

<p>Institution: University of the West of Scotland – Institute for Clinical Exercise & Health Science</p>
<p>Unit of Assessment: UoA26</p>
<p>a. Context</p> <p>The Institute for Clinical Exercise & Health Science (ICEHS) is the result of targeted investment in clinical exercise, health and sport at the University of the West of Scotland since 2009. The Institute explores the anatomical, physiological, biomechanical, and bio-behavioural aspects of exercise and physical activity – to include sport – as they relate to the national health agenda. The Institute is organised into two core themes. The Centre for Clinical Exercise & Rehabilitation Science is currently researching; metabolic disease, cardiopulmonary disease, immune function, oxidative stress, steroid abuse/misuse, whole-body vibration as an exercise intervention, hormonal control of exercise, health promotion, exercise as an element of breast cancer survival, anthropometric variation in children, spinal biomechanics and gait analysis. A key target activity is collaborative research with NHS and governing bodies of sport including World Anti-Doping Association (WADA). The Sport Academy is presently examining how the anatomical variability of the human body affects weighted exercise movements and how this, in turn, informs the teaching of such skills. The Academy is also exploring the effects of Rugby 7's training and competition on metabolic and performance markers of physiological recovery and readiness, determining how cerebral mechanisms in sport affects biochemical markers of cognition, and investigating the evolution of sport within Scotland and the impact of the Glasgow 2014 Commonwealth Games. Key work in this area includes partnership working with international industry including CROSSFIT.</p> <p>The Institute has developed into a vibrant and academically rich research environment with ten staff now submitted to this assessment exercise. Outputs have increased steadily in quality and volume. This has been achieved in line with UWS strategic priorities through investment of 8 new research orientated posts (3 Professors, 1 Senior Lecturer, 4 Lecturers) six of whom are included in this submission. As a new area of research UWS has taken the opportunity to embed approaches to impact through collaborative working in the work of the Institute from the outset.</p>
<p>b. Approach to impact</p> <p>A key strategic priority of the Institute is to contribute to the University's mission; to have a transformational influence on the economic, social and wellbeing of the regions in which the University (multi-campus/multi region) operates. This is coupled with key challenges facing Scotland in poor health, obesity and lack of fitness in children as well as adults. The Institute aims to address these challenges through targeted applied research working with strategic partners and stakeholders. Many PGR projects also run in partnership with external organisations such as the NHS, local authorities, charities (Scottish Ethnic Minority Sports Association and the Bevan Foundation), local schools and industry.</p> <p>The Institute recognizes that it is in an early stage of its development and its research outputs are relatively recent and so is realistic as to the maturity of Impact that can be evidenced on research that commenced post-2009. However, the Institute has a key goal of transforming the health and wellbeing of the general public and having a demonstrable effect on the performance of elite and developmental athletes, and believes it can evidence good progress with Interim Impact on research which shows strong potential to achieve this goal. The submitted impact studies reflect the unit's approach to embed potential impact into research work through collaboration and engagement with external organisations and end users. Staff are actively encouraged to participate in knowledge exchange and research activities by the University through appropriate reductions in administrative and teaching duties, through funding for equipment and through internal studentships. Institute staff have also been successful in drawing down external funding support packages to engage with local and national SMEs, to transfer underpinning research knowledge into product development of sport enhancement products and medical devices.</p>
<p>c. Strategy and plans</p> <p>The Institute aims to create a body of evidence that contributes to the following objectives:</p> <ol style="list-style-type: none"> 1. Promotion of public health through physical activity, exercise and sport. 2. Informing health, fitness and sport professionals/participants in safe, effective, and sustainable practice. <p>The Centre for Clinical Exercise & Rehabilitation Science – aims to collaborate in research into the benefits of the clinical effects of exercise, both as a prophylactic and as a therapy. Staff are active in the areas of cardiac physiology and rehabilitation, pulmonary physiology and</p>

rehabilitation, paediatric health and exercise, workplace ergonomics, community health and physical activity interventions. A key interest has been in legal and illegal performance enhancement, health promotion and protection and policy frameworks. The Centre has several laboratories unique in HEIs. One of the major foci, and indeed a central theme of research, is scientific investigation related to paediatric physical activity and health. Staff regularly engage in collaboration with academics from the UK, EU, Asia, Australia, Canada and the USA.

