

Running a marathon halts cellular suicide

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Apoptosis, the natural 'programmed' death of cells, is arrested in the aftermath of strenuous exercise. Researchers writing in the open access journal *BMC Physiology* studied peripheral blood mononuclear cells (PBMCs), isolated from whole blood samples taken from people after finishing a marathon, finding that the balance between expression of pro- and anti-apoptotic genes is shifted after the race.

Gabriella Marfe from the University of Rome 'Tor Vergata' led a team of researchers who studied ten amateur athletes after a 42km run. Marfe said, "Apoptosis is a normal physiological function dependent on a variety of signals, many of which can be modulated by strenuous exercise. Here, we've shown for the first time that exercise modulates expression of the sirtuin family of proteins, which may be key regulators of training".

The researchers believe that the sirtuin family of proteins, particularly SIRT1, may be involved in the protective effects of exercise against <u>cell</u> <u>death</u>. Speaking about these results, Marfe added, "Sirtuins may play a crucial role of mediators/effectors in the maintenance of skeletal and <u>cardiac muscle</u> tissues as well as neurons, thus explaining the synergic protective effects of <u>physical exercise</u> and <u>calorie restriction</u> for survival and ageing".

The authors also caution that any exercise people carry out should be done properly. Marfe said, "Untrained amateur athletes often do hard training without professional advice. Such intense and exhaustive exercise can be harmful to health. In order to achieve beneficial effects,



we recommend that exercise training should form part of a lifelong regime with expert medical advice and supervision".

More information: The effect of marathon on mRNA expression of anti-apoptotic and pro-apoptotic proteins and sirtuins family in male recreational long-distance runners, Gabriella Marfe, Marco Tafani, Bruna Pucci, Carla Di Stefano, Manuela Indelicato, Angela Andreoli, Matteo Antonio Russo, Paola Sinibaldi-Salimei and Vincenzo Manzi, BMC Physiology (in press), <u>www.biomedcentral.com/bmcphysiol/</u>

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