

**Ronald J. Sigal, BSc, MD, MPH, FRCPC**

Professor, Division of Endocrinology and Metabolism, Departments of Medicine, Cardiac Sciences and  
Community Health Sciences

Professor, Faculty of Kinesiology

AI-HS Health Senior Scholar

**RESEARCH INTERESTS AND ACTIVITIES**

*Key Words: exercise, diabetes mellitus, obesity, cardiovascular disease, randomized controlled trials, cohort studies*

Dr. Sigal's current research focuses on clinical trials related to physical activity, obesity, diabetes and cardiovascular disease. His research also includes randomized trials evaluating exercise interventions in people with or at risk of diabetes.

**RESEARCH IN PROGRESS**

<b><u>ROLE</u></b>	<b><u>FUNDING AGENCY</u></b>	<b><u>TITLE</u></b>	<b><u>2010/11 ALLOCATION</u></b>
Principal Investigator	Alberta Heritage Foundation for Medical Research	<i>Health senior scholar award: Exercise interventions in people with or at risk of diabetes</i>	155,000
	Canadian Institutes of Health Research	<i>Resistance exercise in already-active diabetic individuals (READI)</i>	120,649
	National Institutes of Health/NHLBI/NIDDK	<i>Action to control cardiovascular risk in diabetes—International ongoing study (ACCORDION)</i>	75,000
	University of Calgary Office of the Provost (Doucet Estate)	<i>The effects of supervised, facility-based exercise programs versus lower-cost alternatives on glycemic control and other cardiac risk factors in type 2 diabetes: A pilot study</i>	30,000
Co-Principal Investigator	Faculty of Medicine and Dentistry and Capital Health New Emerging Research Teams Grant	<i>Practical behavioural modifications for type 2 diabetes treatment: Physical activity and nutrition for diabetes in Alberta (PANDA)</i>	75,000

## PUBLICATIONS

### Peer-Reviewed Journal Articles

Alberga A, **Sigal RJ**, Kenny GP. Role of resistance exercise in reducing risk for cardiometabolic disease. *Current Cardiovascular Risk Reports* 2010; July 7.

Kenny G, Yardley J, Brown C, **Sigal RJ**, Jay O. Heat stress in older individuals, and patients with common chronic diseases. *Canadian Medical Association Journal* 2010;182(10):1053-60.

Larose J, **Sigal RJ**, Boulé NG, Wells GA, Prud'homme D, Fortier M, Reid RD, Tulloch H, Coyle D, Phillips P, Jennings A, Khandwala F, Kenny GP. The effect of exercise training on physical fitness in type 2 diabetes mellitus. *Medicine and Science in Sports and Exercise* 2010;42(8):1439-47.

Plotnikoff R, Johnson S, Luchak M, Pollock C, Holt N, Leahy A, Liebreich T, **Sigal RJ**, Boulé N. Peer telephone counseling for adults with type 2 diabetes mellitus: A case-study approach to inform the design, development, and evaluation of programs targeting physical activity. *The Diabetes Educator* 2010;36(5):717-29.

**Sigal RJ**, Kenny GP. New evidence for the value of supervised exercise training in type 2 diabetes mellitus. *Archives of Internal Medicine* 2010;170(20):1790-1.

**Sigal RJ**, Kenny GP. Combined aerobic and resistance exercise for patients with type 2 diabetes. *Journal of the American Medical Association* 2010;304(20):2298-9.

Colberg SR, **Sigal RJ**, Fernhall B, Regensteiner JG, Blissmer BJ, Rubin RR, Chasan-Taber L, Albright AL, Braun B. Exercise and type 2 diabetes: The American College of Sports Medicine and the American Diabetes Association joint position statement. *Diabetes Care* 2010;33(12):e147-67 and *Medicine and Science in Sports and Exercise* 2010;42(12):2282-303.

Colberg SR, **Sigal RJ**, Fernhall B, Regensteiner JG, Blissmer BJ, Rubin RR, Chasan-Taber L, Albright AL, Braun B. Exercise and type 2 diabetes: The American College of Sports Medicine and the American Diabetes Association: joint position statement executive summary. *Diabetes Care* 2010;33(12):2692-6.

