curr Diab Rep.</i> 2013;13(3):372-380. doi:10.1007/s11892- 013-0373-0.		x				
Korczak D, Dietl M, Steinhauser G. Effectiveness of programmes as part of primary prevention demonstrated on the example of cardiovascular diseases and the metabolic syndrome. <i>GMS Health Technol</i> <i>Assess</i> . 2011;7:Doc02. doi:10.3205/hta000093.	x					
Krass I, Hebing R, Mitchell B, et al. Diabetes management in an Australian primary care population. <i>J Clin Pharm Ther</i> . 2011;36(6):664-672. doi:10.1111/j.1365- 2710.2010.01221.x.			х			
Kriska AM, Hawkins M, Richardson CR. Physical activity and the prevention of type II diabetes. <i>Curr Sports Med Rep</i> .			х			

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
2008;7(4):182-184.						
doi:10.1249/JSR.0b013e31817ec0b4.						
Kujala UM. Evidence on the effects of						
exercise therapy in the treatment of						
chronic disease. Br J Sports Med.		Х				
2009;43(8):550-555.						
doi:10.1136/bjsm.2009.059808.						
Kumar V, Jagannathan A, Philip M, Thulasi						
A, Angadi P, Raghuram N. Role of yoga for						
patients with type II diabetes mellitus: a		x				
systematic review and meta-analysis.		A				
Complement Ther Med. 2016;25:104-112.						
doi:10.1016/j.ctim.2016.02.001.						
Laaksonen MA, Knekt P, Rissanen H, et al.						
The relative importance of modifiable						
potential risk factors of type 2 diabetes: a				×		
meta-analysis of two cohorts. Eur J				~		
Epidemiol. 2010;25(2):115-124.						
doi:10.1007/s10654-009-9405-0.						
Lam DW, LeRoith D. In: De Groot LJ,						
Chrousos G, Dungan K, et al., eds.			х			
Metabolic Syndrome. Endotext. South						
Dartmouth, MA: MDtext.com; 2000.						
Lee J, Kim D, Kim C. Resistance training for						
glycemic control, muscular strength, and						
lean body mass in old type 2 diabetic		х				
patients: a meta-analysis. <i>Diabetes Ther</i> .						
2017;8(3):459-473. doi:10.1007/s13300-						
			-			
Lee IVIS, Chen KW, Choi TY, Ernst E. Qigong						
for type 2 diabetes care: a systematic		v				
review. Complement Ther Med.		X				
2009;17(4):230-242.						
Loo MS Choi TV Lim III Fract F. Toi shi for						
Lee IVIS, Choi I Y, Lini HJ, Ernst E. Tal Chi Ior						
systematic roviow. Chin Unterr Med		v				
2011:17(10):789-793 doi:10.1007/c11655-		~				
011-0812-1						
Lee MS Frost F Systematic reviews of t'ai						
chi: an overview. Br J Sports Med.						
2012:46(10):713-718.	х					
doi:10.1136/bism.2010.080622.						
Lee MS. Jun JH. Lim HJ. Lim HS. A						
systematic review and meta-analysis of tai						
chi for treating type 2 diabetes. <i>Maturitas</i> .		х				
2015;80(1):14-23.						
doi:10.1016/j.maturitas.2014.09.008.						
Lee MS, Pittler MH, Kim MS, Ernst E. Tai chi						
for type 2 diabetes: a systematic review.		N.				
Diabet Med. 2008;25(2):240-241.		Х				
doi:10.1111/j.1464-5491.2007.02325.x.						

Citation	Outcome	Population	Study	Exposure	Not ideal fit for replacement of de	Other
		-	Design		novo search	
Lin JS, O'Connor EA, Evans CV, Senger CA,						
Rowland MG, Groom HC. Behavioral						
counseling to promote a healthy lifestyle						
for cardiovascular disease prevention in						
persons with cardiovascular risk factors: an						
updated systematic evidence review for				×		
the U.S. Preventive Services Task Force.				A		
U.S. Preventive Services Task Force						
Evidence Syntheses, formerly Systematic						
Evidence Reviews. Rockville, MD: Agency						
for Healthcare Research and Quality; 2014.						
13-05179-EF-1.						
Lin X, Zhang X, Guo J, et al. Effects of						
exercise training on cardiorespiratory						
fitness and biomarkers of cardiometabolic						
health: a systematic review and meta-	Х					
analysis of randomized controlled trials. J						
Am Heart Assoc. 2015;4(7):pii: e002014.						
doi:10.1161/JAHA.115.002014.						
Lirussi F. The global challenge of type 2						
diabetes and the strategies for response in						
ethnic minority groups. Diabetes Metab	Х					
Res Rev. 2010;26(6):421-432.						
doi:10.1002/dmrr.1105.						
Liubaoerjijin Y, Terada T, Fletcher K, Boule						
NG. Effect of aerobic exercise intensity on						
glycemic control in type 2 diabetes: a meta-		V				
analysis of head-to-head randomized trials.		Х				
Acta Diabetol. 2016;53(5):769-781.						
doi:10.1007/s00592-016-0870-0.						
Longo-Mbenza B, Nkongo Mvindu H,						
Kasiam On'kin JB, et al. The deleterious						
effects of physical inactivity on elements of						
insulin resistance and metabolic syndrome			Х			
in Central Africans at high cardiovascular						
risk. Diabetes Metab Syndr. 2011;5(1):1-6.						
doi:10.1016/j.dsx.2010.05.001.						
MacLeod SF, Terada T, Chahal BS, Boule						
NG. Exercise lowers postprandial glucose						
but not fasting glucose in type 2 diabetes: a						
meta-analysis of studies using continuous		Х				
glucose monitoring. Diabetes Metab Res						
Rev. 2013;29(8):593-603.						
doi:10.1002/dmrr.2461.						
Madden SG, Loeb SJ, Smith CA. An						
integrative literature review of lifestyle						
interventions for the prevention of type II						
diabetes mellitus. J Clin Nursing.			Х			
2008;17(17):2243-2256.						
doi:10.1111/j.1365-2702.2008.02335.x.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Maglione MA, Gibbons MM, Livhits M, et al. Bariatric surgery and nonsurgical therapy in adults with metabolic conditions and a body mass index of 30.0 to 34.9 kg/m2. AHRQ Comparative Effectiveness Reviews. Rockville, MD: Agency for Healthcare Research and Quality; 2013. 12(13)-EHC139-EF.				х		
Mann S, Beedie C, Balducci S, et al. Changes in insulin sensitivity in response to different modalities of exercise: a review of the evidence. <i>Diabetes Metab Res Rev</i> . 2014;30(4):257-268. doi:10.1002/dmrr.2488.	x					
Manne-Goehler J, Atun R, Stokes A, et al. Diabetes diagnosis and care in sub-Saharan Africa: pooled analysis of individual data from 12 countries. <i>Lancet Diabetes</i> <i>Endocrinol.</i> 2016;4(11):903-912. doi:10.1016/S2213-8587(16)30181-4.	х			х		
Marwick TH, Hordern MD, Miller T, et al. Exercise training for type 2 diabetes mellitus: impact on cardiovascular risk: a scientific statement from the American Heart Association. <i>Circulation</i> . 2009;119(25):3244-3262. doi:10.1161/CIRCULATIONAHA.109.192521		х				
Mathis RA, Taylor DJ, Fletcher JP, Rainey J, Cade WT, Bandy WD. Time course of exercise training-induced muscle strength changes in type 2 diabetes. <i>Cardiopulmonary Physical Therapy Journal</i> . 2016;27(4):133-139. doi:10.1097/CPT.00000000000032.		х	х			
Mayor S. Moderate exercise cuts type 2 diabetes risk but more is better, review finds. <i>Bmj.</i> Oct 2016:i5605 doi:10.1136/bmj.i5605.			х			
McGinley SK, Armstrong MJ, Boule NG, Sigal RJ. Effects of exercise training using resistance bands on glycaemic control and strength in type 2 diabetes mellitus: a meta-analysis of randomised controlled trials. <i>Acta Diabetol</i> . 2015;52(2):221-230. doi:10.1007/s00592-014-0594-y.		х				
McMillan KA, Kirk A, Hewitt A, MacRury S. A systematic and integrated review of mobile-based technology to promote active lifestyles in people with type 2 diabetes. <i>J Diabetes Sci Technol</i> . 2017;11(2):299-307. doi:10.1177/1932296816656018.		x				
IVIEAGER N, KING K, WRIGHT K, et al. Multiple risk behavior interventions: meta-analyses	х					

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
of RCTs. Am J Prev Med. 2017;53(1):e19-						
e30. doi:10.1016/j.amepre.2017.01.032.						
Melo LC, Dativo-Medeiros J, Menezes-Silva						
CE, Barbosa CT, de Sousa-Rodrigues CF,						
Rabelo LA. Physical exercise on						
inflammatory markers in type 2 diabetes		х				
patients: a systematic review of						
randomized controlled trials. Oxid Med Cell						
Longev. 2017:8523728.						
doi:10.1155/2017/8523728.						
Mendes R, Sousa N, Almeida A, et al.						
Exercise prescription for patients with type						
2 diabetes-a synthesis of international		х				
recommendations: narrative review. Br J						
Sports Med. 2016;50(22):1379-1381.						
doi:10.1136/bjsports-2015-094895.						
Merlotti C, Morabito A, Ceriani V, Pontiroli						
AE. Prevention of type 2 diabetes in obese						
at-risk subjects: a systematic review and				х		
meta-analysis. Acta Diabetol.						
2014;51(5):853-863. doi:10.1007/s00592-						
014-0624-9. Milton K. Magniyan D. Dayman A. Daview						
of the opidemiological evidence for						
of the epidemiological evidence for						
physical activity and health from low- and middle income countries. Cleb Public					Х	
dei:10.1090/17441602.2014.804548						
Misra A. Khurana L. Ohosity and the						
metabolic syndrome in developing						
countries I Clin Endocrinol Metab			v			
2008:93(11)(suppl 1):59-530			~			
doi:10.1210/ic.2008-1595						
Misra A Nigam P Hills AP et al Consensus						
nhysical activity guidelines for Asian						
Indians Dighetes Technol Ther			x			
2012.14(1).83-98			~			
doi:10.1089/dia.2011.0111.						
Montero D. Walther G. Benamo E. Perez-						
Martin A, Vinet A. Effects of exercise						
training on arterial function in type 2						
diabetes mellitus: a systematic review and		х				
meta-analysis. Sports Med.						
2013;43(11):1191-1199.						
doi:10.1007/s40279-013-0085-2.						
Musaiger AO, Al-Hazzaa HM. Prevalence						
and risk factors associated with nutrition-						
related noncommunicable diseases in the	v					
Eastern Mediterranean region. Int J Gen	^					
<i>Med</i> . Feb 2012:199-217.						
doi:10.2147/IJGM.S29663.						

