

involved in another person's fitness efforts must be aware of their responsibility to temper newfound enthusiasm for fitness and health with common sense.

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REFERENCE

1. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ* 2006;174(6):801-9.

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Darren Warburton and colleagues¹ conclude that "there appears to be a linear relation between physical activity and health status, such that a further increase in physical activity and fitness will lead to additional improvements in health status." Although Health Canada's guidelines on physical activity appear sufficient to elicit health benefits, especially in previously sedentary people, debate continues regarding the intensity and type of physical activity needed to achieve the most favourable health changes without eliciting osteoarthritis and cardiovascular abnormalities not present at rest.² The results of our own recent investigations of top-level endurance athletes³⁻⁵ support the conclusion that substantial intensification of leisure-time physical activity does not increase the risk of adverse cardiovascular events and is likely to be effective in eliciting supplemental health gains. We further suggest that higher intensities and amounts of aerobic training may be safely implemented by sedentary individuals living in the community as a measure to gain further health advantages, especially for those most at risk of cardiovascular problems, osteoporosis and cancer.¹

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REFERENCES

1. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ* 2006;174(6):801-9.
2. Lee IM, Sesso HD, Oguma Y, et al. Relative intensity of physical activity and risk of coronary heart disease. *Circulation* 2003;107:1110-6.
3. Lippi G, Salvagno GL, Montagnana M, et al. Chronic influence of vigorous aerobic training on hemostasis. *Blood Coagul Fibrinolysis* 2005;16:533-4.
4. Lippi G, Salvagno GL, Guidi GC. Other advantages to aerobic exercise [letter]. *CMAJ* 2005;173:1066.
5. Lippi G, Salvagno GL, Montagnana M, et al. Influence of physical exercise and relationship with biochemical variables of NT-pro-brain natriuretic peptide and ischemia modified albumin. *Clin Chim Acta* 2005;367(1-2):175-80.

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As described by Darren Warburton and colleagues,¹ regular physical activity provides a variety of health and fitness benefits. However, barriers to exercise are frequently reported, including lack of time, lack of access and lack of safe environments in which to work out.² Increased availability of affordable, secure environments for physical activities combined with acceptable exercise choices, such as walking, swimming, biking or fitness classes, may increase activity levels.

However, education alone does not motivate changes in behaviour, nor will such changes be made before a person is ready to do so.³ Researchers and health care providers have implemented health-promoting interventions for diverse groups of people for many years with mixed success.⁴ They have also reported that disease and disability disproportionately affect racial and ethnic minorities and impoverished people.⁵ Therefore, we need to develop and deliver inclusive, culturally appropriate interventions to increase and encourage active lifestyles and healthy diets in our communities.

Highlighting the public health benefits of physical activities and active lifestyles, as Warburton and colleagues¹ have done, is important. Discussing barriers to physical activities and suggesting solutions, as well as making recommendations about best practices to increase physical activities, are just as important. To slow and reverse current trends in obesity-related health problems, highly effective health promotion interventions

and removal of barriers to active lifestyles and healthy diets are greatly needed.⁶

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REFERENCES

1. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ* 2006;174(6):801-9.
2. French SA, Story M, Jeffery RW. Environmental influences on eating and physical activity. *Annu Rev Public Health* 2001;22:309-35.
3. Sneed NV, Paul SC. Readiness for behavioral changes in patients with heart failure. *Am J Crit Care* 2003;12(5):444-53.
4. Wanko NS, Brazier CW, Young-Rogers D, et al. Exercise preferences and barriers in urban African Americans with type 2 diabetes. *Diabetes Educ* 2004;30(3):502-13.
5. Brownson RC, Eyster AA, King AC. Reliability of information on physical activity and other chronic disease risk factors among US women aged 40 years or older. *Am J Epidemiol* 1999;149:379-91.
6. Desapriya E. Obesity epidemic [letter]. *Lancet* 2004;364:1488.

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For a substantial proportion of the population in impoverished nations, physical activity is more or less essential to earning a livelihood, rather than being just another activity aimed toward better health. To make ends meet, a subsistence farmer or manual labourer must start early in the morning and work until late in the evening. For example, the tricycle rickshaw is still a means of transport in some places, and the pedaller burns an immense number of calories throughout the day. But at the end of the day, his health may not have improved, despite his supposedly deriving health benefits from aerobic physical activity.¹⁻³ Therefore, it seems that more than physical activity alone is needed.

Instead, various factors probably interact with physical activity to generate the health benefits observed. Although the study by Darren Warburton and associates¹ is meticulous, detailed and interesting, the interplay of an adequate balanced diet, timely replenishment of essential minerals and nutrients, the environment, adequate rest, psycho-

logical factors, comorbidities and other factors needs to be explored.

