

Impact case study (REF3b)

Institution: Trinity Laban Conservatoire of Music and Dance
Unit of Assessment: 35 (Music, Drama, Dance and Performing Arts)
Title of case study: Performance Science- Talent Development and Training
1. Summary of the impact (indicative maximum 100 words)

This case study addresses new methods for identifying talent in young musicians and dancers, and also concerns issues regarding their wellbeing during training, both inside and outside the academy. This research has achieved impact in two areas, firstly by raising awareness among training institutions and performance companies of the importance of scientific assessment and screening, and secondly through impacts on policy-making, educational and otherwise, beyond the submitting HEI. This impact has been achieved through research dissemination that includes, but goes beyond peer-reviewed journal articles. This has involved broadcast media, digital media, symposia, workshops and numerous conference presentations, the popular press and resource papers for teachers.

2. Underpinning research (indicative maximum 500 words)

Trinity Laban is known internationally for its research in performance science, particularly with regards to the training, health and performance capacities of young dancers and musicians. Emma Redding, the leader of this research grouping, has an established international reputation, particularly in the new discipline of dance science, and has a substantial peer-reviewed publications profile. She is regularly invited to comment on behalf of the field in the national press and is the current President of the US-based International Association for Dance Medicine and Science (IADMS), a membership organisation with over a thousand members, which is now in its twenty-third year. Dance and performance science has emerged as a new and rapidly growing area of research and study. The discipline developed out of a need to apply scientific rigour to the analysis of artist training, with a methodological affinity with some areas of sports science. Much idiomatic dance and music teaching has been based upon tradition, and the evolution of this new discipline, in which Trinity Laban has played a leading role, has allowed for a progression in pedagogical practice via the utilization of scientific and evidence-based information. Research at Trinity Laban has resulted in the development of multi-disciplinary injury and health risk screening for student and professional dancers, new methods of measuring and training dancers' physiological capabilities and it has instigated new methods of identifying and developing talent. This Case Study focused on three studies that provide evidence of this work.

Screening Research and Fitness for Dancers (2005-2013). The aims of this study were twofold. Firstly, it contained a scientific investigation into appropriate dance screening techniques, which are vital in injury prevention. Secondly, it categorized specific fitness training regimens for the enhancement of both pedagogic practice and dance performance. The screening model developed by Trinity Laban was the first multi-disciplinary programme to assess the injury risks of dancers. It comprised biomechanical, physiological and psychological assessment and was analysed and interpreted by a multidisciplinary team of dance science researchers and therapists. Developed using internal prototypes tested on Trinity Laban dance students, it led to the first standardised dance-specific fitness tests that measure the physiological capabilities of dancers using idiomatic dance movement(s). Both these tests and the screening model are now the *de facto* method used by many dance schools and dance companies around the world (see section 4).

Talent Development Research (2008-11). This study was a longitudinal three-year project looking at dance talent identification and development, and was funded by the Department for Education and The Leverhulme Trust. The project involved 800 young dancers who were observed at specific intervals through their training at the national Centres for Advanced Training (CAT). This project was the first such study that examined talented young dancers from an interdisciplinary scientific

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perspective, and aimed to categorize both the key characteristics of dance talent, and the interrelationships and potential implications for training and education. Principal Investigator, Emma Redding led the investigation with Trinity Laban Research Fellow, Sanna Nordin-Bates. In addition to the core research team, the project personnel also included a funded PhD student, thirty research assistants, several physical therapists and CAT Managers. Findings provided evidence for the view that talent is multi-dimensional, transitory and that many aspects of talent, which were once perceived to be innate, are in fact trainable. The findings also supported previous research concerning the prevalence of disordered eating in dance, and highlighted the high-risk nature of dance training environments for individuals with other predisposing characteristics.

Music and Dance Science: Optimising Performance Potential (2009-11). This two-year research project was an interdisciplinary investigation of the physiological, biomechanical and psychological characteristics of both training and performance. Emma Redding led the project as Principal Investigator; Terry Clark was the project Research Fellow. The project was descriptive and longitudinal in design, involving approximately 180 dance and music students. Validated and standardised tests were used, and the research findings led to the creation of new methods of assessing performance determinants.