novo search	
National Clinical Guideline Centre (UK).	
Hypertension: the clinical management of	
primary hypertension in adults: update of X	
clinical guidelines 18 and 34. London: Royal	
College of Physicians (UK); 2011.	
Nerat T, Locatelli I, Kos M. Type 2 diabetes:	
cost-effectiveness of medication adherence	
and lifestyle interventions. Patient Prefer X	
Adherence. Oct 2016:2039-2049.	
doi:10.2147/PPA.S114602.	
Nielsen PJ, Hafdahl AR, Conn VS, Lemaster	
JW, Brown SA. Meta-analysis of the effect	
of exercise interventions on fitness	
outcomes among adults with type 1 and X	
type 2 diabetes. <i>Diabetes Res Clin Pract</i> .	
2006;74(2):111-120.	
doi:10.1016/j.diabres.2006.03.033.	
Nunan D, Mahtani KR, Roberts N,	
Heneghan C. Physical activity for the	
prevention and treatment of major chronic x	
disease: an overview of systematic reviews.	
Syst Rev. July 2013:56. doi:10.1186/2046-	
4053-2-56.	
O'Donovan G, Blazevich AJ, Boreham C, et	
al. The ABC of physical activity for health: a	
consensus statement from the British X	
Association of Sport and Exercise Sciences.	
J Sports Sci. 2010;28(6):573-591.	
doi:10.1080/02640411003671212.	
Oliveira C, Simoes M, Carvalho J, Ribeiro J.	
Combined exercise for people with type 2	
diabetes mellitus: a systematic review. X	
Diabetes Res Clin Pract. 2012;98(2):187-	
198. doi:10.1016/j.diabres.2012.08.004.	
Orlando G, Balducci S, Bazzucchi I, Pugilese	
G, Sacchetti M. Neuromuscular dysfunction	
In type 2 diabetes: underlying mechanisms X	
and effect of resistance training. Diabetes	
Metab Res Rev. 2016;32(1):40-50.	
Urozco LJ, Buchieither AM, Gimenez-Perez	
G, Roque I Figuis IVI, Richter B, Mauricio D.	
Exercise or exercise and diet for preventing X	
cype z ulabeles mellitus. Colinaire	
doi:10.1002/14651959 CD002054 pub2	
uui.10.1002/14051050.00005054.µu05. Dai LW, Chang DV, Chan W, Hum VI, Lai CH	
The effectiveness of physical leisure time	
Interenectiveness of physical leisure time	
activities on give emic control in adult	
patients with diabetes type 2: a systematic X	
2012:10/42)/suppl):1.20	
doi:10.11124/ibisrir-2012-251.	

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Pai LW, Li TC, Hwu YJ, Chang SC, Chen LL,						
Chang PY. The effectiveness of regular						
leisure-time physical activities on long-term						
glycemic control in people with type 2		v				
diabetes: a systematic review and meta-		^				
analysis. Diabetes Res Clin Pract.						
2016;113:77-85.						
doi:10.1016/j.diabres.2016.01.011.						
Pandey A, Tripathi P, Pandey R, Srivatava R,						
Goswami S. Alternative therapies useful in						
the management of diabetes: a systematic		x				
review. J Pharm Bioallied Sci.		~				
2011;3(4):504-512. doi:10.4103/0975-						
7406.90103.						
Paulweber B, Valensi P, Lindstrom J, et al. A						
European evidence-based guideline for the						
prevention of type 2 diabetes. Horm Metab			Х			
<i>Res</i> . 2010;42(suppl 1):S3-S36.						
doi:10.1055/s-0029-1240928.						
Pedersen BK, Saltin B. Exercise as						
medicine—evidence for prescribing						
exercise as therapy in 26 different chronic		х				
diseases. Scand J Med Sci Sports.						
2015;(25)(suppl 3):1-72.						
doi:10.1111/sms.12581.						
Phillips SM, Winett RA. Uncomplicated						
resistance training and nearth-related						
outcomes: evidence for a public health			Х			
mandate. Curr sports Med Rep.						
2010;9(4):208-213. doi:10.1240/JSP.0b012o2181o7do72						
Distrikeff PC Costigan SA Karunamuni ND						
Lubans DP. Community based physical						
activity interventions for treatment of type						
2 diabetes: a systematic review with meta-		Х				
analysis Front Endocrinol (Lausanne)						
2013:4:3 doi:10.3389/fendo.2013.00003						
Plotnikoff BC Karunamuni ND Johnson JA						
Kotovych M. Svenson I W. Health-related						
behaviours in adults with diabetes:						
associations with health care utilization		Х				
and costs. Can J Public Health.						
2008;99(3):227-231.						
Prasad VG, Abraham P. Management of						
chronic constipation in patients with						
diabetes mellitus. Indian J Gastroenterol.		х				
2017;36(1):11-22. doi:10.1007/s12664-						
016-0724-2.						
Proper KI, Singh AS, van Mechelen W, et al.						
Sedentary behaviors and health outcomes						
among adults: a systematic review of				v		
prospective studies. Am J Prev Med.				^		
2011;40(2):174-182.						
doi:10.1016/j.amepre.2010.10.015.						

