

ATV & ORM Health Benefit Study Fact Sheet

- Study conducted by York University Physical Activity and Chronic Disease Unit, Faculty of Health, and supported by the Canadian Off-Highway Vehicle Distributors Council, the All Terrain Quad Council of Canada, The Motorcyclists Confederation of Canada and the Government of Nova Scotia
- A ground breaking, first ever comprehensive probe of the fitness and health benefits of all-terrain vehicle (ATV) and off-road motorcycle (ORM) recreational riding. The national study expanded on an Ontario pilot study of the health benefits of off-road motorcycle (ORM) riding.
- Jamie F. Burr, Veronica K. Jamnik, Jim A. Shaw and Professor Norman Gledhill at York University's Physical Activity and Chronic Disease Unit, Faculty of Health agreed to conduct the study and for Jamie Burr, a kinesiologist and exercise physiologist at York, the research would be part of his PhD. The purpose of the research -- to characterize the physiological demands of recreational ORV riding under typical ORV riding conditions using habitual recreation off-road vehicle riders.
- The study was approved by the university's human research ethics review board, and in accord with research ethics guidelines, written and informed consent was provided by all participants, with those younger than 18 yr also providing parental consent after verbal explanation of procedures.
- This published report (July 2010 issue of Medicine & Science in Sports & Exercise, the Official Journal of the American College of Sports Medicine (ACSM), "Physiological Demands of Off-Road Vehicle Riding") on one component of the research focuses specifically on the physiological demands of off-road vehicle (ORV) riding, compares them to the demands of other recreational activities, and explores the health and fitness benefits that ORV participation can provide to Canadians.
- Subsequent publications will examine the fitness and health of habitual recreational off-road riders; their own health perceptions, lifestyle behaviours and quality of life; and fitness and health training adaptations from six to eight weeks of ORV riding (i.e. how much ORV riding is required for health and fitness benefits to be derived).
- Study began in 2007 with a nationwide survey involving 310 participant to determine the characteristics of a "typical" rider and of a "typical" ride (Phase I). This information was then used as the basis to determine the health and fitness impacts of off-road riding (Phase II).

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- Phase II involved 128 riders – male and female divided between the age groups of 16-29, 30-49 and 50+. Riders were first familiarized with the trail for safety reasons. All riders used their own riding gear and vehicles to avoid the necessity of having to adjust to new equipment. Riders wore specially designed helmets and equipment that allowed researchers to monitor and measure the physical demands of off-road riding (heart rate, oxygen consumption, muscular involvement (fatigue), and rate of exertion).
- Off-road vehicle riding was found to require “a true physiological demand that would be expected to have a beneficial effect on health and fitness according to Canada’s current physical activity recommendations”
- Off-road vehicle riding was determined to be a recreational activity associated with moderate-intensity cardiovascular demand and fatigue-inducing muscular strength challenges, similar to other self-paced recreational sports such as golf, rock-climbing and alpine skiing
- Oxygen consumption, which is an indicator of physical work, increased by 3.5 and 6 times the resting values for ATV and ORM riding respectively – which falls within moderate intensity activity according to the American College of Sports Medicine guidelines and is in line with Canadian physical activity recommendations.
- The duration of a typical ride (2-3 hours for ATV, 1-2 hours for ORM) and the frequency of the rides (1-2 times a week) create sufficient opportunity to stimulate changes in aerobic fitness which falls within the physical activity guidelines (American College of Sports Medicine recommends between 450 – 720 MET minutes per week)
- “More health and fitness benefits could likely be realized if the frequency of riding were increased to a level compatible with the recommended Canadian guideline for physical activity”
- Using heart rate measurements alone, the demands of riding belong to the category of “hard” exercise – this increase of intensity may be linked to heightened psycho emotional responses (i.e. adrenalin), an effect of heat stress while riding, or a response to repeated isometric squeezing of the handlebars.

- When considering muscular force and power involvement, study results indicate a greater impact on muscular endurance as opposed to an increase in strength (NB: this is in reference to hand grip specifically)
- “Off-road vehicle riders perform considerable physical work using their arms and upper body.” This upper body strength requirement “could lead to beneficial training increases in musculoskeletal fitness”
- Study findings also picked up on the psycho-social effects of riding – the “enhanced quality of life and stress reduction effects of off-road riding”
- Findings also reflect the “importance of alternative physical activity such as off-road riding to promote physical activity in a group who might otherwise forego exercise altogether” (habitual ATV riders in the study were not avid exercisers) and all physical activity is beneficial.

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