



HUMAN PERFORMANCE AND FITNESS CENTRE

We provide World Class Sports Science Support Service to athletes of all levels and Sports. Our services and benefits include:

1. Physiological assessment of sports people for identification of fitness strengths and weaknesses relevant to chosen sport, and delivery of appropriate recommendations.
2. Assessment of effectiveness of specific training programs.
3. Monitoring fatigue and over training.
4. Prevention of Injury : Prehabilitation.
5. Rehabilitation and assessment.
6. Hydration assessment and advice.
7. Psychological / Skill Improvements.
8. Promoting goal setting.
9. Improved Technique.
10. Improved / more effective tactical awareness.

These benefits are achieved via the use of numerous physiological and physical test protocols, or individual consultations.

Each area can be tailored to suit each individuals needs. The main examples of which are outlined below. If you have any questions about this or our range of services and how they can help to improve your performance, please do not hesitate to contact us.

Physiological testing:

- Body composition, Static lung function, and hydration assessment.
This series of tests allows the assessment of - body fat percentage, respiratory status and health, and hydration status.
- VO_2 max (with gas analysis)
This test is a direct measure of an individuals maximal aerobic capacity, and is a good indicator of general fitness e.g. individuals with a high VO_2 max have good work and recovery capacities.
- Lactate Transition and VO_2 max (with gas analysis).
This test is used to determine an athletes lactate and anaerobic threshold and can be carried out upon a treadmill, bike or rowing ergometer. Measurement of blood lactate concentrations and heart rate during the incremental exercise protocol indicate how hard the athlete is working at each stage. This allows the setting of accurate heart rate training zones. In addition a maximal final stage may be included to elicit VO_2 max, which can be used in place of the separate maximal test.
- Biodex Isokinetic muscle strength assessment.
This test is used for the assessment of strength and is a good indicator for upper and lower body

strength performance. It is also used in pre and rehabilitation where imbalances of strength can be identified.

- **Reaction time assessment.**
Used pre and post exercise this test can be used to indicate the effects peripheral fatigue on the central nervous system and subsequent neuro-muscular facilitation and activation.
- **Gait analysis.**
Video analysis during exercise allows the assessment of running gait for early identification or diagnosis of back and/or lower limb problems.
- **Wingate (cycle) power assessment.**
This is a measure of an individual's anaerobic power, an assessment tool used within many power and speed based sports.
- **Flexibility assessment.**
This series of tests is designed to measure core stability and flexibility, with identification of potential imbalances for injury prevention.
- **Field based testing.**
This series of tests range from indirect VO_2 max testing (Beep test), jump matt power assessment, timing gate sprint analysis, measuring speed and acceleration, plus a number of timed agility tests.
- **Body Composition Tests (Body Fat and Muscle Mass)**
Measures taken from specific anatomical sites can provide information to the athlete and coach on changes in body compartments. Skin folds have traditionally been used to give an indication of body fat percentage, this is a little outdated. More importantly, when used in conjunction with a body mass measure, the athlete and coach will be able to recognise if muscle mass or fat mass has been developed over a training period.
- **Hydration Assessment**
The body is made up of 60% water and good fluid balance is required to perform normal bodily functions properly, with ~2 litres required each day even before exercise. Hydration can be monitored in two ways. Firstly by using the osmometer, which measures the concentration of particles from a urine sample, the higher the concentration, the more dehydrated you are. Osmolality may vary between 50 and 1200 mOsm/kg in healthy individuals depending on the state of their hydration, and values above 900 mOsm/kg may indicate an inhibiting degree of dehydration.

Secondly, athletes can be monitored for pre and post training or game body mass measures. A simple calculation will provide coaches and athlete of the hourly sweat rate, and thus the fluid intake required for their sport. This is imperative for maintaining the correct fluid balance during exercise. This method used with the previous measure of hydration provides comprehensive profile of the athletes fluid needs.

Physiotherapy:

In conjunction with the HPFC includes assessment and treatment of injuries, rehabilitation, as well as prevention strategies such as screening for potential injury by highlighting areas of weakness or imbalance.

Massage:

Regular massage can facilitate quicker recovery from training and competition as well as help in

the prevention of injuries. Massage can be of particular use in the prevention and treatment of 'arm pump up'.

Sport Psychology:

- Individual consultancy
Individual sport psychology can help maximise an athletes potential. Assisting athletes in mental preparation, goal setting, and intervention strategies i.e. technical changes, to enhance and fine tune performance.

Contact details: For further Information.

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