Gavin C, **Sigal RJ**, Cousins M, Menard ML, Cousins M, Khandwala F, Kenny GP, Proctor S, Ooi TC. Resistance exercise but not aerobic exercise lowers remnant-like lipoprotein particle cholesterol in type 2 diabetes: A randomized controlled trial. *Atherosclerosis* 2010;213(2):552-7.

Dasgupta K, Joseph L, Pilote L, Strachan I, **Sigal RJ**, Chan C. Daily steps are low year-round and dip lower in fall/winter: Findings from a longitudinal diabetes cohort. *Cardiovascular Diabetology* 2010;9:81.

Larose J, **Sigal RJ**, Khandwala F, Prud'homme D, Boulé NG, Kenny GP on behalf of the DARE trial investigators. Associations between physical fitness and haemoglobin A1c in type 2 diabetes mellitus. *Diabetologia* 2011;54(1):93-102.

Fortier MS, Wiseman E, Sweet S, O'Sullivan T, Blanchard B, **Sigal RJ**, Hogg WE. A moderated mediation of motivation on physical activity in the context of the Physical Activity Counseling randomized control trial. *Psychology of Sport & Exercise* 2011;12:71-8.

Plotnikoff RC, Trinh L, Courneya KS, Karunamuni N, **Sigal RJ**. Predictors of physical activity in adults with type 2 diabetes. *American Journal of Health Behavior* 2011;35(3):359-70.

### **Abstracts Published in Journals**

Yardley J, **Sigal RJ**, Kenny GP, Perkins BA, Riddell M. Performing resistance exercise before aerobic exercise reduces the risk of hypoglycemia in type 1 diabetes: A study using continuous glucose monitoring. *Canadian Journal of Diabetes* 2010;34(3):247(Abstract 8).

Armstrong MJ, Mottershead T, Hemmelgarn BR, **Sigal RJ**. Motivational interviewing to improve weight loss in overweight patients: A systematic review and meta-analysis of randomized controlled trials. *Canadian Journal of Diabetes* 2010;34(3):262(Abstract 66).

Yardley JE, Kenny GP, Perkins BA, Riddell MC, Malcolm JC, **Sigal RJ**. Greater fluctuations in blood glucose seen both during and after aerobic exercise as compared to resistance or no exercise in type 1 diabetes: A study using continuous glucose monitoring. Canadian Society for Exercise Physiology Annual Meeting – Exploring the Routes to Health and Fitness, November 3-6, 2010, Toronto, Ontario. *Applied Physiology, Nutrition, and Metabolism* 2010;3(Suppl 1):S112.

Gavin C, **Sigal RJ**, Cousins M, Menard ML, Cousins M, Khandwala F, Kenny GP, Proctor S, Ooi TC. Resistance exercise but not aerobic exercise lowers remnant-like lipoprotein particle cholesterol in type 2 diabetes: A randomised controlled trial. *Irish Journal of Medical Sciences* 2010;139(Suppl 13):533.

**Sigal RJ**, Kenny G, Goldfield G, Hadjiyannakis S, Malcolm J, Gougeon R, Pacaud D, Prudhomme D, Ford G, Donovan L, Khandwala F, Edwards A. Neither aerobic exercise nor resistance exercise improves glycemic control in type 1 diabetes: A randomized controlled trial. *Diabetes* 2011;(Suppl 1):142-OR.

### **GRADUATE STUDENT SUPERVISION**

Marni Armstrong, PhD student, Department of Cardiovascular Sciences

Thesis Topic: Promoting long-term exercise adherence in Type 2 diabetes: A mixed-methods evaluation

Zainisha Vasanji, PhD Student, Faculty of Kinesiology

Thesis Topic: Pilot studies assessing Myocardial Fibrosis, left ventricular function, and aerobic capacity in individuals with Type 1 Diabetes

Jane Yardley, PhD student, Population Health Institute, University of Ottawa

Thesis Topic: Acute glycemic responses to aerobic exercise, resistance exercise, or both in patients with Type 1 Diabetes (successfully defended PhD in April 2011)

Angela Alberga, PhD student, School of Human Kinetics, University of Ottawa

Thesis Topic: The effects of aerobic exercise, resistance exercise and their combination, on cardiorespiratory and musculoskeletal fitness, resting metabolic rate, regional body composition and metabolic profile in obese adolescents