

# Building the Complete Dancer: Optimising Health, Performance and Longevity in Irish Dance

Period when the underpinning research was undertaken: 2011–2017  
Period when the claimed impact occurred: 2014–present

**Lead Researcher:** Dr Roisin Cahalan, Lecturer in Physiotherapy, University of Limerick (UL).

**Collaborators:** Dr Kieran O’Sullivan, Senior Lecturer of Physiotherapy, UL, Professor Emma Redding, Head of Dance Science, Trinity Laban Conservatoire of Music and Dance, London, United Kingdom, Ms Edel Quin, Programme Leader for Dance Science, Chichester University, United Kingdom, Dr Orfhlaith Ni Bhriain, Course Director, MA Irish Traditional Dance, Irish World Academy of Music and Dance, UL, Prof Peter O’Sullivan, Professor of Musculoskeletal Physiotherapy, Curtin University, Perth, Australia, Ms Jasmine Challis, International Dance Dietitian, London, United Kingdom.


## Summary of the impact:

Irish dance is amongst Ireland’s most successful cultural exports, with current figures showing over 10,000 qualified Irish dancing teachers operating in thousands of schools in over 30 countries internationally<sup>1</sup>. The decades since Riverdance, the critically acclaimed Irish music and dance stage show, have seen monumental developments in the complexity of Irish dance. This has precipitated markedly increased injury incidence, comparable to that in ballet and contemporary dance [Ref 1-4]. The biopsychosocial benefits of dancing have long been established, across genres and in both elite and non-elite cohorts. However, levels of pain and injury can be significant in elite dancers. Studies in Irish dance have recorded injury rates of 82.1% in adult elite cohorts over the previous year which compares to rates

of approximately 80% in dancers from other elite genres. Direct comparisons of dancers in the same study showed that at least one injury was reported by 83.3% and 92.6% of contemporary and Irish dancers respectively [Ref 5].

Dr Roisin Cahalan is the world’s leading researcher in Irish dance injury having

investigated Irish professional, elite and student Irish dancers across the lifespan. Former lead dancer with Riverdance, she is a physiotherapist and experienced Irish dance clinician. With her collaborators, she has raised the profile of Irish dance medicine internationally, informed clinical practice, and improved the health and performance of Irish dancers. She is

 The decades since Riverdance, the critically acclaimed Irish music and dance stage show, have seen monumental developments in the complexity of Irish dance.



<sup>1</sup> Official List of Registered Adjudicators and Teachers, An Coimisiun Le Rinci Gaelacha, 2019

currently advising Irish dance governing organisations regarding dancer health guidelines.

### Details of the impact

This research impacts upon institutions, teachers, and clinicians including GPs and physiotherapists, as well as parents and dancers, through publications, conferences, seminars, online resources, and workshops.

#### Elite Irish dancers

The research has direct impact on the Irish dance population (dancers, teachers, parents, clinicians) through Cahalan's creation of the 'Complete Dancer Project' which provides workshops and online resources for dancers and teachers, aiming to enhance their knowledge and application of research-informed training in order to optimise performance potential and minimise injury risk." (Source 5).


For elite dancers, research-based guidelines informed by over a decade of clinical experience of treating Irish dancers has supported improved performance and resilience. Injury surveillance, monitoring and management promote healthier, less

injury-prone dancers. Research discoveries include the finding that Irish dancers continue to dance (75.9%) more often when injured than their contemporary peers (64.4%) [Ref 5]. It also highlights the unique choreography and comparably limited repertoire of leg movements, of Irish dance, and the poor prescription of training load in the genre. These factors threaten the well-being of the dancer if inappropriately managed [Ref 3, 6].

The research impacts these specific issues by developing and prescribing injury-prevention and health promotion strategies. These include workshops and online resources for stakeholders regarding appropriate strength and conditioning, injury management, training load prescription, nutrition [Ref 7] and other holistic strategies. Additionally, presentations to regional branches of the main governing body for Irish dance, "An Coimisiun le Rinci Gaelacha", is driving proposals for better dancer health. Dr Cahalan delivers performance optimisation workshops at elite events including the World Irish Dancing Championships.