Image: Control of the state of the	Citation	Outcome	Population	Study	Exposure	Not ideal fit for replacement of de	Other
Psałtopulou T, Ilas I, Alevizaki M. The role of det and lifest ple in primary, secondary, and tertiary diabetes prevention: a review of meta-analyses. <i>Rev Diabet Stud.</i> 2010;7(1):26-35. doi:10.1090/RDS.2010.7.26. Ulu S, Cai X, Choma N, Yang B, Sun Z. Step Counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. <i>RMCMet.</i> Feb 2014:36. doi:10.1186/1741- 7015-12-36. Qiu S, Cai X, Schuman U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis of ranan L, Rook-Pec RC, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic X review. <i>Am J Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.amepre 2.015.90.30. Rattay KT, Rosenthal M, Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307.13; qui 217. Rerraho AM, Mellor D, Boulton K, Swihubru B. Effectiveness Of prevention programmes for obesity and chronic disasses amog immigrants to developed X countris—a systematic review. <i>Public Herith Nutr.</i> 2010;13(3):438-407.				Design		novo search	
of diet and lifestyle in primary, secondary, and tertitary diabetes prevention: a review of meta-analyses. <i>Rev Diabet Stud.</i> 2010;7(1):26-35: doi:10.1900/RDS.2010.7.26. Clu S, Cai X, Chen X, Yang B, Sun Z. Step counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. <i>X MC Med.</i> Feb 2014:36. doi:10.1186/1741- 7015-12-36. Clu S, Cai X, Schumann U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. <i>PLoS One.</i> 2014;9(10):e109767. doi:10.1371/journal.pone.00190767. Ramsey Buchana L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic X review. <i>Am J Rev Med.</i> 2016;9(0):4002- diabetes spidencia: arole for primary care in identifying pre-diabetes and referal to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; guit 317. Remarked M, Mellor D, Boulton K, Swihourn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed X controle physical activity for diabetes: a systematic review. <i>Public</i> <i>Health Nut.</i> 2010;13(3):438-450. doi:10.1371/journal.pone.0070101. Rottay KJ, Rosenthal M, Stenyer T, Namise K, Effectiveness of prevention programmes to improve cardio-metabolic rosideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of nadomized X controlled rials. <i>PLoS One</i> . 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rottay K. Frostenatic review and meta-analysis of primary care in adverter. <i>SubJi</i> and thronic diseases among immigrants to keyeologed X controlled rials. <i>PLoS One</i> . 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rottay K. Ffects of long-term exercise interventions of glycamic control in type X and more analysis of primary care interventions of glycamic control in type X and type 2 diabetes: a systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Pr</i>	Psaltopoulou T, Ilias I, Alevizaki M. The role						
and tertiary diabetes prevention: a review of meta-analysis. <i>PLoS 2010;</i> 72:6	of diet and lifestyle in primary, secondary,						
of meta-analyses. Rev Diabet Stud. 2010;7(1):26-55. doi:10.1900/RDS 2010.7.26. Qiu S, Cai X, Chen X, Yang B, Sun Z. Step counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. BMC Med. Feb 2014:36. doi:10.1186/1741- 7015-12-36. Qiu S, Cai X, Schumann U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. <i>PLoS One</i> . 2014;9(10):e109767. doi:10.1371/journal.pone.00109767. Ramsey Buchana L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>Am J Prev Med</i> . 2016;50(3):e02- 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes an referal to an evidence-based program. <i>Dl Med</i> J. 2014;86(10):307-13; qui 2317. Remashe M, Melor D, Boutton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed Countris—a systematic review. <i>Public</i> Health Nutr. 2011;31(3):43:450. doi:10.1017/S13689800099111X. Rva JJ. Weng JJ, Brunark BJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of nandmized Carrington MJ. A systematic review and meta-analysis of firmary care in dientifying pre-diabetes: a systematic review of nandmized Carrington MJ. A systematic review and meta-analysis of theore as the systematic review and meta-analysis of theore of theor	and tertiary diabetes prevention: a review					v	
2010;7(1):26-35. doi:10.1900/RDS.2010.7.26. Qiu S, Cai X, Chen X, Yang B, Sun Z. Step counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. <i>BMC Med.</i> Feb 2014:36. doi:10.1186/1741- 7015-12-36. Qiu S, Cai X, Schuman U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular glycemic control and other cardiovascular glycemic control and other cardiovascular glycemic control and other cardiovascular glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. <i>PLoS One</i> . 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Hamsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>Am J Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.ampre.2015.00.30. Ratay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying re-diabetes and referral to X an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; qui 2317. Renzaho AM, Melior D, Bouton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries – a systematic review. <i>Public</i> <i>Health Nutr.</i> 2010;13(3):438-450. doi:10.1017/513689800099111X, Riva JJ. Wong JJ, Brunarski D, et al. Consideration of chronic pain in trials to promote physical activity (for diabetes: a systematic review of randomized Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> Lunz 2016;22:44. doi:10.1016/j.ypmed.2016.02.011. Robing M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycemic corrolin tippe X 1 and type 2 diabetes: a systematic review.	of meta-analyses. Rev Diabet Stud.					^	
doi:10.1900/RDS.2010.7.26.	2010;7(1):26-35.						
Ciu S, Cai X, Chen X, Yang B, Sun Z. Step counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. <i>BMC Med.</i> Feb 2014:36. doi:10.1186/1741- 7015-12-36. Ciu S, Cai X, Schuman U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. <i>PLoS One</i> . 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Ramsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>Am J Prev Med.</i> 2016;50(3):402– 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. <i>Public</i> <i>Health Nucl Sci</i> 100:1017(3):438-450. doi:10.1017/5136898000990111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review and meters: a systematic review and meta-analysis of primary revention programmes for domesity of condences: a systematic review of randomized X Carrington JJ, A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-utaba. <i>Prev Med.</i> June 2016;22:34. doi:10.1016/, iypmed.2016.02.011. Robing M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic corrol in type X 1 and type 2 diabetes: a systematic review. <i>Public</i> <i>Pro Chis Gedorational Dehatere</i> <i>Stematic review of randomized</i> <i>Stematic review of randomized</i>	doi:10.1900/RDS.2010.7.26.						
counter use in type 2 diabetes: a meta- analysis of randomized controlled trials. <i>BMC Med.</i> Feb 2014:36. doi:10.1186/1741- 7015-12-36. Qiu S, Cai X, Schumann U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. <i>PLoS One.</i> 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Ramsey Buchanan L, Rooks-Peck CB, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>Am J Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.00.30. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; qui 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness Of prevention programmes for obesity and chronic diseases among immigrants to developed countries— a systematic review. <i>Public</i> <i>Heath Nutr.</i> 2010;33():438-450. doi:10.1017/j.168989000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled tris. <i>PLoS One</i> . 2013;8(8):e71021. doi:10.1016/j.ymed.2016.02.011. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary recertion programmes to improve cardio-metabolic risk in non-unkom communities. <i>Prev Med.</i> June 2016;22:34. doi:10.1016/j.ymed.2016.02.011. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-unkom communities. <i>Prev Med.</i> June 2016;22:34. doi:10.1016/j.ymed.2016.02.011. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-unkon communities. <i>Prev Med.</i> June 2016;22:34. doi:10.1016/j.ymed.2016.02	Qiu S, Cai X, Chen X, Yang B, Sun Z. Step						
analysis of randomized controlled trials. BMC Med. Feb 2014:36. doi:10.1186/1741- 7015-12-36. Qiu S, Cai X, Schuman U, Velders M, Sun Z, Steinacker M. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- nanlysis. <i>PLoS One.</i> 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Harmsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>An J Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.90.30. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. <i>Dublic</i> Health VKT, Rosenatic Review of the Med J. diseases among immigrants to developed countries—a systematic review. <i>Dublic</i> Health WLT. 2010;13(3):438-450. doi:10.1017/5136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promore physical activity for diabetes: a systematic review of randomized Carrington M. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-unban communite. <i>Prev Med.</i> June 2016;22-34. doi:10.1016/j.ypmed.2016.02.011. Robing M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type 1 and type 2 diabetes: a systematic review.	counter use in type 2 diabetes: a meta-						
BMC Med. Feb 2014:36. doi:10.1186/1741- 7015-12-36.	analysis of randomized controlled trials.		Х				
7015-12-36.	<i>BMC Med</i> . Feb 2014:36. doi:10.1186/1741-						
Qiu S, Cai X, Schuman U, Velders M, Sun Z, Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. FLOS One. 2014;9[10]e:109767. doi:10.1371/journal.pone.0109767. Ramsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screent ime: a community guide systematic review. An J Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes egitemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. Del Med J. 2014;86(10):307-13; qui 217. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic disease samog immigrants to developed countries—a systematic review. Public Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review and meta-analysis of primary prevention promote physical activity for diabe	7015-12-36.						
Steinacker JM. Impact of walking on glycemic control and other cardiovascular risk factors in type 2 diabetes: a meta- analysis. PLoS One. 2014;9(10):e109767. X Ramsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. Am J Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.09.030. X Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. Del Med J. 2014;86(10):307-13; guiz 317. X Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. Public Health Nutr. 2010;13(3):438-450. X Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of fronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled trials. PLoS One. 2013;8(8):e71021. X Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of fronic pain in trials to programes to improve cardio-metabolic crarington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016;22:34. X Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic cortrol in type 1 and type 2 diabeter: a systematic review. X	Qiu S, Cai X, Schumann U, Velders M, Sun Z,						
glycemic control and other cardiovascular risk factors in type 2 diabetes : a meta- analysis. <i>PLoS One.</i> 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Ramsey Buchanan L, Rooks-Peck CB, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>An J Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.mepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; quiz 317. Renzabo AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases amog immigrants to developed countries—a systematic review. <i>Public Health Nutr.</i> 2010;13(3):438-450. doi:10.1017/S13689800099111X. Riva J, Wong JJ, Brunarski D, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled trials. <i>PLoS One.</i> 2013;8(8):e71021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to more cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> June 2016;22:34. doi:10.1017/S1406:2016.2011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic cortrol in type 1 and type 2 diabetes: a systematic review. <i>Public</i> <i>Controlled trials. PloS One.</i> 2015;22:34. 2016;22:34	Steinacker JM. Impact of walking on						
risk factors in type 2 diabetes: a meta- analysis. <i>PLOS One</i> . 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. doi:10.1371/journal.pone.0109767. doi:10.1371/journal.pone.0109767. dx exile.exil a constraint of the second second and the secon	glycemic control and other cardiovascular		x				
analysis. <i>PLoS One</i> . 2014;9(10):e109767. doi:10.1371/journal.pone.0109767. Ramsey Buchanan I., Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic review. <i>Am Prev Med.</i> 2016;50(3):402- 415. doi:10.1016/j.mepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. <i>Public</i> <i>Health Nutr.</i> 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled trials. <i>PLO One</i> . 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Bal J, Ski C, Stewart S, Carrington MJ, A systematic review and meta-analysis of pimary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> June 2016;22-34. doi:10.1016/j.ypmed 2016.02.011. Robling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review.	risk factors in type 2 diabetes: a meta-		A				
doi:10.1371/journal.pone.0109767.	analysis. PLoS One. 2014;9(10):e109767.						
Ramsey Buchanan L, Rooks-Peck CR, Finnie RK, et al. Reducing recreational sedentary screen time: a community guide systematic X review. Am J Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Melior D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countris—a systematic review. Public Health Nutr. 2010;13(3):438-450. doi:10.1017/S13689800099111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled trials. PLoS One. 2013;8(8):e71021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016;22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in trype X index M Set	doi:10.1371/journal.pone.0109767.						
RK, et al. Reducing recreational sedentary X screen time: a community guide systematic X review. Am / Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the X diabetes epidemic: a role for primary care X in identifying pre-diabetes and referral to X an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, X Swinburn B. Effectiveness of prevention y programmes for obesity and chronic diseases among immigrants to developed countries — a systematic review. Public X Health Nutr. 2010;13(3):438-450. doi:10.1017/5136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. X Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. PLoS One. X coli:10.1371/journal.pone.0071021. X Rodrigues AL, Ball J, Ski C, Stewart S, X Carrington MJ. A systematic review and X meta-analysis of primary prevention X programmes to improve cardio-metabolic X	Ramsey Buchanan L, Rooks-Peck CR, Finnie						
screen time: a community guide systematic X review. Am J Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.00.30. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. Public Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. <i>PLoS One</i> . 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med</i> . Lune 2016;22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X inder the context of the systematic review. Exp (2) the context of the systematic revie	RK, et al. Reducing recreational sedentary						
review. Am J Prev Med. 2016;50(3):402- 415. doi:10.1016/j.amepre.2015.09.030. Rattay KT, Rosenthal M. Reversing the diabetes epidemic: a role for primary care in identifying pre-diabetes and referral to an evidence-based program. <i>Del Med J.</i> 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed Countries — a systematic review. <i>Public</i> <i>Health Nutr.</i> 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized Countries — Los One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rodrigues K. Effects of long-term exercise interventions on glycaenic control in type X 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type X 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type X 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type 1 and type 2 diabetes: a systematic review. Exercise interventions on glycaenic control in type 1 and type 2 diabetes: a systematic review.	screen time: a community guide systematic	Х					
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Rattay KT, Rosenthal M. Reversing the X diabetes epidemic: a role for primary care X in identifying pre-diabetes and referral to X an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, X Swinburn B. Effectiveness of prevention X programmes for obesity and chronic X diseases among immigrants to developed X countries—a systematic review. Public X Health Nutr. 2010;13(3):438-450. X doi:10.1017/S136898000999111X. X Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a x systematic review of randomized X 2013;8(8):e71021. X doi:10.1371/journal.pone.0071021. X Rodrigues AL, Ball J, Ski C, Stewart S, X Carrington MJ. A systematic review and X meta-analysis of primary prevention X programmes to improve cardio-metabolic X risk in non-urban communities. Prev Med. X June 2016:22-34. A doi:10.1016/j.ypmed.2016.02.011. <td>415. doi:10.1016/j.amepre.2015.09.030.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	415. doi:10.1016/j.amepre.2015.09.030.						
diabetes epidemic: a role for primary care X in identifying pre-diabetes and referral to X an evidence-based program. Del Med J. X 2014;86(10):307-13; quiz 317. X Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic X diseases among immigrants to developed X countries—a systematic review. Public X Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a ysystematic review of randomized xystematic review of randomized X controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and X meta-analysis of primary prevention X programmes to improve cardio-metabolic X risk in non-urban communities. Prev Med. X June 2016:22-34. June 2016:02.011. Rohling M, Herder C, Roden M, Stemper T, X Mussig K. Effects of long-term exercise X	Rattay KT, Rosenthal M. Reversing the						
in identifying pre-diabetes and referral to an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. Public Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized Addi:10.1317/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Robling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type 1 and type 2 diabetes: a systematic review. Exp Clin Endersing I.	diabetes epidemic: a role for primary care						
an evidence-based program. Del Med J. 2014;86(10):307-13; quiz 317. Renzaho AM, Mellor D, Boulton K, Swinburn B. Effectiveness of prevention programmes for obesity and chronic diseases among immigrants to developed countries—a systematic review. <i>Public</i> <i>Health Nutr.</i> 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. <i>PLoS One.</i> 2013;8(8):e71021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type 1 and type 2 diabetes: a systematic review. <i>Exer Clin Endocrined</i> Direktore	in identifying pre-diabetes and referral to			Х			
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programmes for obesity and chronic X diseases among immigrants to developed X countries—a systematic review. Public X Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. promote physical activity for diabetes: a consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. A Rodrigues AL, Ball J, Ski C, Stewart S, X Carrington MJ. A systematic review and X meta-analysis of primary prevention X programmes to improve cardio-metabolic X risk in non-urban communities. Prev Med. X June 2016:22-34. 4 doi:10.1016/j.ypmed.2016.02.011. X Rohling M, Herder C, Roden M, Stemper T, X Mussig K. Effects of long-term exercise X interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. X	Swinburn B. Effectiveness of prevention						
diseases among immigrants to developed X countries — a systematic review. Public X Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X growth physical activity for diabetes: a systematic review of randomized X 2013;8(8):e71021. X doi:10.1371/journal.pone.0071021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, X Mussig K. Effects of long-term exercise interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. X	programmes for obesity and chronic						
countries—a systematic review. Public Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X Y 1 and type 2 diabetes: a systematic review.	diseases among immigrants to developed				Х		
Health Nutr. 2010;13(3):438-450. doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X Yand type 2 diabetes: a systematic review.	countries—a systematic review. Public						
doi:10.1017/S136898000999111X. Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized Controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X Y	Health Nutr. 2010;13(3):438-450.						
Riva JJ, Wong JJ, Brunarski DJ, et al. Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomized X controlled trials. PLoS One. 2013;8(8):e71021. doi:10.1371/journal.pone.0071021. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X Y 1 and type 2 diabetes: a systematic review.	doi:10.1017/S136898000999111X.						
Consideration of chronic pain in trials to promote physical activity for diabetes: a systematic review of randomizedXsystematic review of randomizedXcontrolled trials. PLoS One.2013;8(8):e71021.doi:10.1371/journal.pone.0071021.Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34.Xdoi:10.1016/j.ypmed.2016.02.011.Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in typeX1 and type 2 diabetes: a systematic review.Even Clin Endecrinal Diabeter.	Riva JJ, Wong JJ, Brunarski DJ, et al.						
promote physical activity for diabetes: a systematic review of randomizedXcontrolled trials. PLoS One.X2013;8(8):e71021	Consideration of chronic pain in trials to						
systematic review of randomizedXcontrolled trials. PLoS One.2013;8(8):e71021.2013;8(8):e71021.4doi:10.1371/journal.pone.0071021.4Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011.XRohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in typeX1 and type 2 diabetes: a systematic review.X	promote physical activity for diabetes: a		N.				
controlled trials. PLoS One.2013;8(8):e71021.doi:10.1371/journal.pone.0071021.Rodrigues AL, Ball J, Ski C, Stewart S,Carrington MJ. A systematic review andmeta-analysis of primary preventionprogrammes to improve cardio-metabolicrisk in non-urban communities. Prev Med.June 2016:22-34.doi:10.1016/j.ypmed.2016.02.011.Rohling M, Herder C, Roden M, Stemper T,Mussig K. Effects of long-term exerciseinterventions on glycaemic control in typeX1 and type 2 diabetes: a systematic review.Even Cline Endecrined Diabatare	systematic review of randomized		х				
2013;8(8):e71021.	controlled trials. <i>PLoS One</i> .						
doi:10.1371/journal.pone.0071021. Image: Constraint of the systematic review and the systematic review. Rodrigues AL, Ball J, Ski C, Stewart S, Carrington MJ. A systematic review and the meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. <i>Prev Med.</i> June 2016:22-34. Image: Systematic review and the systematic review. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type to the systematic review. Image: Systematic review. Image: Systematic review. Free Cline Endecrined Diabates: Image: Systematic review.	2013;8(8):e/1021.						
Rodrigues AL, Bail J, Ski C, Stewart S, Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X	doi:10.1371/journal.pone.0071021.						
Carrington MJ. A systematic review and meta-analysis of primary prevention programmes to improve cardio-metabolic risk in non-urban communities. Prev Med. June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. X Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type 1 and type 2 diabetes: a systematic review. X	Koarigues AL, Ball J, Ski C, Stewart S,						
meta-analysis of primary prevention X programmes to improve cardio-metabolic X risk in non-urban communities. Prev Med. X June 2016:22-34. 4 doi:10.1016/j.ypmed.2016.02.011. X Rohling M, Herder C, Roden M, Stemper T, X Mussig K. Effects of long-term exercise X interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. X	Carrington IVIJ. A systematic review and						
programmes to improve cardio-metabolic X risk in non-urban communities. Prev Med. X June 2016:22-34. 4 doi:10.1016/j.ypmed.2016.02.011. X Rohling M, Herder C, Roden M, Stemper T, X Mussig K. Effects of long-term exercise X interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. X	meta-analysis of primary prevention				, v		
June 2016:22-34. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type 1 and type 2 diabetes: a systematic review. Exerc fine Enderrinol Diabates	programmes to improve cardio-metabolic				Х		
June 2010:22-54. doi:10.1016/j.ypmed.2016.02.011. Rohling M, Herder C, Roden M, Stemper T, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. Even Cline Endecrined Diabetes	Insk in non-urban communities. Prev Med.						
Book 100, 1016/j. ypmed. 2016, 02, 011. Image: Constraint of the second secon	June 2010:22-34.						
Koming M, Herder C, Koden M, Stemper I, Mussig K. Effects of long-term exercise interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review. Even Clin Endocrinol Diabates	uoi:10.1016/j.ypmed.2016.02.011.						
interventions on glycaemic control in type X 1 and type 2 diabetes: a systematic review.	KUNIING IVI, Herder C, Koden M, Stemper T,						
1 and type 2 diabetes: a systematic review.	interventions on glues and a sentral in the		v				
I and type 2 diabetes: a systematic review.	1 and type 2 diabatos: a systematic regime		X				
	Fyn Clin Endocrinol Diabetes						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de	Other
2046 424(0) 407 404 45:40 4055 /- 0042					novo search	
2016;124(8):487-494. doi:10.1055/5-0042- 106293.						
Roine E, Roine RP, Rasanen P, Vuori I,						
Sintonen H, Saarto T. Cost-effectiveness of						
interventions based on physical exercise in						
the treatment of various diseases: a		Х				
systematic literature review. Int J Technol						
Assess Health Care. 2009;25(4):427-454.						
doi:10.1017/S0266462309990353.						
Rosenzweig JL, Ferrannini E, Grundy SM, et						
al. Primary prevention of cardiovascular						
disease and type 2 diabetes in patients at						
metabolic risk: an endocrine society clinical				Х		
practice guideline. J Clin Endocrinol Metab.						
2008;93(10):3671-3689.						
doi:10.1210/jc.2008-0222.						
Russell JW, Zilliox LA. Diabetic						
neuropathies. Continuum (Minneap Minn).						
2014;20(5 Peripheral Nervous System		х				
Disorders):1226-1240.						
doi:10.1212/01.CON.0000455884.29545.d2						
Ryden L, Grant PJ, Anker SD, et al. ESC						
Guidelines on diabetes, pre-diabetes, and						
cardiovascular diseases developed in						
collaboration with the EASD: the Task Force						
on diabetes, pre-diabetes, and						
cardiovascular diseases of the European				х		
Society of Cardiology (ESC) and developed						
in collaboration with the European						
Association for the Study of Diabetes						
(EASD). Eur Heart J. 2013;34(39):3035-						
3087. doi:10.1093/eurheartj/eht108.						
Sabag A, Way KL, Keating SE, et al. Exercise						
and ectopic fat in type 2 diabetes: a						
systematic review and meta-analysis.		Х				
Diabetes Metab. 2017;43(3):195-210.						
doi:10.1016/j.diabet.2016.12.006.						
Sacco IC, Sartor CD. From treatment to						
preventive actions: improving function in						
patients with diabetic polyneuropathy.			Х			
Diabetes Metab Res Rev. 2016;32(suppl						
1):206-212. doi:10.1002/dmrr.2737.						
Sadarangani KP, Hamer M, Mindell JS,						
Coombs NA, Stamatakis E. Physical activity						
and risk of all-cause and cardiovascular						
disease mortality in diabetic adults from		х				
Great Britain: pooled analysis of 10						
population-based cohorts. <i>Diabetes Care</i> .						
2014;37(4):1016-1023. doi:10.2337/dc13-						
1816.						