The Sport Academy – aims to support UK government /National Sporting Governing Bodies agenda to engage students through intramural and social sporting opportunities. Further, the UK government and the NHS strongly assert the link between sport participation, health, and wellness. Within the Sport Academy there are three interrelated areas of research; (1) coaching improvement, to include fitness enhancement methods, (2) psychological & sociological aspects of participation, and (3) commercial aspects of health and fitness operations. Within the Sport Academy there are five national/international level coaches, two behavioural specialists, and two staff with extensive experience within the commercial fitness sector. A significant number have also competed in sports to an international or national level.

The Institute follows an impact plan that comprises five elements; (1) Collaboration with Government and Sporting Bodies (2) Publication in high impact factor appropriate journals (3) Publication in lay and professional journals and (4) Engagement in academic and lay conferences (5) Publication of books and book chapters. In this way research findings are being disseminated to the widest possible audience and potential impacts are optimised.

A key target is not only to publish and disseminate research findings, but also to contribute to and shape debate on Policy, specialist user/public perception of exercise, health, drug use and misuse.

The current strategy will be continued and developed over the next few years. Collaboration and external funding will continue to be key to the strategy (for example, the Institute is developing a strategy for Horizon2020). Some specific examples are:

1. WADA – Examination of the effects of anabolic androgenic steroids (AAS) and Human Growth Hormone abuse.
2. Welsh Rugby Union (WRU) – A high-level examination of of the Welsh 7s National team in training and competition (including the 2014 Commonwealth Games).
3. Chief Scientific Officer for Scotland – Examination of the effects of time-efficient High Intensity exercise regimes on the health of school pupils.
4. NHS Scotland – Two active longitudinal studies: (1) education interventions for health of school aged children, (2) effects of exercise on recovery of breast cancer patients post-therapy.

All envisaged projects will be enablers for new collaborations with industry, public sector and universities in the areas of expertise. Such projects will also provide necessary extensions to our infrastructure base for practicing “research at large”. They will further offer training and help develop the local and wider ecosystems so that all stakeholders can benefit from the latest academic thinking. The innovation opportunities will create health, wellbeing and societal benefits in Scotland, the UK and, more generally, globally.

d. Relationship to case studies

The case studies are borne from the ICEHS commitment to research and knowledge exchange with potential to influence policy and practice. The two case studies have emerged from the UoA’s strategy for collaboration and income generation. Each case study bridges the interests of both research groups in the Institute and illustrates the cross-disciplinary nature of the Institute’s work. The Harm reduction in Steroid (Ab)users; an international perspective Case study developed from longstanding relationships with both the World Anti-Doping Agency (WADA), investigating a number of key aspects of drug abuse in sport, and also the Welsh Rugby Union, researching performance and training perspectives in the national squad and in local leagues. This new research was able to combine both of these interests and was instrumental in leading to a greater understanding of the full extent of the problems associated with anabolic steroid and growth hormone supply and sports performance enhancing purposes and the physiological consequences of using these drugs.

The role of physical activity upon the Health and Well-being of Scottish Youth Case Study similarly bridges the boundaries of the Centre for Clinical Exercise and Rehabilitation and Sport Academy. Research has revealed two critically important impacts which involve the identification of

Impact template (REF3a)

the prevalence of cardiometabolic disease risk in youth populations and thereafter the effects of physical activity interventions upon cardiometabolic risk in these populations. A key impact has been in the evaluation of the effects of a High Intensity Training (HIT) programme. This new research has led to interesting collaborations with the local authority sector in Scotland, the Chief Scientific Officer for Scotland and interest from a worldwide audience. In keeping with the collaborative approach of the Institute, further work is being pursued to map the findings across different regions, and ethnicities including collaborative work with researchers in the USA, Canada, EU, Australia, India, and China.