

Integrating Blood Profiling into Athlete Programmes



Nowadays, the prevalence of blood profiling is becoming more and more common in elite sport. A workshop on profiling was included in the World Class Coaching Conference that was attended by SINI staff during November of last year, and following discussions between David Reid (HPM, Athletics) and Declan Gamble (SINI sport scientist), it was acknowledged that the screening process could be beneficial to athletes and was worth investing in. With the technical assistance of Dr Gareth Davison (UUJ Sports Science Coordinator), it has been possible to introduce this service. Last week, eight members of the SINI athletics squad attended the Human Performance Laboratory and provided blood samples.

What is profiling and what relevance does it have to athletes?

Blood profiling provides information on the overall health status of athletes and an insight into how well training loads are being tolerated. This can be a very effective tool if implemented in a structured way into athlete programmes. The process is based on the knowledge that biological markers within the blood fluctuate as a function of both health status and adaptation to varying levels of training stress. The analysis process includes assessment of haematological (red blood cells, white blood cells), biochemical (urea, electrolytes), and immunological (glutamine) markers. For example, monitoring of iron status is of particular interest because many athletes, particularly female endurance athletes, have been shown to have sub-optimal iron stores. Iron is an essential element for the formation of haemoglobin of red blood cells and plays an important role in the transport of oxygen to tissues. Iron stores can be influenced by; inadequate dietary iron intake, loss of iron through sweat and/or urine, and low dietary iron absorption. Thus, suboptimal iron levels have the potential to impair endurance performance, through a reduced oxygen carrying capacity.

The screening process

Initially, the athletes and coaches need to be educated about the screening process and the outcomes that accompany it. Prior to coming in to the laboratory the athletes are advised to refrain from exercise for the preceding 12 hrs. Venous blood samples are then drawn following 10 minutes of supine rest. Two to three profiles are required to establish baseline levels (i.e. of the various markers). Once these have been obtained, profiling can be used tri-annually and with some athletes every 4 – 6 weeks, depending on circumstances. The previously established link between the Sports Science department at UUJ and the haematology laboratory at the Ulster Hospital has facilitated rapid analysis of the blood samples and communication of results. This process ensures that the athletes and coaches receive the results and interpretation, within 2-3 days of the blood tests being conducted.

The overwhelming success of the UK Sport haematological initiative has led to a rapid expansion of the service, which was originally set up to cater for a maximum of 30 athletes, and now provides screening for approximately 120 athletes, who are preparing for Athens. It is envisaged that the knowledge gained from the pilot initiative will be disseminated throughout the regional institute's post-Athens, and this information will contribute to enhancing the profiling service at SINI.