

Table B.1.e. Adiposity-related outcomes: Association between physical activity and measures of adiposity among adults, by comparison and author

[See the Supplementary materials](#) for description of evidence of US PAGAC by outcome

Systematic review evidence Review credibility	No. of studies/ Study design No. of participants	Quality Assessment					Description of evidence Summary of findings	Certainty
		Risk of bias	Inconsistency	Indirectness †	Imprecision	Other		
Walking								
Paudel 2019 (54) Low	3 cross sectional studies N=435	Serious risk of bias	No serious inconsistency	Serious indirectness	Serious imprecision	None	Examination of the association between PA and measures of adiposity among South Asian adults. One study reported a protective association with walking and BF% , FMI , and FFMI , one study reported no association between walking with BMI, WC and FMI but found significant associations between cycling and BMI, BW, WC, and fat mass, and the last study found no association between increasing levels of walking and BMI or WC.	VERY LOW ^a
Light-intensity PA								
Amagasa 2018 (2) Low	14 cross-sectional studies 1 cohort study N=20,552	No serious risk of bias	Serious inconsistency	No serious indirectness	Serious imprecision	None	LIPA was found to have a favourable association with WC in 8/12 cross-sectional studies and an inconsistent association with BMI in 4/10 cross-sectional studies. One cohort study found that women in the highest tertiles of LIPA time had lower fat mass, BF%, and central fat at 1 year compared with women in lowest and middle tertiles of LIPA; no significant effects were found in fat-free mass, BW, BMI, and WC .	VERY LOW ^b
Chastin 2019 (14) Moderate	4 RCTs or CCTs 17 cross-sectional studies 1 prospective cohort N=NR	No serious risk of bias	No serious inconsistency	Serious indirectness	No serious imprecision	None	Studies evaluated the association between LIPA (as defined by each study, and inconsistent between studies) and adiposity measures. 2/4 trials reported significant effects on measures of fat mass or BF% . Cross-sectional studies showed "consistent reports across studies on the association between time spent in LIPA and adiposity markers; but the reported effect sizes were small and consistently stronger with increased absolute intensity of LIPA." One cohort study showed a small decrease in BW to be associated with increased time spent in LIPA.	VERY LOW ^c

Systematic review evidence	No. of studies/ Study design	Quality Assessment					Description of evidence Summary of findings	Certainty
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Review credibility	No. of participants							
High-intensity interval training								
Andreato 2019 (4) ^d Moderate	48 RCTs or pre-post studies N=1,222	Serious risk of bias	No serious inconsistency	Serious indirectness	No serious imprecision	Dose-response relationship ^e	<p>Studies evaluated the association between HIIT vs. MICT vs. controls on anthropometric variables among adults with overweight or obesity. Mean follow-up was 10 weeks (range 2 to 24 weeks). In most studies, HIIT was performed 3 times per week; 30 studies evaluated cycling and 18 evaluation running/walking.</p> <p>Compared with no exercise control groups, HIIT was significantly associated with decreased body mass (MD = -1.45 kg [95% CI -1.85 to -1.05] kJ, n=1,168), BMI (MD = -0.44 kg/m² [95% CI -0.59 to -0.30], n=990), WC (MD = -2.3 cm [95% CI, -3.1 to -1.4], n=671), and BF% (MD = -1.29% [95% CI -1.70 to -0.87], n=833). When comparing HIIT vs. MICT protocols that had similar energy expenditures or workloads, HIIT was associated with greater reduction in body mass than MICT (MD = -0.41 kg [95% CI -0.79 to -0.023]); but there were no other differences between HIIT and MICT with similar protocols on BMI, WC, or BF%.</p>	LOW ^f
Sultana 2019 (70) Low	21 RCTs N=NR	Serious risk of bias	Serious inconsistency	Serious indirectness	Serious imprecision	None	<p>Studies evaluated the association between low-volume HIIT (<500 MET-min/week) performed for at least 4 weeks for a minimum of 2 days/week vs. a non-exercising control or MICT and measures of body composition. Most studies recruited adults with overweight or obesity, mean age ranged from 19 to 70 years. Exercise interventions ranged from 4 to 16 weeks, with most taking place for 12 weeks with exercise sessions performed 2 to 5 days/week.</p> <p>No significant association was found between low-volume HIIT vs. non-exercising control groups for measures of total body fat mass (ES = -0.129 [95% CI, -0.468 to 0.210], 6 studies), BF% (ES = -0.063 [95% CI, -0.383 to 0.257], 7 studies), and lean body mass (ES = 0.050 [95% CI, -0.250 to 0.351], 8 studies) or between low-volume HIIT vs. MICT on total body fat mass (ES = -0.021 [95% CI, -0.272 to 0.231], 6 studies), BF% (ES = 0.005 [95% CI, -0.294 to 0.304], 7 studies) or lean body mass (ES = 0.030 [95% CI, -0.167 to 0.266], 11 studies).</p>	VERY LOW ^g

Abbreviations: ARD = absolute rate difference; BF% = percent body fat; BMI = body mass index; BW = body weight; CCT = controlled clinical trial; CI = confidence interval; cm = centimeters; DXA = dual-energy X-ray absorptiometry; ES = effect size; FMI = fat mass index; FFMI = fat-free mass index; HIIT = high-intensity interval training; HR = hazards ratio; kg = kilograms; LIPA = light-intensity physical activity; m = meters; MET = metabolic equivalent of task; MetS = metabolic syndrome; MICT = moderate-intensity continuous training; min = minutes; MVPA = moderate-to-vigorous intensity PA; NAFLD = non-alcoholic fatty liver disease; NR = not reported; PCOS = polycystic ovary syndrome; RCT = randomized controlled trial; RR = risk ratio; SB = sedentary behaviour; SIT = sprint interval training; WC = waist circumference

† Serious indirectness indicates measurement of intermediate/indirect outcomes or heterogeneity in exposures and comparisons assessed; certainty of evidence was not always downgraded for indirectness if it was not judged to impact the certainty in the findings for the outcome evaluated in the review

^a Certainty of evidence rated as very low according to authors given serious risk of bias and serious imprecision. Serious indirectness is also present given variability in comparisons

^b Certainty of evidence not upgraded

^c Certainty of evidence not upgraded given serious indirectness in comparisons of exposures and lack of detailed results, with most evidence from cross-sectional studies and inconsistency across RCTs and nonrandomized intervention studies

^d Review by Wewege 2017 (74) included overlapping evidence and found consistent effects of HIIT vs. MICT on measures of adiposity among adults with overweight or obesity.

^e A significant association was found between number of sessions and greater reductions in body mass

^f Certainty of evidence downgraded given serious risk of bias of all included studies, including lack of control for participants' diets and total PA and serious indirectness given variability of exercise protocols and comparisons; review did not report results of RCTs separately (10 studies were 'adequately randomized')

^g Certainty of evidence downgraded given serious risk of bias of all included studies, serious indirectness given variability of exercise protocols and comparisons, and serious imprecision in estimates of effect within individual studies and pooled effect sizes