

JOURNAL WATCH

Our panel of experts highlight the most important research articles across the spectrum of topics relevant to the field of pain management

Expert panel: Dominique Hansen, Hasselt University, Faculty of Medicine, Belgium; Preethi Yerram, University of Missouri, Columbia, MO, USA; Pranav Dalal, University of Missouri, Columbia, MO, USA; Adam Whaley-Connell, University of Missouri, Columbia, MO, USA

Srikanthan P, Karlamangla AS. Relative muscle mass is inversely associated with insulin resistance and prediabetes. Findings from The Third National Health and Nutrition Examination Survey. *J. Clin. Endocrinol. Metab.* 96(9), 2898–2903 (2011).

Insulin resistance is rapidly increasing in prevalence; very low muscle mass is a risk factor for insulin resistance. The aim was to determine whether increases in muscle mass at average and above average levels are associated with improved glucose regulation. A cross-sectional analysis of National Health and Nutrition Examination Survey III data was conducted. Data from 13,644 subjects in a national study were evaluated. Homeostasis model assessment of insulin resistance, blood glycosylated hemoglobin level, prevalence of transitional/pre or overt diabetes (PDM), and prevalence of overt diabetes mellitus was assessed. All four outcomes decreased from the lowest quartile to the highest quartile of skeletal muscle index, the ratio of total skeletal muscle mass to total bodyweight. After adjusting for age, ethnicity, sex and generalized and central obesity, each 10% increase in skeletal muscle index was associated with 11% relative reduction in homeostasis model assessment of insulin resistance and 12% relative reduction in PDM prevalence. Across the full range, higher muscle mass (relative to body

size) is associated with better insulin sensitivity and lower risk of PDM.

Mikus CR, Fairfax ST, Libla JL et al. Seven days of aerobic exercise training improves conduit artery blood flow following glucose ingestion in patients with Type 2 diabetes. *J. Appl. Physiol.* 111(3), 657–664 (2011).

The vasodilatory effects of insulin account for up to 40% of insulin-mediated glucose disposal; however, insulin-stimulated vasodilation is impaired in individuals with Type 2 diabetes, limiting perfusion and delivery of glucose and insulin to target tissues. To determine whether exercise training improves conduit artery blood flow following glucose ingestion, we assessed femoral blood flow (FBF) during an oral glucose tolerance test (OGTT) in 11 overweight or obese, sedentary individuals with noninsulin-dependent Type 2 diabetes before and after 7 days of supervised treadmill and cycling exercise. Fasting glucose, insulin and FBF were not significantly different after 7 days of exercise, nor were glucose or insulin responses to the OGTT. However, estimates of whole body insulin sensitivity increased ($p < 0.05$). Prior to exercise training, FBF did not change significantly during the OGTT. By contrast, after exercise training, FBF increased significantly ($p < 0.05$). In conclusion, 7 days of aerobic exercise



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training improves conduit artery blood flow during an OGTT in individuals with Type 2 diabetes.

Pergola PE, Raskin P, Toto RD *et al.*
Bardoxolone methyl and kidney function in CKD with Type 2 diabetes.
N. Engl. J. Med. 365(4), 327–336 (2011).

Patients with Type 2 diabetes and an estimated glomerular filtration rate between 20 and 45 ml/min/1.73 m² were randomly assigned in a 1:1:1:1 ratio to receive placebo or oral bardoxolone methyl, an antioxidant inflammatory modulator, in a dose titration study for 52 weeks. Bardoxolone methyl increased the mean estimated glomerular filtration rate compared with placebo, at 24 weeks (differences of 8.2 ± 1.5 in the 25 mg group, 11.4 ± 1.5 in the 75 mg group and 10.4 ± 1.5 in the 150 mg group were noted; $p < 0.001$) that were maintained through to week 52. These results are promising, but whether this agent can actually prevent chronic kidney disease progression to end-stage renal disease can only be answered with a longer term Phase III trial that is currently underway.

Baigent C, Landray MJ, Reith C *et al.*
The effects of lowering LDL cholesterol with simvastatin plus ezetimibe in patients with chronic

kidney disease (Study of Heart and Renal Protection): a randomised placebo-controlled trial. *Lancet* 377(9784), 2181–2192 (2011).

In this study, 9270 patients with chronic kidney disease (3023 on dialysis and 6247 not) were randomized to simvastatin 20 mg plus ezetimibe 10 mg versus placebo. After a median follow-up of 4.9 years, patients randomized to the ezetimibe/simvastatin combination had a significant reduction in major atherosclerotic events compared with the placebo group. There were significant reductions in nonhemorrhagic stroke and arterial revascularization, but the rates of nonfatal myocardial infarction and death from coronary heart disease were similar in both groups. There was no significant increase in the risk of death from noncardiovascular causes or excess risks of hepatitis, gall stones or cancers with this combination.

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Journal Watch highlights some of the most important papers recently published in the field of diabetes management and research. The editorial team welcomes recommendations for relevant papers for inclusion in future issues.

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