3. References to the research (indicative maximum of six references)

Redding E., Weller, P., Ehrenberg, S., Irvine, S., Quin, E., Rafferty, S., Cox, C. (2009). The development of a high intensity dance performance fitness test. *Journal of Dance Medicine and Science*, 13, 3-9.

Clark, T., Holmes, P., Feeley, G., & Redding, E. (2011). The role and value of implementing health screening programs within music conservatoires. In A. Williamon, D. Edwards, & L. Bartel (Eds.), *Proceedings of the International Symposium on Performance Science 2011* (pp. 335-340). Utrecht, The Netherlands: European Associations of Conservatoires. Retrieved from: <http://www.legacyweb.rcm.ac.uk/ISPS/Home>

Clark, T., Holmes, P., & Redding, E. (2011). Investigating the physiological demands of musical performance. In A. Williamon, D. Edwards, & L. Bartel (Eds.), *Proceedings of the International Symposium on Performance Science 2011* (pp. 137-142). Utrecht, The Netherlands: European Associations of Conservatoires. Retrieved from: <http://www.legacyweb.rcm.ac.uk/ISPS/Home>

Nordin-Bates, S. M., Walker, I. J., & Redding, E. (2011). Correlates of disordered eating attitudes among male and female young talented dancers: Findings from the UK Centres for Advanced Training. *Eating Disorders*, 19, 211-233.

Walker, I. J., Nordin-Bates, S. M., & Redding, E. (2011). Characteristics of talented dancers and age group differences: Findings from the UK Centres for Advanced Training. *High Ability Studies*, 22, 43-60.

Redding, E., & Quested, E. (2006). When art meets science: An action research approach to improving professional dance teaching and learning using scientific methods. *International Journal of Learning*, 13(7), 31-40. [NB: This paper won an International Award for Excellence in the area of Literacy and Education]

Key Grants

Talent development research (2008-11): Leverhulme Trust (£183,000); Department for Education (£180,000). Music and Dance Science: Optimising Performance Potential (2009-11): Leverhulme Trust (£54,000).

4. Details of the impact (indicative maximum 750 words)

The research on dance screening has produced resource papers for teachers such as the International Association for Dance Medicine and Science Teacher's Bulletin. In addition, as an impact of the research, many training institutions, such as The Australian Ballet School, Circus Space, London and professional dance companies such as Random Dance and Akram Khan Dance Company have commissioned Trinity Laban to undertake screening with their dancers. The screening programme is also now endorsed by Dance UK, the national body for independent dance in the UK [1]. The underpinning research is accessible to approximately 1600 registered individual performers and dance companies, such as Boston Ballet and New York City Ballet, via the US-based *Dancer Wellness Project* [2]. The dance specific fitness tests created by Trinity Laban have been purchased by educational organisations such as: Royal Academy of Dance, London; Imperial Society of Teachers of Dancing, London; governmental organisations such as Department of Education and Communities, New South Wales, Australia [3]. The tests are currently being used to assess dancers' physiological capacities in 17 different countries including Australia, United States and China. Trinity Laban's research on dance screening was a major influencing factor behind the formation of the National Institute for Dance Medicine and Science (NIDMS), which was launched in April 2012, and comprises a partnership between HEIs and non-academic dance and health organisations, and comprises: Trinity Laban; Dance UK; Birmingham Royal Ballet's Jerwood Centre for the Prevention and Treatment of Dance Injuries; University of Wolverhampton; University of Birmingham; Royal National Orthopaedic Hospital. The aim of NIDMS is to provide specialist healthcare for dancers in the UK, lead collaborative research and further develop educational and continual professional development needs for dance practitioners [4]. An additional impact has been the creation of a *Safe and Effective Dance Practice* certificate authored by Trinity Laban researchers and currently awarded by the examination body Trinity College London [5]. This qualification has been awarded to hundreds of teachers within the UK and overseas, allowing them to gain knowledge and understanding of the biomechanics of the body, health and safety, and the nutritional and physiological demands of dance.