47

Citation	Outcome	Population	Study	Exposure	Not ideal fit for replacement of de	Other
		•	Design		novo search	
Sato Y, Nagasaki M, Kubota M, Uno T,						
Nakai N. Clinical aspects of physical						
exercise for diabetes/metabolic syndrome.			x			
Diabetes Res Clin Pract. 2007;77(suppl			~			
1):S87-S91.						
doi:10.1016/j.diabres.2007.01.039.						
Saunders LE, Green JM, Petticrew MP,						
Steinbach R, Roberts H. What are the						
health benefits of active travel? A				x		
systematic review of trials and cohort				~		
studies. PLoS One. 2013;8(8):e69912.						
doi:10.1371/journal.pone.0069912.						
Scarton LJ, de Groot M. Emotional and						
behavioral aspects of diabetes in American						
Indians/Alaska Natives. Health Educ Behav.		Х				
2017;44(1):70-82.						
doi:10.1177/1090198116639289.						
Schellenberg ES, Dryden DM, Vandermeer						
B, Ha C, Korownyk C. Lifestyle interventions						
for patients with and at risk for type 2						
diabetes: a systematic review and meta-				х		
analysis. Ann Intern Med. 2013;159(8):543-						
551. doi:10./326/0003-4819-159-8-						
201310150-00007.						
Schellenberg ES, Dryden DM, Vandermeer						
B, Ha C, Korownyk C. Lifestyle Interventions						
dishere a systematic review and more				v		
diabetes: a systematic review and meta-				X		
analysis. Ann intern weu. 2013;159(8):543-						
551. 001:10.7326/0003-4819-159-8-						
201310150-00007.						
M Loitzmann M Dhycical activity, diabotoc						
and rick of thyroid cancor: a systematic						
review and meta-analysis Eur L Enidemial	Х					
2013.28(12).945-958 doi:10.1007/s10654-						
013-9865-0						
Schwingshack I Misshach B Dias S Konig						
I. Hoffmann G. Impact of different training						
modalities on glycaemic control and blood						
lipids in patients with type 2 diabetes: a		х				
systematic review and network meta-						
analysis, Digbetologig, 2014:57(9):1789-						
1797. doi:10.1007/s00125-014-3303-z.						
Scott RA, Chu AY. Grarup N. et al. No						
interactions between previously associated						
2-hour glucose gene variants and physical						
activity or BMI on 2-hour glucose levels.				Х		
Diabetes. 2012;61(5):1291-1296.						
doi:10.2337/db11-0973.						
Sigal RJ, Armstrong MJ, Colby P, et al.						
Physical activity and diabetes. Can J						
Diabetes. 2013;37(suppl 1):S40-S44.			х			
doi:10.1016/j.jcjd.2013.01.018.						

Citation	Outcome	Population	Study	Exposure	Not ideal fit for replacement of de	Other
			Design		novo search	
Sigal RJ, Kenny GP, Wasserman DH,						
Castaneda-Sceppa C, White RD. Physical						
activity/exercise and type 2 diabetes: a						
consensus statement from the American		Х				
Diabetes Association. Diabetes Care.						
2006;29(6):1433-1438. doi:10.2337/dc06-						
9910.						
Singh K, Ansari M, Galipeau J, et al. An						
evidence map of systematic reviews to						
inform interventions in prediabetes. Can J			Х			
Diabetes. 2012;36(5):281-291.						
doi:10.1016/j.jcjd.2012.06.004.						
Sluik D, Buijsse B, Muckelbauer R, et al.						
Physical activity and mortality in individuals						
with diabetes mellitus: a prospective study		х				
and meta-analysis. Arch Intern Med.						
2012;172(17):1285-1295.						
doi:10.1001/archinternmed.2012.3130.						
Smith AD, Crippa A, Woodcock J, Brage S.						
Physical activity and incident type 2						
diabetes mellitus: a systematic review and						
dose-response meta-analysis of		Х				
prospective cohort studies. Diabetologia.						
2016;59(12):2527-2545.						
doi:10.1007/s00125-016-4079-0.						
Smith S, Wallace EM, O'Dowd T, Fortin M.						
Interventions for improving outcomes in						
patients with multimorbidity in primary						
care and community settings. Cochrane		Х				
Database of Syst Rev.						
2016;14(3):CD006560.						
doi:10.1002/14651858.CD006560.pub3.						
Smith SA, Ansa B. A systematic review of						
lifestyle interventions for chronic diseases						
in rural communities. J Ga Public Health	Х					
Assoc. 2016;5(4):304-313.						
doi:10.21663/jgpha.5.404.						
Snowling NJ, Hopkins WG. Effects of						
different modes of exercise training on						
glucose control and risk factors for						
complications in type 2 diabetic patients: a		Х				
meta-analysis. Diabetes Care.						
2006;29(11):2518-2527. doi:10.2337/dc06-						
1317.						
Soderlund PD. The social ecological model						
and physical activity interventions for						
Hispanic women with type 2 diabetes: a		Х				
review. J Transcult Nurs. 2016;28(3):306-						
314. doi:10.1177/1043659616649671.						
Solomon TP, Thyfault JP. Type 2 diabetes						
sits in a chair. Diabetes Obes Metab.			х			
2013;15(11):987-992.						
doi:10.1111/dom.12105.						

