

Isokinetic dynamometry in Higher Education

In the Dept. of Sport & Physical Activity at Edge Hill University we have a suite of programs including Sports & Exercise Science and Sports Therapy. Our isokinetic dynamometer (IKD) is used for undergraduate teaching across these programs, postgraduate research projects at M-level and PhD, research outputs and grant income, and external consultancy or 'reach'.

We therefore see multiple benefits across the concurrent challenges in terms of both the Teaching Excellence Framework (TEF) and the Research Excellence Framework (REF).

Chronologically in terms of the academic journey of a student, our IKD is a 'big ticket' item that we use during Open and Visit days for potential students. The IKD is incorporated within our tour on an initial Open day, and is utilised within subject-specific Visit days for candidates visiting EHU. This provides an example of how we invest in the student experience, in research, and in employability. **The IKD is the gold standard for strength assessment, and some of our placement providers utilise IKD in their practice. The exposure to cutting edge technologies throughout the undergraduate experience is a fundamental element of our student recruitment.**

As an undergraduate student at EHU the student will experience the IKD across a range of modules, and at all levels. We use the IKD primarily in modules aligned to Biomechanics or Kinesiology primarily, but we also integrate the technology within Research Methods strands, providing a novel means of considering research design issues such as familiarisation, reliability, validity, and trial randomisation. The data generated also presents opportunity for a wide range of statistical techniques to be employed. This approach also facilitates synergy between the research methods strand and other core disciplines, and with other analysis tools such as the Biodex Stabilometer.

This experience generates a great deal of interest in IKD projects at Level 6 for the students' final year dissertation. This is evident in both Sport & Exercise Science and Sports Therapy. This provides the student with a high degree of academic rigour and encourages critical discussion and an appreciation of clinical/practical context. The concurrent level 6 work placement modules can also be enhanced where a provider has an IKD also, with subsequent implications in employability. Conversely, the opportunity also brings external practitioners (from multiple disciplines) and participants in to EHU. **The opportunity to complete a high-level dissertation project has immediate benefits for the student, and highlights opportunity for postgraduate and employability options.** As an example, a 2018 graduate completed an IKD-based dissertation, elements of which have been accepted for publication in the Journal of Sports Sciences. The student gained employment upon graduation at a professional football club, who now come to EHU for IKD profiling of their players.

The student has also applied to do postgraduate study at EHU, and his line manager has also registered for postgraduate study at EHU. This provides opportunities to develop research supervisory capacity amongst the staffing base, and might lead to research output(s) for both the student and supervisor(s).



Postgraduate study is an area of particular growth, both at MRes and PhD level. The vast majority of our postgraduate students are EHU graduates, and many expand their use of the IKD and in particular the development of novel analysis metrics or data collection protocols. There is therefore a strong pull-through of our graduates into postgraduate study, continuing their relationship with EHU. We also have external candidates applying for projects specifically based around the PhD, at both MRes and PhD level. The IKD is well suited to independent study, and we have generated a number of PhD completions with a core focus in IKD analysis. This engagement with postgraduate study has generated research outputs for the student, provided opportunities for postgraduate supervision and mentorship by staff, and therefore supports our REF strategy.

IKD research was also the basis of a REF2014 Impact Case Study, facilitating the return of an additional seven members of staff into the REF exercise. This work is on-going towards REF2021, generating research outputs, facilitating the development of a research culture, and providing reach. The IKD has value in teaching and research within an academic context, but its use in clinical practice highlights the opportunity to generate externality. Many professional sports clubs and clinical providers do not have an IKD, and therefore the opportunity to support external partners has clear implications for supporting teaching, research and employability. Income from consultancy-related activities therefore is a potential means of supporting research grant funding.

Our IKD therefore highlights our commitment to the student experience, attracts students at open days, enhances our undergraduate teaching, provides opportunities for pull-through to postgraduate study, supports research supervision opportunities for staff, generates research outputs, and provides opportunities to generate impact and reach by bringing external partners to EHU. In an era of concurrent challenges across a myriad of evaluative tools including REF, TEF, and the NSS, the IKD has provided us with a means of using a single item to support many of our strategic objectives.

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