The impact of the talent development research is demonstrable in terms of the mechanisms whereby young performers are identified, trained and supported through UK Government funded dance talent schemes [6]. In addition to the underpinning research, two resource factsheets specifically tailored towards young dancers, musicians and their educators were also produced from the research and are accessible through the Department for Education's Music and Dance Scheme's *Foundations for Excellence* website [7]. Importantly, the research also led directly to the development of the *Policy for the Prevention, Identification and Action on Disordered Eating* now implemented across all government funded Centres for Advanced Training in the UK and available through the national website [8]. Furthermore, a series of Continual Professional Development events were produced by Trinity Laban and offered to all Centres for Advanced Training during the period of research [9]. In October 2011, over one hundred primarily non-academic delegates from the UK and overseas attended the end of project symposium, *Passion, Pathways and Potential* at Trinity Laban. The final report which proposes recommendations for dance talent identification and development is accessed by all Centres for Advanced Training [10] as well as cited on the individual Centre for Advanced Training websites such as that of the Northern Ballet School [11]. Subsequent to this research project, Emma Redding and colleagues have been regularly invited to comment in national newspapers regarding the extent to which dance talent is innate versus trainable; these appearances have raised awareness within the dance sector of the implications of the research [12]. There have also been some secondary impacts, namely the further commissioning of the Trinity Laban performance science research grouping to undertake a further study into dance talent development among young people with disabilities, with funding from the Department for Education [13].

The research into musicians' health and well-being has led directly to modified training practices within the National Youth Orchestra of Great Britain including: instrument specific warm-up and conditioning classes; injury monitoring; compulsory workshops for young people on topics such as performance anxiety; staff development workshops for the support team and movement classes for composers [14]. The findings of this study were further utilised as a basis of an application to the

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AHRC to undertake a collaborative four-year study into the topic of musician's health, with beneficiaries beyond HE. The application was successful and three leading music conservatoires including Trinity Laban, were awarded over **£810k** to pursue this project in 2013.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- [1] Dance UK. *Dance science screening for independent dancers: date: Wed 5 September 2012*. Retrieved from <http://www.danceuk.org/news/article/dance-science-screening-independent-dancers/>
- [2] Dancer Wellness Project. Retrieved from: <http://www.dancerwellnessproject.com/>
- [3] Evidenced by invoices and receipts within the TL Finance Department.
- [4] National Institute for Dance Medicine and Science. *Enhancing dancers' health, well-being and performance*. Retrieved from <http://www.nidms.co.uk/home/>
- [5] Trinity College London Certificate. Retrieved from: <http://www.trinitycollege.co.uk/site/?id=1598>
- [6] National Centre for Advanced Training (CATs): <http://www.nationaldancecats.co.uk/about-us/research-and-resources>
- [7] Foundations for Excellence. *Resource centre: Preparation for excellence*. Retrieved from: <http://www.foundations-for-excellence.org/resources/preparation-for-performance>
- [8] National Eating Disorder Policy accessible through the national CAT website: <http://www.nationaldancecats.co.uk/news/the-national-eating-disorder-policy>
- [9] Continual Professional Development Workshops: National Dance CATs. *Trinity Laban provides CAT continual professional development*. Retrieved from: <http://www.nationaldancecats.co.uk/news/nurturing-talent-the-centre-for-advanced-training-at-trinity-laban/trinity-laban-provides-cat-continual-professional-development>
- [10] End of project Symposium held in October 2011 at Trinity Laban Conservatoire of Music and Dance. *CAT symposium: Passion, Pathways and Potential in Dance*. Retrieved from: <http://www.trinitylaban.ac.uk/study/dance/dance-science/dance-science-research/the-cat-research-project/cat-symposium-passion,-pathways-and-potential-in-dance>
- [11] Northern Ballet. The dance science report. Retrieved from: <http://northernballet.com/index.php?q=news/11-09-15/northern-ballet/dance-science-project>
- [12] Examples include: Walker, I. (2008). Developing talent in young dancers: Using dance science to help us understand best practice. *Dance UK News*, (71), 18-19; Walker, I., Nordin, S., & Redding, E. (2009). Talent spotting. *Dancing Times*, 99(1184), 23, 25, 27; Walker, I., Nordin, S., & Redding, E. (2010). Talking talent: Findings from the first year of a talent development project. *Dancing Times*, 100(1198), 29-31.
- [13] Trinity Laban & Dance 4. (2013). *Changing perceptions: What is it?: Enhancing provision and progression routes for young disabled dancers*. Retrieved from: <http://www.dance4.co.uk/young-people/project/cat-centre-advanced-training/about/cat-centre-advanced-training/changing-perceptions-what-it>
- [14] Full outline of the National Youth Orchestra's *The Physical Orchestra* strand are available upon request.