#### Teachers, Students, and Parents

Information for these stakeholders has been disseminated through workshops



Dr Roisin Cahalan is the world's leading researcher in Irish dance injury having investigated Irish professional, elite and student Irish dancers across the lifespan.

and seminars, each pitched to a different audience, allowing for tailored education. For example, research-based education in the areas of physical activity and injury management; psychological health; and nutrition, were disseminated separately to adolescent dancers, parents, and teachers. Irish dance teacher and 2018 workshop attendee (Source 8), states that he "found the seminar informative, helpful and advice received from the seminar has definitely shaped [his approach to] dance classes."

"As a consequence of the seminar, we have adopted a long term seasonal outlook to plan our dancing classes... We have certainly felt that this has reduced injuries, reduced recovery times from any injuries sustained and has allowed the dancers maintain energy levels, focus and motivation." (Source 8)

Other participants (Source 9) wrote: "the topics covered will be of great benefit to dancers, teachers and parents alike ..." (parent and clinician); lots "of practical advice regarding workload management, injury prevention & improving mindset" (parent).

Additionally, the project established an online resource "The Complete Dancer Project" (<https://www.facebook.com/CompleteDancer/>), providing dance-specific advice and evidence-based resources.

Interviewed by the international Irish Dance Podcast, Cahalan noted a lack of continued professional development (CPD) or guidance for Irish dance teachers. The host notes that [T]here is a lack of centralised guidance and information on [injury and pain] for tens of thousands of Irish dancers around the world. [Dr



Cahalan's interview] was received with huge enthusiasm from our international audience. Her insight and advice as regards supporting and managing the health of our dancers are ground-breaking for the community (Source 2).

In the interview, Cahalan notes the adverse psychological implications of Irish dance, potentially causing physical and psychological burnout. (Source 2). The association of psychological issues and injury is a recurrent theme in Dr Cahalan's research [Refs 1, 4, 8].

### Clinicians

Clinicians internationally, if unfamiliar with the genre, lack appropriate information for optimal injury management. Source 7, a physiotherapist and dance researcher from the United States, commented that "[N]early seven years ago [...] my physical therapy practice began to collect injured Irish dancers. There was insufficient research for practical assessment of their technique when the clinician is without that particular background. This is, of course, unsafe for dancers world-wide because they truly have nowhere to turn." (Source 7)

The physiotherapist concludes that: "Dr. Roisin's Cahalan contributions to this growing body of work cannot be stated strongly enough. As a clinician, I am deeply grateful for the state of the art information provided by her for the care of Irish dancers."

Irish dancers often dance through pain, and the genre has several stylistic elements that may increase injury risk [Ref 8]. Unlike other genres, Irish dance lacks guidelines for dancer progression, meaning dancers may attempt choreography that increases their injury risk [Ref 9].

Lastly, an American doctor and Irish dancer (Source 10), writes: "When I last combed the literature on science regarding Irish dancing a few years back, it was quite sparse, so I think many will appreciate [Dr Cahalan's] working on filling this quite large hole in the literature and in the art!"

### Sources to corroborate the impact

1. Diaga Irish Dance, Canada (testimonial, institute)
2. Martin Percival (testimonial, The Irish Dance Podcast host)
3. Parent (testimonial)



4. McCarthy School of Irish Dancing (testimonial, organisation)
5. Programme Leader BSc and MSci Dance Science, University of Chichester (testimonial)
6. Chair, An Coimisiún le Rinci Gaelacha
7. Physiotherapist and dance researcher, USA (testimonial)
8. Irish Dance Teacher (testimonial)
9. Irish Dance Teacher, Russia (testimonial); Parent (testimonial); Parent (testimonial); individual (testimonial) – on Facebook; individual (testimonial); Parent (testimonial)
10. Senior house officer, GP scheme, Massachusetts, Boston, USA and Irish dancer, (testimonial)

### Underpinning research

Irish dance has increased in popularity in the last few decades -- on a national and international scale, across a diverse range of interested groups. There are Irish dance schools in over 30 countries across five continents. Along with students and their teachers, Irish dance is of interest to parents, professional dancers, and health practitioners.