Spratt KA. Managing diabetic dyslipidemia: aggressise approach. J Am OSCOPUTH Assoc: 2009;109(5)(suppl)S2-57. Staimez LR, Weber MB, Gregg EW. The role of lifestyle change for prevention of cardiovascular disease in diabetes. Curr Atheroscier Rep. 2014;16(1):460. doi:10.1007/s1188-014-0460-y. Standl E, Erbach M, Schnell C. Glycemic control: a combination of lifestyle management and the use of drugs. Cardiol Ther. 2013;2(1):1-16. doi:10.1007/s40119- 012-0007-7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? J Clin Endocrinol Metab. 2015;00(1):43-52. doi:10.1120/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes: are some individuals anglical interventions. Diabetes Res Clin Pract. 2015;10(1):33-52. doi:10.11210/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes: anglical and surgical interventions. Diabetes Res Clin Pract. 2015;10(1):33-20. Strasser B, Siebert U, Schobersberger W. Resistance training in the tranemt of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training in the tranemt of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training in the tranemt of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training in the tranemt of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training in the tranemt of the metabolism. Sports Med. 2010;40(5):397- 415. doi:10.215/1153188-000000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-traits entic populations with type 2 diabetes: a systematic review of clinical traits, Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/jc.1016;976-970. Sukala WR, Page R, Cheema BS. Exercise training in high-traits the populations with type 2 diabetes: a systematic review of clinical traits, Diabetes Res Clin Pra	Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
aggressive approach. J Am Osteopath X Amosteopath X Assoc. 2009;10(9):1529:73. Staimez UR, Weber MB, Gregg EW. The role of lifestyle change for prevention of cardiovascular disease in diabetes. <i>Curr</i> X <i>Atheroscler Rep.</i> 2014;16(12):460. doi:10.1007/s1188-3014-0460-y. Standl F, Erbach M, Schnell O. Glycemic control: a combination of lifestyle management and the use of drugs. <i>Cardiol</i> X X <i>Tree</i> . 2013;2(1):1-16. doi:10.1007/s40119- D12-0007-7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> X <i>Stephens</i> W. Mpuriti, Harvey R, et al. Preventing the progression to type 2 diabetes. 2015;00:11:43-52. doi:10.1016/j.cliabres.2015.01.027. Stephens W, Khurti K, Harvey R, et al. Preventing the progression to type 2 diabetes. 2015;01:01:43-52. doi:10.1210/cliabres.2015.01.027. Strasser B, Slepter U, Schoberger W. Resistance to the metabolic syndrome: a systematic review and network meta- analysis of lifestrue, pharmacoligical and surgicial interventions. <i>Diabetes Res Clin</i> <i>Prace</i> . 2015;10(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Slepter U, Schoberserger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and network meta- and meta-analysis of interfect of resistance training in the treatment of the metabolic syndrome: a systematic review and meta-onsystem of the frect of sukala WR, Page R, Cheema BS. Exercise training in the treatment of the metabolic syndrome: a systematic review and the opulations with type 2 diabetes: a systematic review of clinical trains. <i>Diabetes Res Clin X</i> X diabetes as systematic review of clinical trains. <i>Diabetes Res Clin X</i> X diabetes as systematic review of clinical trains. <i>Diabetes Res Clin X</i> X diabetes as systematic review of clinical trains. <i>Diabetes Res Clin X</i> X diabetes and viscure and pharmalysis of the effect of sukala WR, Page R, Cheema BS. Exercise trains a systematic review of clinical tr	Spratt KA. Managing diabetic dyslipidemia:						
Assoc. 2009;109(5)(suppl):S2-57. X Stainer LR, Weber MB, Gregg EW. The role of lifestyle change for prevention of cardiovascular disease in diabetes. <i>Curr</i> Atheroscier Rep. 2014;16(12):460. doi:10.1007/s11883-014-0460-y. Standt E, Fbach, M, Schnell C. Glycemic control: a combination of lifestyle management and the use of drugs. <i>Cardiol</i> X X Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> Metrob. 2015;100(1):43-52. diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> Metrob. 2015;100(1):43-52. diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> Metrob. 2015;100(1):43-52. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes mellits in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diabetes Res Clin</i> Pract. 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Straser B, Sileer U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering X in patients with abnormal glucose metabolism. <i>Sports</i> Med. 2010;40(5):397- 415. doi:10.2165/11531380.0000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk etnic populations with type 2 diabetes: a systematic review of Sukala WR, Page R, Cheema BS. Exercise training in high-risk etnic populations with type 2 diabetes: and wickeral obself. JPhysiol. Sukala WR, Page R, Cheema BS. Exercise training LM J App Hysiol. 2012;112(1):317-332. doi:10.1007/s00421- 011.1137-32. doi:10.1016/j.diabres.2012.0101. Sukala WR, Page R, Rowlands DS, et al. South Pacific Listanders resity type 2 diabetes: comparison of aerobic and resistance training. <i>LM</i> App Hysiol. 2012;112(1):317-332. doi:10.1007/s00421- 011.1137-82. doi:10.1016/j.diabres.2012.	aggressive approach. J Am Osteopath		Х				
Staimez LR, Weber MB, Gregg EW. The role of IlleStyle Change for prevention of cardiovascular disease in diabetes. <i>Curr</i> X Atherascier Rep. 2014;16(1):460. doi:10.1007/511883-014-0460-y. X Atherascier Rep. 2014;16(1):400. Glycemic control: a combination of IlleStyle management and the use of drugs. <i>Cardiol Ther.</i> 2013;2(1):1-16. doi:10.1007/s40119-102-0007-7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? <i>Clin Endocrinol Metab.</i> 2015;100(1):43-52. doi:10.1007/cline1-2012;00(1):43-52. doi:10.1007/cline1-2012;00(1):43-52. doi:10.1007/cline1-2012;00(1):43-52. doi:10.1101/cline1-2013;2(1):10:43-52. doi:10.1101/cline1-2013;2(1):10:10:10:10:10:10:10:10:10:10:10:10:10:	Assoc. 2009;109(5)(suppl):S2-S7.						
of lifestyle change for prevention of cardiovascular disease in diabetes. <i>Curr</i> X <i>X</i> cardiovascular disease cardiovascul	Staimez LR, Weber MB, Gregg EW. The role						
cardiovascular disease in diabetes. <i>Curr</i> Atheroscier Rep. 2014;16(1):460. doi:10.1007/511883-014-0460-y. Standi F, Erbach M, Schnell O. Glycemic control: a combination of lifestyle management and the use of drugs. <i>Cardiol</i> <i>Ther</i> . 2013;2(1):1-16. doi:10.1007/s00119- 012-0007.7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? <i>Clin Endocrinol</i> <i>X</i> <i>X</i> <i>X</i> <i>X</i> <i>X</i> <i>X</i> <i>X</i> <i>X</i>	of lifestyle change for prevention of						
Atheroscler Rep. 2014;15(12):460. doi:10.1007/s101188-014-0460-y. doi:10.1007/s1188-014-0460-y. doi:10.1007/s1188-014-0460-y. doi:10.1007/s40119-012-0017-7. doi:10.1016/s1078-012-0017-7. doi:10.1007/s00421-00111-707-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	cardiovascular disease in diabetes. Curr		Х				
doi:10.1007/s11883-014-0460-y.	Atheroscler Rep. 2014;16(12):460.						
Stand E, Erbach M, Schnell O. Glycemic x control: a combination of lifestyle x management and the use of drugs. Cardiol x Ther. 2013;2(1):1-16. doi:10.1007/s40119- x Stephens NA, Sparks LM. Resistance to the beneficial effects of excretes in type 2 x diabets: are some individuals x programmed to fail? I Clin Endocrinol X Metab. 2015;100(1):43-52. - diabets: are some individuals x systematic review and network meta-analysis of lifestyle, pharmacological and surgical interventions. Diabetes Res Clin Proc. 2015;107(3):320-331. x diabets: are sing in the treatment of the metabolic syndrom: a systematic review and network meta-analysis of iffestyle, pharmacological and surgical interventions. Diabetes Res Clin Proc. 2015;107(3):320-331. - doi:10.216/j.diabres.2015.01.027. - - Strasser B, Sibert U, Schobersberger W. - - Resistance training on metabolic clustering in patients with abnormal glucose netabolis: syndrome: a systematic review and network meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose netabolism. Sports Med. 2010;40(5):397-415. - Sukala WR, Page R, Cheema BS. Exercise training on metabolic clustering in patients with abnormal glucose netabolism. Sports Med. 2010;40(5):397-415. - - <td>doi:10.1007/s11883-014-0460-y.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	doi:10.1007/s11883-014-0460-y.						
control: a combination of lifestyle management and the use of drugs. Cardiol Ther. 2013;2(1):1-16. doi:10.1007/s40119- 012-007-7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? / <i>Clin Endocrinol</i> Metab. 2015;100(1):43-52. diabetes: meltus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diabetes Res Clin</i> Pract. 2015;107(3):320-331. doi:10.01201/.diabers.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrom: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolis. <i>Sports Med.</i> 2010;40(3):397- 415. doi:10.216/s11531380-00000000- 00000. Suklal WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. <i>Diabetes Res Clin Pract.</i> 2012;97(2):206-216. doi:10.1016/, diabres.2012.02.001. Suklal WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. <i>Diabetes Res Clin Pract.</i> 2012;97(2):206-216. doi:10.1016/, diabres.2012.02.001. Suklal WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. <i>Diabetes Res Clin Pract.</i> 2012;97(2):206-216. doi:10.1016/, diabres.2012.02.001. Suklal WR, Page R, Nowands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. <i>Lin J Appl Physiol.</i> 2012;112(1):317-325. doi:10.1007/s00421- 111-19740.	Standl E, Erbach M, Schnell O. Glycemic						
management and the use of drugs. Cardiol X Infer. 2013;2(1):1-16. doi:10.1007/s40119- X Ol2-0007-7. Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals X programmed to fail? / Clin Endocrinol X Metab. 2015;100(1):43-52. - doi:10.1210/jc.2014-2545. - Stevens JW, Khunti K, Harvey R, et al. X Preventing the progression to type 2 - diabetes mellitus in adults at high risk: a systematic review and network meta-analysis of lifestyle, pharmacological and surgical interventions. Diobetes Res Clin Proct. 2015;107(3):320-331. X doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. - Restance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397-40. X Sukala WR, Page R, Cheema BS. Exercise training in hip-risk enting populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Proct. X Sukala WR, Page R, Lonsdale C, et al. X X Sukala WR, Page R, Lonsdale C, et al. X X Sukala WR, Page R, Rowands DS, et al. X X	control: a combination of lifestyle						
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012-0007-7. Image: Constraint of Constra	Ther. 2013;2(1):1-16. doi:10.1007/s40119-						
Stephens NA, Sparks LM. Resistance to the beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> <i>Metab.</i> 2015;100(1):43-52. doi:10.1210/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diabetes Res Clin</i> <i>Proct.</i> 2015;07(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolics. <i>Sports Met.</i> 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS, Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical traits. <i>Diabetes Res Clin Proct.</i> 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Cheema BS, Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical traits. <i>Diabetes Res Clin Proct.</i> 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Runsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Runsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Runsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes: comparison of aerobic and resistance training. <i>Lur J Appl Physiol.</i> 2012;112(1):317-325, doi:10.1007/s00421- 11:19740.	012-0007-7.						
beneficial effects of exercise in type 2 diabetes: are some individuals programmed to fail? / Clin Endocrinol Metab. 2015;100(1):43-52. dioi:10.1210/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diobetes Res Clin</i> <i>Prot.</i> 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. <i>Sports Med.</i> 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. <i>Diabetes Res Clin Proct.</i> 2012;97(2):206-216. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. <i>J Phys Act</i> <i>Health.</i> 2013;10(5):699-707. Sukala WR, Page R, Roema BS. Exercise training on genesits type 2 diabetes and visceral obesity. <i>J Phys Act</i> <i>Health.</i> 2013;10(5):699-707. Sukala WR, Page R, Roema BS. Exercise training. <i>Life J Appl Physiol.</i> 2012;112(1):317-325. doi:10.1007/s00421- 111-1978-0.	Stephens NA, Sparks LM. Resistance to the						
diabetes: are some individuals programmed to fail? <i>J Clin Endocrinol</i> Metab. 2015;100(1):43-52. doi:10.1210/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diabetes Res Clin</i> <i>Pract.</i> 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolics. <i>Sports Med.</i> 2010;40(5):337- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. <i>Diabetes Res Clin Pract.</i> 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.01. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes: and visceral obesity. <i>J Phys Act</i> <i>Health.</i> 2013;10(5):699-707. Sukala WR, Page R, Consdale C, et al. Sukala WR, Page R, Consdal	beneficial effects of exercise in type 2						
programmed to fail? J Clin Endocrinol Metob. 2015;100(1):43-52. doi:10.1210/jc.2014-2545. Stevens JW, Khunti K, Harvey R, et al. Preventing the progression to type 2 diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. Diabetes Res Clin Prot. 2015;107(3):320-331. doi:10.0106/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-0000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinic.0.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;0(5):699-707. Sukala WR, Page R, Romalas DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. <i>Lit</i> Appl Physlol. 2012;112(1):317-325. doi:10.1007/s00421- 111-1978-0.	diabetes: are some individuals		x				
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Preventing the progression to type 2 diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. <i>Diabetes Res Clin</i> <i>Proct.</i> 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. <i>Sports Med.</i> 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of dinical trials. <i>Diabetes Res Clin Pract.</i> 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes: and visceral obesity. <i>J Phys Act</i> Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes and visceral obesity. <i>J Phys Act</i> Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. <i>Eur J Appl Physiol.</i> 2012;112(1):317-325. doi:10.1007/s00421- 111-1978-0	Stevens JW, Khunti K, Harvey R, et al.						
diabetes mellitus in adults at high risk: a systematic review and network meta- analysis of lifestyle, pharmacological and surgical interventions. Diabetes Res Clin Proct. 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11513180-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Ronsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Ronsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Ronsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Ronsdale SD, et al. South Pacific Islanders resist type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Ronsdale SD, et al. South Pacific Islanders resist type 2 diabetes and visceral obesity. J Phys Joh 2012;112(1):317-325. doi:10.1007/s00421- 111-1978-0	Preventing the progression to type 2						
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analysis of lifestyle, pharmacological and surgical interventions. Diabetes Res Clin Pract. 2015;107(3):320-331. doi:10.1016/j.diabres.2015.01.027. Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Rowands DS, et al. South Pacific Islanders resist type 2 diabetes: and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2011;10(1):317-325. doi:10.1007/s00421- 011-1078-0	systematic review and network meta-				x		
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Strasser B, Siebert U, Schobersberger W. Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-0000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Rowlands DS, et al. Sukala WR, Page R, Rowlands DS, et al. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011.1978-0	doi:10.1016/j.diabres.2015.01.027.						
Resistance training in the treatment of the metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 Sukala WR, Page R, Rowlands DS, et al. Sukala WR, Page R, Rowlands DS, et al. Suth Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011.1978-0	Strasser B, Siebert U, Schobersberger W.						
metabolic syndrome: a systematic review and meta-analysis of the effect of resistance training on metabolic clustering in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011.1978-0	Resistance training in the treatment of the						
and meta-analysis of the effect of resistance training on metabolic clustering X in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-00000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	metabolic syndrome: a systematic review						
resistance training on metabolic clustering X in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-0000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 0111-1978-0	and meta-analysis of the effect of						
in patients with abnormal glucose metabolism. Sports Med. 2010;40(5):397- 415. doi:10.2165/11531380-0000000- 00000. Sukala WR, Page R, Cheema BS. Exercise training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001. Sukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	resistance training on metabolic clustering	Х					
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training in high-risk ethnic populations with type 2 diabetes: a systematic review of clinical trials. Diabetes Res Clin Pract. 2012;97(2):206-216. doi:10.1016/j.diabres.2012.02.001.XSukala WR, Page R, Lonsdale C, et al. Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707.XXSukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0XX	Sukala WR, Page R, Cheema BS. Exercise						
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Exercise improves quality of life in indigenous Polynesian peoples with type 2 diabetes and visceral obesity. J Phys Act Health. 2013;10(5):699-707. Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	Sukala WR, Page R, Lonsdale C, et al.						
Indigenous Polynesian peoples with type 2 X X diabetes and visceral obesity. J Phys Act X Health. 2013;10(5):699-707. X Sukala WR, Page R, Rowlands DS, et al. X South Pacific Islanders resist type 2 X diabetes: comparison of aerobic and X resistance training. Eur J Appl Physiol. X 2012;112(1):317-325. doi:10.1007/s00421- X	Exercise improves quality of life in		v	v			
Health. 2013;10(5):699-707. Image: Constraint of the second of the sec	diabatos and viscoral obacity. J Phys Act		X	X			
Sukala WR, Page R, Rowlands DS, et al. South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. Eur J Appl Physiol. 2012;112(1):317-325. doi:10.1007/s00421-	Health 2012-10(E)-600 707						
South Pacific Islanders resist type 2 diabetes: comparison of aerobic and resistance training. <i>Eur J Appl Physiol</i> . 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	Freului. 2013;10(5):099-707.						
diabetes: comparison of aerobic and resistance training. <i>Eur J Appl Physiol</i> . 2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	South Decific Islandors resist ture 2						
viabletes. comparison of aerobic and X resistance training. Eur J Appl Physiol. X 2012;112(1):317-325. doi:10.1007/s00421-	diabates: comparison of acrobic and						
2012;112(1):317-325. doi:10.1007/s00421- 011-1978-0	resistance training Fur LAppl Divisio			Х			
011-1978-0	2012.112(1).317_325 doi:10.1007/c00421						
	011-1978-0						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Sumlin LL. Garcia TJ. Brown SA. et al.					noro occión	
Depression and adherence to lifestyle						
changes in type 2 diabetes: a systematic		х				
review. <i>Diabetes Educ</i> . 2014;40(6):731-744.						
doi:10.1177/0145721714538925.						
Sun Y. You W. Almeida F. Estabrooks P.						
Davy B. The effectiveness and cost of						
lifestyle interventions including nutrition						
education for diabetes prevention: a				х		
systematic review and meta-analysis. J						
Acad Nutr Diet. 2017;117(3):404-421.e36.						
doi:10.1016/j.jand.2016.11.016.						
Swanson A, Watrin K, Wilder L. Clinical						
inquiries: how can we keep impaired						
glucose tolerance and impaired fasting			Х			
glucose from progressing to diabetes? J						
Fam Pract. 2010;59(9):532-533.						
Tanaka S, Tanaka S, Iimuro S, et al.; Japan						
Diabetes Complications Study Group and						
the Japanese Elderly Diabetes Intervention						
Trial Group. Body mass index and mortality						
among Japanese patients with type 2						
diabetes: pooled analysis of the Japan		х				
diabetes complications study and the						
Japanese elderly diabetes intervention						
trial. J Clin Endocrinol Metab.						
2014;99(12):E2692-E2696.						
doi:10.1210/jc.2014-1855.						
Tanaka S, Tanaka S, Iimuro S, et al.; Japan						
Diabetes Complications Study Group;						
Japanese Elderly Diabetes Intervention						
Trial Group. Predicting macro- and						
microvascular complications in type 2				~		
diabetes: the Japan Diabetes Complications				^		
Study/the Japanese Elderly Diabetes						
Intervention Trial risk engine. Diabetes						
Care. 2013;36(5):1193-1199.						
doi:10.2337/dc12-0958.						
Taylor J, Stubbs B, Hewitt C, et al. The						
effectiveness of pharmacological and non-						
pharmacological interventions for						
improving glycaemic control in adults with		x				
severe mental illness: a systematic review		A				
and meta-analysis. PLoS One.						
2017;12(1):e0168549.						
doi:10.1371/journal.pone.0168549.						
Terranova CO, Brakenridge CL, Lawler SP,						
Eakin EG, Reeves MM. Effectiveness of						
lifestyle-based weight loss interventions for						
adults with type 2 diabetes: a systematic		Х				
review and meta-analysis. Diabetes Obes						
Metab. 2015;17(4):371-378.						
doi:10.1111/dom.12430.						

