

To the edge... and over



Special report on the Olympics

When the Olympic Games open in Athens on 13 August, all eyes will be on the athletes. But it's not just the spectators who will be showing an interest. Sports scientists and doctors will also be keeping a watchful eye on the competitors — to them, the Olympics are a kind of giant experiment.

Few elite athletes are willing to participate in lab-bound projects. So the games are an important component of trials that help to determine how well various training strategies work. Such regimes can include high-tech equipment to pinpoint exactly which muscles are used in a given event, strict diets, and high-altitude training (see 'A breed apart', opposite).

The Olympic Games showcase talented people pushing their bodies to the absolute limit. In the following pages, *Nature* looks at the unusual



problems faced by this elite group — beyond the normal wear and tear of sprained ankles, pulled muscles and torn tendons. For some, their bodies are worked so hard — simply from training, let alone the added abuse of any hormones or drugs — that they develop a syndrome of perpetual exhaustion (see 'The medals and the damage done', page 604). For others, a rare genetic condition can mean that their decision to compete in the games could prove fatal (see 'Heart-stopping action', page 606).

Researchers are also keen to see how the athletes will cope with Athens' heavy pollution. For cyclists and marathon runners, in particular, the events will be as much a test of their lungs as of their legs (see 'Gasping for victory', page 608).

Elite sport, a triumph of the human body over the laws of nature, pushes participants to the edge of possibilities — and sometimes right over that edge. In the coming weeks, *Nature* will be watching to see what records — and which athletes — are broken in the process. **Nicola Jones, assistant news and features editor**

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