This speed with which Irish dance has gained popularity, and the wide range of interest groups connected to it, have significant consequences for the industry. Some critical issues need to be addressed. Notably, there has been a neglect in understanding Irish dance injuries and in implementing that understanding. Research by Dr Cahalan

has shown that dancers consistently cite factors such as overuse, fatigue, accidents and biomechanical weaknesses as being the major contributors to injury. Her research reveals minimal recognition of the role of factors such as general health, load management, psychological well-being or sleep (Ref 4, 10)

The research behind this case study aims to address this gap in the knowledge. The impact of the research resonates across the practices of all groups interested in Irish dance. Led by internationally eminent dancer, dance physiotherapist, and academic researcher Roisin Cahalan, the work includes detailed cross-sectional and prospective studies of several cohorts, including professional, student, and elite adolescent competitive Irish dancers. "[It] has shed light on both the unique and shared traits of Irish dance injury and management" (Ref 5).

### Notable results include

There is substantial incidence of pain and injury across several cohorts of Irish dancers, which is comparable to elite dancers from other groups. Injury rates across genres tend to be approximately 80% in these dancers [Ref 1-4].

Dancing in pain is not unusual, with the majority of dancers reviewed reporting that they frequently dance through pain [Ref 4, 10]. In professional dancers, only 1.3% of participants reported never dancing in pain, with over a third of dancers always or usually dancing in pain.

There is evidence of a culture of perseverance, and perhaps concealment in Irish dance, with participants revealing that dancing in pain was the norm and expected [Ref 3, 11].

The foot and ankle are by far the most common sites of injury in these dancers, with lower limb injuries accounting for most complaints [Ref 6, 8].

Psychosocial risk factors for injury consistently identified included a higher number of general health complaints, poorer sleep, psychological issues such as catastrophising and low mood, and a higher number of painful bodily sites [Ref 1, 3, 10, 12].

Dancers' perceived causes of injuries frequently include fatigue, overuse, biomechanical issues, and flooring. There is little recognition or awareness of the role of non-physical risk factors as listed above [Ref 5, 13].

There is evidence of a lack of appropriate load management in Irish dance, with no exhibition of good practices such as periodisation and tapering [Ref 3, 9].

Although there are marked choreographical differences between Irish and contemporary dancers, there is evidence of a shared dancer mentality as regards motivation, dancer identity, and passion for dance [Ref 13].

There is exceptionally good adherence to practices such as warm-up and cool-down. However, cross-training (non-Irish dance physical training) is underutilised. There is a potential to improve dancer health and performance via this mechanism [Ref 3, 9]. The research informed the development of strategies to manage, minimise or prevent injuries related to dance, which were disseminated and communicated appropriately to the different stakeholder groups. These included academic papers and conferences, as well as non-academic output, such as podcasts, workshops for students (and teachers and parents), and a social media support group. Currently there is no requirement for Irish dancing teachers to undergo any form of continuous professional development. Future ambitions include the generation of an educational framework for teachers to be supported by the various governing bodies which represent the genre.