Thent ZL, Das S, Henry LL Role of exercise In the management of diabetes mellitus: the global scenario. <i>PLoS One</i> . 2013;8(11):e80436. doi:10.1371/jurnal.pone.0080436. Thibault V, Belanger M, LeBlanc E, et al. Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. <i>Diabetol Metob Syndr</i> . Nov 2016;71. doi:10.1186/s1098.016-0186-9. Thomas DE, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2010;61(3):c0002968. doi:10.1002/1A651885.CD002968.pub2 Thomas GN, Jiang CQ, Taheri S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. <i>Curr Diabetes Rev.</i> 2010;66(6):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities of hordic walking: a systematic review. <i>An J Prev Med.</i> 2013;4(1):76-84. doi:10.1001/jime.2012.05.018. Tschentscher M, Niederser D, Niebauer J. Health benefits of hordic walking: a systematic review. <i>An J Prev Med.</i> 2013;4(1):76-78-84. doi:10.1016/jime.2012.06.018. Tschentscher M, Niederser D, Niebauer J. Health benefits of hordic walking: a systematic review and meta-analysis. <i>JMAA</i> 2013;6(1):778-84. doi:10.1016/jime.2012.09.043. Umpierre D, Ribeiro PA, Kamer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels is asystematic review with <i>X</i> and activity monitor-based' courseling on physical activity and health- relate doutcomes in patients with treview and meta-analysis. <i>JMAA</i> 2013;24(1):72-25. doi:10.1007/jame.2013;57(5):87-412. doi:10.1007/jame.2013;57(5):87-412. doi:10.1007/jame.2013;45(5:6):87-412. Health benefits: asystematic review with x meta-regression analysis. <i>Diabetologia</i> . 2013;6(2):72-25. doi:10.1007/jame.2013;45(5:6):87-412. Health benefits: asystematic review with review and meta-analysis. <i>JMAA</i> 2013;45(2):72-25.	Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
in the management of diabetes mellitus: the global scenario. PLOS One. 2013;6(11):660436. doi:10.1371/journal.pone.0080436. Thibault V, Beloard M, Karlon E, et al. Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. Diabetol Metab Syndr. Nov 2016:71. doi:10.1186/s13098-016-0186-9. Thomas DF, Ellott EJ, Naughton GA. Exercise for type 2 diabetes melitus. Cachrane Database Syst Rev. 2006;(3):70:002968. doi:10.1002/14551838.CD002968.pub2 Thomas GV, Inang CQ, Taher J, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. Curr Diabetes Rev. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(6):378-387. 2010;6(1):378-387. 2010;7(1):399. 2010;7(1):399. 2010;7(1):399. 2010;7(1):399. 2010;7(1):399. 2010;7(1):399. 2010;7(1):399. 2010	Thent ZC, Das S, Henry LL, Bole of exercise						
the global scenario. PLoS One. 2013;4(11):e80436. doi:10.1371/uomal.pone.0080436. Thibault V, Belanger M, LeBlanc E, et al. Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. <i>Diabetol Metab Syndr.</i> Nov 2016;71. doi:10.1186/s1309-016-018-9. Thomas DE, Ellott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. <i>Cochrane Datobase Syst Rev.</i> 2006;13):cd002968. doi:10.1002/14651385.CD002968.pub2 Thomas GN, Jiang CQ, Taheri S, et al. A systematic review of lifestyle modification and glucos intolerance in the prevention of type 2 diabetes. <i>Curr Diabetes Rev.</i> 2016;6(1):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in Deathesty, diabetes and aging <i>Mol Cell Endocrinol.</i> 2013;79(1- 2):30-34. doi:10.1016/j.mee.2013.06.018. Tschentscher M, Niederscer D, Niebauer J. Health benefits of Nordic walking: a systematic review and meta-analysis. <i>IMPERION PLICE Construction</i> systematic review and meta-analysis. <i>IMPERION PLICE</i> 2013;44(1):76-84. doi:10.1016/j.mee.2013.06.018. Tschentscher M, Niederscer D, Niebauer J. Health benefits of Nordic walking: a systematic review and meta-analysis. <i>IMMA</i> : 2013;45(17):1790-1799. doi:10.1016/j.mee.2013.06.018. Tschentscher M, Piedrover D, 2013.06.018. Tschentscher M, And Prev Med. X 2013;44(1):76-84. doi:10.1016/j.mee.2013.06.018. Tschentscher M, Niederscer D, Niebauer J. Health benefits of Nordic walking: a systematic review and meta-analysis. <i>IMMA</i> : 2011;305(17):1790-1799. doi:10.1016/j.mee.2013.06.018. Tschentscher M, Piedrover D, 2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training impact sylversed cercise training impact sylversed cercise tra	in the management of diabetes mellitus:						
2013;8(11):e80436. X doi:10.1371/journal.pone.0080436. Thibaut V, Belanc E, et al. Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. <i>Diabetol Metab Syndr</i> . Nov 2015:71. doi:10.1186/s13098-016-0186-9. X Thomas DE, Elliott EJ, Naughton GA. Exercise for type 2 diabetes mellitus. X Cochrane Database Syst Rev. X 2006;(3):C002088. 2000;(3):C002088. doi:10.1022/14651858.CD002968.pub2 Thomas GN, Jiang CQ, Taheri S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes Rev. X 2006;(6):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting steletal muscle micorhordrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1-2):39-34. doi:10.1016/j.mce.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X X 2013;05(17):1790-1799. doi:10.1016/j.meer.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Y Physical activity advice only or structured exercise training impacts glycarestic corrol in patter systematic review and meta-analysis. X 2012;05(17):1790-1799. Joil-10.1016/j.meer.2012.09.043. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro IP. X 2012;2774-2. <td>the global scenario PLOS One</td> <td></td> <td>x</td> <td></td> <td></td> <td></td> <td></td>	the global scenario PLOS One		x				
doi:10.1371/journal.pone.0080436.	2013·8(11)·e80436		~				
Thibault V, Belanger M, LeBlanc E, et al. Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. Diabetol Metab Syndr. Nov 2016:71. doi:10.1186/s13098-016-0186-9. Thomas DE, Elliot LJ, Naughton GA. Exercise for type 2 diabetes mellitus. Cobina Database Syst Rev. 2006;(3):Cd002968. doi:10.1002/14651858.CD002968.pub2 Thomas ON, Jiang CQ, Taheri S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. <i>Curr Diabetes Rev.</i> 2016;(6):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting steletal muscle mitochondrial abnormalities in obesity, diabetes and aging. <i>Mol Cell Endocrinol.</i> 2013;379(1-2):30-34. doi:10.1016/j.mce.2013.06.018. Tschentscher M, Niederser D, Niebauer J. Health benefits of Nordic walking: a systematic review and meta-analysis. JAMA. 2013;305(17):1790-1799. doi:10.1016/j.mce.2013.06.018. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review and meta-analysis. JAMA. 2013;355(17):1790-1799. doi:10.1007/s00125-12-274-2. Vas AW, Cheung A, Atakhorrami M, et al. Effect of "activity and health- related outcomes in patients with troine diseases: a systematic review and meta-analysis. Ann Med. 2013;45(5-6):37+412.	doi:10.1371/journal.pone.0080436.						
Factors that could explain the increasing prevalence of type 2 diabetes among adults in a Canadian province; a critical review and analysis. Diabetol Metab Syndr. Nov 2016:71. doi:10.1186/s10398-016-0186-9. X Thomas DE, Elliott EJ, Naughton GA.	Thibault V Belanger M LeBlanc E et al						
Intervalence of type 2 diabetes among adults in a Canadian province: a critical review and analysis. Diabetol Metabol Syndr. Nov 2016:71, doi:10.1186/s13098-016-0186-9. X Thomas DE, Elliott EJ, Naughton GA. X Exercise for type 2 diabetes mellitus. X Cookinare Databoase Syst Rev. X 2006;31:C002968. X doi:10.1002/14551858.CD002968.pub2 Thomas DE, Lington, S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. Curr Diabetes Rev. X 2016;0[5]:378-387. X Didelo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013;06:018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nord'c walking: a systematic review and meta-analysis. X 2013.61(5): amer 2.012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Y Physical activity advice only or structured exercise training and association with HbALC levels in type 2 diabetes: a systematic review and meta-analysis. X JMMA 2011;305(17):1790-1799. J J JOI:10.1007/meta-stabeter training impacts glycaenic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. Diabetologia. X JMMA 2011;305(17):1790-1799. J J	Factors that could explain the increasing						
prevence of type 2 diabetes and analysis. Diabetol Metab Syndr. Nov X 2016-71. doi:10.1186/s1308-016-0186-9. X Thomas DE, Elliott EL, Naughton GA. X Exercise for type 2 diabetes mellitus. X Cochrane Database Syst Rev. X 2016-71. doi:0.1186/s1308-016-0186-9. X Thomas GN, Jiang CO, Taheri S, et al. A X systematic review of lifestyle modification and glucose intolerance in the prevention X of type 2 diabetes. Curr Diabetes Rev. X 2010;6(1):378-387. X Toledo FG, Goodpaster BH. The role of X weight loss and exercise in correcting Skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1-2):30-34. doi:10.1016/j.mce.2013:06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X U013;40:17:6-644. Quitabetes: a systematic review and meta-analysis. X Systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. Quitabetes: a systematic review with meta-analysis. X Systematic review with meta-analysis. JAMA. 2011;305(17):1790-1799. Quitabetes: a systematic review with meta-analysis. X	prevalence of type 2 diabetes among adults						
In a Canadani, Proceeding of the constraints of the	in a Canadian province: a critical review			Х			
201671.doi:10.1186/s13098-016-016-9. Thomas DE, Elliott EL, Naughton GA. Exercise for type 2 diabetes mellitus. Cochrane Database Syst Rev. 2006;(3):Cd002968. doi:10.1002/14651858.CD002968.pub2 Thomas GN, Jiang CO, Taheri S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. Curr Diabetes Rev. 2010;6(i):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in obesity. diabetes and aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. Tischentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;4(1):76-84. doi:10.1016/j.amegne.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a X Systematic review and meta-analysis. JAMA 2011;36(17):1790-1799. Socialinaling JOUJu	and analysis Dighetol Metab Syndr Nov						
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Decision Or Spic Evolution X 2006;(3):Cd002968. X 006;(3):Cd002968. X doi:10.1002/14651858.C0002968.pub2 X Thomas GN, Jiang CQ, Taheri S, et al. A X systematic review of lifestyle modification X and glucose intolerance in the prevention X Oti(0.1006/G):378-387. X Diddo FG, Goodpaster BH. The role of X weight loss and exercise in correcting X skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1- 21:30-34. doi:10.1016/j.mce.2013.06.018. Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. Coil:30-104. doi:10.1016/j.amepre.2012.09.043. V Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with X HbA1C levels in type 2 diabetes: a X systematic review and meta-analysis. JAMA JAMA: 2011;305(17):1790-1799. Joil:01:001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro	Exercise for type 2 diabetes mellitus						
Dots X A X A A A A A A A A A A A A A A A A A A A A Statistic review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. Curr Diabetes Rev. X 2010;6(6):378-387. Toledo FG, Goodpater BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. A A doi:10.1016/j.amepre.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. X JAMA: 2011;305(17):1790-1799. A A doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with related outcome in patients with	Cochrane Database Syst Rev		x				
Decomposed Action 2002/14651858.CD002968.pub2 Thomas GN, Jiang CQ, Taheri S, et al. A systematic review of lifestyle modification and glucose intolerance in the prevention X Oltop(6):378-387. X Toledo FG, Goodpaster BH. The role of X weight loss and exercise in correcting X skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1-2):33-44. doi:10.1016/j.mec.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.mepre.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA12 levels in type 2 diabetes: a Moli:10.1016/j.mapre.2012.09.043. X Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA12 levels in type 2 diabetes: a JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with X Unpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic	2006:(3):Cd002968		~				
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Information Curry and Electric review of lifestyle modification and glucose intolerance in the prevention of type 2 diabetes. <i>Curr Diabetes Rev.</i> 2010;6(6):378-387. Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. <i>Mol Cell Endocrinol.</i> 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. <i>Am J Prev Med.</i> 400:10.1016/j.ame.pre.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbAtc levels in type 2 diabetes: a systematic review and meta-analysis. <i>JAMA.</i> 2011;305(17):1790-1799. doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with x meta-regression analysis. <i>Diabetologia</i> . 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with thronic diseases: a systematic review and meta- analysis. <i>Ann Med.</i> 2013;45(5-6):397-412. doi:20.2010/GTCTP00.2010.2010.2010.2010.2010.2010.2010.2	Thomas GN liang CO Taberi S et al A						
Systematic review of mestyle inductation X and glucose intolerance in the prevention of type 2 diabetes. Curr Diabetes Rev. 2010;6(6):378-387. X Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.mce.2012.09.043. Health benefits of Nordic walking: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. X doi:10.1010/j.amepre.2012.09.043. Health benefits of Nordic walking: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. X doi:10.1010/j.amepre.2012.09.043. Health benefits of Nordic walking: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. X doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with weta-regression analysis. Jiabetologia. 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. X Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic disease: a systematic review and meta- analysis. Ann Med. 2013;45(5-6):397-412. doi:20.200.200.200.200.200.200.200.200.200.	systematic review of lifestyle modification						
and glubbe inter and in prevention X 2010;6(6):378-387. X Toledo FG, Goodpaster BH. The role of X weight loss and exercise in correcting X skeletal muscle mitochondrial X abnormalities in obesity, diabetes and X aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.ame.pre.2012.09.043. X X Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with X Systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. X X Systematic review and meta-analysis. JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. Diabetologia. X 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Z Z 2013;56(2):242-251. doi:10.1007/s0125- 012-2774-z. Z Z Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and	and ducose intolerance in the prevention				v		
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2013/00/J.30937. X Toledo FG, Goodpaster BH. The role of weight loss and exercise in correcting skeletal muscle mitochondrial abnormalities in obesity, diabetes and aging. Mol Cell Endocrinol. 2013;379(1- 2):30-34. doi:10.1016/j.mce.2013.06.018. X Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.amepre.2012.09.043.	2010.666.378-387						
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2/30-34. dui.10.1011/j.Inte.2013.dui.10. Tschentscher M, Niederseer D, Niebauer J. Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.amepre.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with weta - segression analysis. Diabetologia. 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and meta- analysis. Ann Med. 2013;45(5-6):397-412. doi:doi/070787090 0000 0000	aging. Mor cerr Endocrinol. 2015,579(1- 2):20.24. doi:10.1016/i.mco.2012.06.019						
Health benefits of Nordic walking: a systematic review. Am J Prev Med. X 2013;44(1):76-84. doi:10.1016/j.amepre.2012.09.043. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. <i>Diabetologia</i> . 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and meta- analysis. Ann Med. 2013;45(5-6):397-412. doi:10.1007/07057002020	ZJ:30-34: doi:10.1010/J:mce.2013.00.018.						
Iteration behavior both working a systematic review. Am J Prev Med. X 2013;44(1):76-84. X doi:10.1016/j.amepre.2012.09.043. Image: Construct of the systematic review and meta-analysis. Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. X JAMA. 2011;305(17):1790-1799. Joi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. Diabetologia. X 2013;56(2):242-251. doi:10.1007/s00125-012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' Counseling on physical activity and health-related outcomes in patients with chronic X X diseases: a systematic review and meta-analysis. Ann Med. 2013;45(5-6):397-412. X X	Hoalth honofits of Nordic walking: a						
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Umpierre D, Ribeiro PA, Kramer CK, et al. Physical activity advice only or structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with x value 2 diabetes: a systematic review with x upierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with x value AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and meta- analysis. Ann Med. 2013;45(5-6):397-412. disitio 20(07872800 2013 20002012 20002012 20002013 20002013 20002012 20002013 20002012 20002013 20002012 20002012 20002013 20002012 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013 20002013	2013,44(1).70-84. doi:10.1016/i.amonro.2012.09.042						
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Privide activity addree only of structured exercise training and association with HbA1c levels in type 2 diabetes: a systematic review and meta-analysis. JAMA. 2011;305(17):1790-1799. doi:10.1001/jama.2011.576. Umpierre D, Ribeiro PA, Schaan BD, Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. Diabetologia. 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and meta- analysis. Ann Med. 2013;45(5-6):397-412. dei:t0.3100/073/2000_2012	Omplette D, Ribelto PA, Kramer CK, et al.						
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JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with X meta-regression analysis. <i>Diabetologia</i> . 2013;56(2):242-251. doi:10.1007/s00125- 012-2774-z. Vaes AW, Cheung A, Atakhorrami M, et al. Effect of 'activity monitor-based' counseling on physical activity and health- related outcomes in patients with chronic diseases: a systematic review and meta- analysis. <i>Ann Med</i> . 2013;45(5-6):397-412. dei:40.2109/07273000.2012	United Distance Destance Desta						
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Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
van der Heijden MM, van Dooren FE, Pop						
VJ, Pouwer F. Effects of exercise training on						
guality of life, symptoms of depression,						
symptoms of anxiety and emotional well-						
being in type 2 diabetes mellitus: a		Х				
systematic review. <i>Diabetologia</i> .						
2013;56(6):1210-1225.						
doi:10.1007/s00125-013-2871-7.						
van der Heijden MM, van Dooren FE, Pop						
VJ, Pouwer F. Effects of exercise training on						
quality of life, symptoms of depression,						
symptoms of anxiety and emotional well-		X				
being in type 2 diabetes mellitus: a		х				
systematic review. Diabetologia.						
2013;56(6):1210-1225.						
doi:10.1007/s00125-013-2871-7.						
Van Huffel L, Tomson CR, Ruige J, Nistor I,						
Van Biesen W, Bolignano D. Dietary						
restriction and exercise for diabetic						
patients with chronic kidney disease: a		х				
systematic review. PLoS One.						
, 2014;9(11):e113667.						
doi:10.1371/journal.pone.0113667.						
van Nieuwaal PA, Wittink HM, de Valk HW.						
Effectiveness of supervised exercise						
programmes versus exercise advice in						
individuals with diabetes mellitus type 2: a						Х
systematic review. Database of Abstracts						
of Reviews of Effects. 2009;119(6):198-205.						
Vancampfort D, Stubbs B. Physical activity						
and metabolic disease among people with						
affective disorders: Prevention,						
management and implementation. J Affect			Х			
Disord. 2016;9(11):e113667.						
doi:10.1371/journal.pone.0113667.						
Vijgen SM, Hoogendoorn M, Baan CA, de						
Wit GA, Limburg W, Feenstra TL. Cost						
effectiveness of preventive interventions in				N.		
type 2 diabetes mellitus: a systematic				X		
literature review. Pharmacoeconomics.						
2006;24(5):425-441.						
Vizcaino M, Stover E. The effect of yoga						
practice on glycemic control and other						
health parameters in type 2 diabetes						
mellitus patients: a systematic review and		х				
meta-analysis. Complement Ther Med.						
2016;28:57-66.						
doi:10.1016/j.ctim.2016.06.007.						
Walker KZ, O'Dea K, Gomez M, Girgis S,						
Colagiuri R. Diet and exercise in the						
prevention of diabetes. J Hum Nutr Diet.				Х		
2010;23(4):344-352. doi:10.1111/j.1365-						
277X.2010.01061.x.						