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REFERENCES

1. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ* 2006;174:801-9.
2. Lippi G, Salvagno GL, Guidi GC. Other advantages to aerobic exercise [letter]. *CMAJ* 2005;173:1066.
3. Barengo NC, Hu G, Lakka TA, et al. Low physical activity as a predictor for total and cardiovascular disease mortality in middle-aged men and women in Finland. *Eur Heart J* 2004;25:2204-11.

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[Two of the authors respond:]

We agree with Herbert Nehrlich that there are many situations in which physicians would benefit from the assistance of health and fitness professionals. It is essential that such advice be sought from professionals who have received formal training and attained national accreditation. In North America¹ these would be professionals certified by the Canadian Society for Exercise Physiology or the American College of Sports Medicine. Together, physicians and health and fitness professionals will be able to provide information that is based on sound physiological principles and a clear knowledge of the absolute and relative contraindications to exercise for a variety of populations.

Giuseppe Lippi and associates correctly point out that vigorous exercise may lead to supplemental health gains in sedentary community-dwelling individuals. There is growing evidence to suggest that certain groups may benefit greatly from high-intensity exercise training. We¹ have advocated high-intensity exercise training for sedentary individuals² and patients with cardiovascular disease³ and chronic heart failure.⁴ However, we are careful to acknowledge that adherence to this form of exercise

may be poor and the risk of musculoskeletal injury higher. Therefore, we must weigh carefully the potential advantages and disadvantages of vigorous exercise for each individual client.

As pointed out by Ediriweera Desapriya and colleagues, discussion of the barriers to exercise and innovative means to deliver inclusive and culturally appropriate physical activity interventions is of great importance. Furthermore, more effective lifestyle interventions are required to address the global crisis of physical inactivity. We have worked diligently to address the barriers to physical activity and have taken a transdisciplinary approach to the creation of novel exercise interventions. More work is required to “develop and deliver” inclusive interventions for all, but we believe that our work^{1,5} is a step in the right direction.

As Rajesh Chauhan and associates point out, the determinants of health are multifactorial and physical activity is not the sole factor influencing health status. However, physical inactivity is an independent predictor of the risk for many chronic diseases and premature mortality. In fact, the risk for chronic disease and premature mortality in North America appears to be about 20% to 50% greater among those with a physically inactive lifestyle.⁵ Furthermore, physical activity appears to be protective in the presence of other known risk factors for chronic disease. Therefore, there is compelling evidence to support the independent health benefits of physical activity.

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REFERENCES

1. Warburton DER, Nicol CW, Bredin SSD. Prescribing exercise as preventive therapy. *CMAJ* 2006;174:961-74.
2. Warburton DE, Haykowsky MJ, Quinney HA, et al. Blood volume expansion and cardiorespiratory function: effects of training modality. *Med Sci Sports Exerc* 2004;36:991-1000.

3. Warburton DE, McKenzie DC, Haykowsky MJ, et al. Effectiveness of high-intensity interval training for the rehabilitation of patients with coronary artery disease. *Am J Cardiol* 2005;95:1080-4.
4. Safiyari H, Warburton DER, Taunton J, et al. The effectiveness of a 12-week home-based interval and resistance training program in patients with chronic heart failure. *Can J Appl Physiol* 2005;30:s70.
5. Warburton DER, Nicol CW, Bredin SSD. Health benefits of physical activity: the evidence. *CMAJ* 2006;174:801-9.

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Corrections

In a recent review article,¹ a study was mistakenly listed in Appendix 1 as having been excluded from the authors' meta-analysis because of “acute diarrhea not associated with use of antibiotic therapy,” when the true reason for exclusion was that the study in question was not randomized. We regret this error.

REFERENCE

1. Johnston BC, Supina AL, Vohra S. Probiotics for pediatric antibiotic-associated diarrhea: a meta-analysis of randomized placebo-controlled trials. *CMAJ* 2006;175(4):377-83.

DOI:10.1503/cmaj.061138

An error occurred in Figure 1 of a recent Analysis article,¹ whereby *D. latum* was expanded as *Dientamoeba latum* instead of *Diphyllobothrium latum*. We apologize for this error.

REFERENCE

1. Lagacé-Wiens PR, VanCaeseele PG, Koschik C. *Dientamoeba fragilis*: an emerging role in intestinal disease. *CMAJ* 2006;175(5):468-9.

DOI:10.1503/cmaj.061139

An author's name was mis-spelled in the online edition of the August 29 issue.¹ The correct spelling is Catherine Agbokou. We regret the error.

REFERENCE

1. Gauthier S, Herrmann N, Ferreri F, Agbokou C. Use of memantine to treat Alzheimer's disease [letter]. *CMAJ* 2006;175(5):501-2.

DOI:10.1503/cmaj.061145