## References to the research

1. Cahalan, R., O'Sullivan P., Purtill H., Bargary N., Ni Bhriain O., O'Sullivan, K., Inability to perform due to musculoskeletal pain and injury in elite adult Irish dancers: a prospective investigation of contributing factors. *Scandinavian Journal of Medicine & Science in Sports*, 2016. 26(6): p. 694-702. <https://doi.org/10.1016/j.physio.2015.03.355>.
2. Cahalan, R., N. Bargary, and K. O'Sullivan, Pain and injury in elite adolescent Irish dancers: A cross-sectional study. *Journal of Dance Medicine & Science*, 2018. 22(2): p. 91-99. <https://doi.org/10.12678/1089-313X.22.2.91>.
3. Cahalan, R., Kearney P., Ni Bhriain O., Redding E., Quin E., McLaughlin LC., O'Sullivan K., Dance exposure, wellbeing and injury in collegiate Irish and contemporary dancers: A prospective study. *Physical Therapy in Sport*, 2018. 34: p. 77-83. <https://doi.org/10.1016/j.ptsp.2018.09.006>.
4. Cahalan, R. and K. O'Sullivan, Injury in professional Irish dancers. *Journal of Dance Medicine & Science*, 2013. 17(4): p. 150-158. <https://doi.org/10.12678/1089-313X.17.4.150>.
5. Cahalan, R., Comber L., Gaire D., Quin E., Redding, E., Ni Bhriain O., O'Sullivan K., Biopsychosocial Characteristics of Contemporary and Irish University-Level Student Dancers A Pilot Study. *Journal of Dance Medicine & Science*, 2019. 23(2): p. 63-71. <https://doi.org/10.12678/1089-313X.23.2.63>.
6. Cahalan, R., Purtill, H., O'Sullivan, P., O'Sullivan, K., Foot and ankle pain and injuries in elite adult Irish dancers. *Medical problems of performing artists*, 2014. 29(4): p. 198-207.
7. Challis, J, Cahalan R, Jakeman P, Ni Bhriain O., Cronin, L., Reeves, S., Dietary Intake, Body Composition and Nutrition Knowledge of Irish Dancers *Journal of Dance Medicine & Science*, 2019. Accepted August 2019. In print.
8. Cahalan, R., H. Purtill, and K. O'Sullivan, Biopsychosocial Factors Associated with Foot and Ankle Pain and Injury in Irish Dance. *Medical Problems of Performing Artists*, 2017. 32(2): p. 111-117. <https://doi.org/10.21091/mppa.2017.2018>.
9. Cahalan, R., N. Bargary, and K. O'Sullivan, Dance exposure, general health, sleep and injury in elite adolescent

- Irish dancers: A prospective study. *Physical Therapy in Sport*, 2019. 40: p. 153-159. <https://doi.org/10.1016/j.ptsp.2019.09.008>.
10. Cahalan, R., Purthill, H., O'Sullivan, P., O'Sullivan, K., A cross-sectional study of elite adult Irish dancers: biopsychosocial traits, pain, and injury. *Journal of Dance Medicine & Science*, 2015. 19(1): p. 31-43. <https://doi.org/10.12678/1089-313X.19.1.31>.
11. Higginbotham O, C.R., The collegiate Irish dancer's experience of injury: A qualitative study. *Medical Problems of Performing Artists*, 2019. Accepted July 2019.
12. Cahalan, R., H. Purtill, and K. O'Sullivan, Biopsychosocial Factors Associated with Foot and Ankle Pain and Injury in Irish Dance. *Medical Problems of Performing Artists*, 2017. 32(2): p. 111-+. <https://doi.org/10.21091/mppa.2017.2018>.
13. Cahalan, R., Comber, L., Gaire, D., Quin, E., Redding, E., Ni Bhriain, O., O'Sullivan, K., Biopsychosocial characteristics of contemporary and Irish university-level student dancers: A pilot study. *Journal of Dance Medicine and Science*, 2019. 23(2): p. 63-71. <https://doi.org/10.12678/1089-313X.23.2.63>.

## Grants and awards

1. 2017: Awarded Dobbin Atlantic Scholarship 2017: Ireland Canada University Foundation. €3,550
2. 2016: Research Bursary: Chartered Physiotherapists in Manipulative Therapy Chartered Physiotherapists in Manipulative Therapy. €750
3. 2016: Research Bursary: Mid-West Branch Irish Society Chartered Physiotherapists. €500
4. 2014: Educational Bursary: Mid-West Branch Irish Society Chartered Physiotherapists. €500
5. 2011: Faculty of Education and Health Sciences, UL. PhD Full Fee Waiver. €13,000

**Find out more:** Listen to the podcast and read other impact case studies [www.ul.ie/researchimpact](http://www.ul.ie/researchimpact)



**Dr Roisin Cahalan**

Lecturer in Physiotherapy,  
School of Allied Health  
University of Limerick.

Email: [Roisin.cahalan@ul.ie](mailto:Roisin.cahalan@ul.ie)