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Wang X, Pi Y, Chen B, et al. Effect of traditional Chinese exercise on the quality of life and depression for chronic diseases: a meta-analysis of randomised trials. <i>Sci</i> <i>Rep</i> . Nov 2015:15913. doi:10.1038/srep15913		x				
Way KL, Hackett DA, Baker MK, et al. The effect of regular exercise on insulin sensitivity in type 2 diabetes mellitus: a systematic review and meta-analysis. <i>Diabetes Metab J.</i> 2016;40(4):253-271. doi:10.4093/dmj.2016.40.4.253.		x				
Way KL, Keating SE, Baker MK, Chuter VH, Johnson NA. The effect of exercise on vascular function and stiffness in type 2 diabetes: a systematic review and meta- analysis. <i>Curr Diabetes Rev</i> . 2016;12(4):369-383.		х				
Wilmot EG, Edwardson CL, Achana FA, et al. Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. <i>Diabetologia</i> . 2012;55(11):2895-2905. doi:10.1007/s00125-012-2677-z.				х		
Xin L, Miller YD, Brown WJ. A qualitative review of the role of qigong in the management of diabetes. <i>J Altern</i> <i>Complement Med</i> . 2007;13(4):427-433. doi:10.1089/acm.2006.6052.		Х				
Yamamoto-Kabasawa K, Hosojima M, Yata Y, et al. Benefits of a 12-week lifestyle modification program including diet and combined aerobic and resistance exercise on albuminuria in diabetic and non-diabetic Japanese populations. <i>Clin Exp Nephrol</i> . 2015;19(6):1079-1089. doi:10.1007/s10157-015-1103-5.				х		
Yan JH, Gu WJ, Pan L. Lack of evidence on tai chi-related effects in patients with type 2 diabetes mellitus: a meta-analysis. <i>Exp</i> <i>Clin Endocrinol Diabetes</i> . 2013;121(5):266- 271. doi:10.1055/s-0033-1334932.		Х				
Yang GY, Wang LQ, Ren J, et al. Evidence base of clinical studies on tai chi: a bibliometric analysis. <i>PLoS One</i> . 2015;10(3):e0120655. doi:10.1371/journal.pone.0120655.		Х				
Yang K. A review of yoga programs for four leading risk factors of chronic diseases. <i>Evid</i> <i>Based Complement Alternat Med</i> . 2007;4(4):487-491. doi:10.1093/ecam/nem154.					Х	

Citation	Outcome	Population	Study Design	Exposure	Not ideal fit for replacement of de novo search	Other
Yang Z, Scott CA, Mao C, Farmer AJ. Resistance exercise versus aerobic exercise for type 2 diabetes: a systematic review and meta-analysis. <i>Sports Med</i> .		х				
2014;44(4):487-499. doi:10.1007/s40279- 013-0128-8.						
Yardley JE, Colberg SR. Update on management of type 1 diabetes and type 2 diabetes in athletes. <i>Curr Sports Med Rep.</i> 2017;16(1):38-44. doi:10.1249/JSR.00000000000327.		Х				
Yates T, Khunti K, Bull F, Gorely T, Davies MJ. The role of physical activity in the management of impaired glucose tolerance: a systematic review. <i>Diabetologia</i> . 2007;50(6):1116-1126. doi:10.1007/s00125-007-0638-8.			x			
Yu TT, Yu XL, Zeng LM, Zhou X, Zhao RH. Baduanjin for diabetes: a systematic review. <i>Chinese Journal of Evidence-Based</i> <i>Medicine</i> . 2014;14(3):341-348.		х				
Zaccardi F, O'Donovan G, Webb DR, et al. Cardiorespiratory fitness and risk of type 2 diabetes mellitus: a 23-year cohort study and a meta-analysis of prospective studies. <i>Atherosclerosis</i> . 2015;243(1):131- 137.doi:10.1016/j.atherosclerosis.2015.09.				x		
016 Zanuso S, Jimenez A, Pugliese G, Corigliano G, Balducci S. Exercise for the management of type 2 diabetes: a review of the evidence. <i>Acta Diabetol</i> . 2010;47(1):15-22. doi:10.1007/s00592-009-0126-3.			x			
Zhang X, Imperatore G, Thomas W, et al. Effect of lifestyle interventions on glucose regulation among adults without impaired glucose tolerance or diabetes: a systematic review and meta-analysis. <i>Diabetes Res Clin</i> <i>Pract</i> . Jan 2017:149-164. doi:10.1016/j.diabres.2016.11.020.	x					
Zheng L, Wu J, Wang G, et al. Comparison of control fasting plasma glucose of exercise-only versus exercise-diet among a pre-diabetic population: a meta-analysis. <i>Eur J Clin Nutr</i> . 2016;70(4):424-430. doi:10.1038/ejcn.2015.128.	x					
Zou Z, Cai W, Cai M, Xiao M, Wang Z. Influence of the intervention of exercise on obese type II diabetes mellitus: a meta- analysis. <i>Prim Care Diabetes</i> . 2016;10(3):186-201. doi:10.1016/j.pcd.2015.10.003.	х					

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Zwald M, Elliott L, Brownson RC, Skala M. Evidence-based diabetes prevention and control programs and policies in local health departments. <i>Diabetes Educ</i> . 2015;41(6):755-762. doi:10.1177/0145721715601736.			х			

References

1. Fogelholm M. Physical activity, fitness and fatness: relations to mortality, morbidity and disease risk factors. A systematic review. *Obes Rev.* 2010;11(3):202-221. doi:10.1111/j.1467-789X.2009.00653.x.

2. Qin L, Knol MJ, Corpeleijn E, Stolk RP. Does physical activity modify the risk of obesity for type 2 diabetes: a review of epidemiological data. *Eur J Epidemiol*. 2010;25(1):5-12. doi:10.1007/s10654-009-9395-y.

3. Reiner M, Niermann C, Jekauc D, Woll A. Long-term health benefits of physical activity—a systematic review of longitudinal studies. *BMC Public Health*. 2013;813. doi:10.1186/1471-2458-13-813.

4. Warburton DE, Charlesworth S, Ivey A, Nettlefold L, Bredin SS. A systematic review of the evidence for Canada's Physical Activity Guidelines for Adults. *Int J Behav Nutr Phys Act*. 2010;7:39. doi:10.1186/1479-5868-7-39.

5. Aune D, Norat T, Leitzmann M, Tonstad S, Vatten LJ. Physical activity and the risk of type 2 diabetes: a systematic review and dose-response meta-analysis. *Eur J Epidemiol*. 2015;30(7):529-542. doi:10.1007/s10654-015-0056-z.

6. Cloostermans L, Wendel-Vos W, Doornbos G, et al. Independent and combined effects of physical activity and body mass index on the development of type 2 diabetes—a meta-analysis of 9 prospective cohort studies. *Int J Behav Nutr Phys Act*. 2015:147. doi:10.1186/s12966-015-0304-3.

7. Huai P, Han H, Reilly KH, Guo X, Zhang J, Xu A. Leisure-time physical activity and risk of type 2 diabetes: a meta-analysis of prospective cohort studies. *Endocrine*. 2016;52(2):226-230. doi:10.1007/s12020-015-0769-5.

8. Jeon CY, Lokken RP, Hu FB, van Dam RM. Physical activity of moderate intensity and risk of type 2 diabetes: a systematic review. *Diabetes Care*. 2007;30(3):744-752. doi:10.2337/dc06-1842.

9. Kyu HH, Bachman VF, Alexander LT, et al. Physical activity and risk of breast cancer, colon cancer, diabetes, ischemic heart disease, and ischemic stroke events: systematic review and dose-response meta-analysis for the Global Burden of Disease Study 2013. *BMJ*. 2016;354:i3857. doi:10.1136/bmj.i3857.

10. Merlotti C, Morabito A, Pontiroli AE. Prevention of type 2 diabetes; a systematic review and metaanalysis of different intervention strategies. *Diabetes Obes Metab.* 2014;16(8):719-727. doi:10.1111/dom.12270.

11. Wahid A, Manek N, Nichols M, et al. Quantifying the association between physical activity and cardiovascular disease and diabetes: a systematic review and meta-analysis. *J Am Heart Assoc*. 2016;5(9). pii:e002495. doi:10.1161/JAHA.115.002495.

12. Xu F, Wang Y, Ware RS, et al. Joint impact of physical activity and family history on the development of diabetes among urban adults in Mainland China: a pooled analysis of community-based prospective cohort studies. *Asia Pac J Public Health*. 2015;27(2):NP372-381. doi:10.1177/1010539512443700.