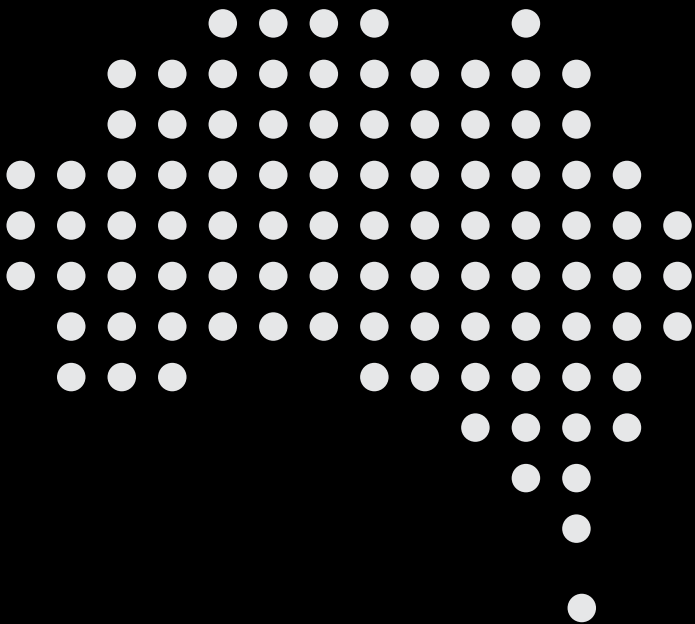


Safe Dance Report IV

Investigating injuries in Australia's professional dancers

Amy Jo Vassallo



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Claire E Hiller, Evangelos Pappas, Emmanuel Stamatakis

**Safe Dance IV is a collaboration between the Australian Dance
Council—Ausdance National and The University of Sydney**



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THE AUTHOR

Amy Jo Vassallo is a PhD candidate at the Faculty of Health Sciences at The University of Sydney. Dancing from a young age is what sparked Amy's interest in human biology, and she completed a Bachelor of Medical Science, Masters of Community and Health Development and Postgraduate Diploma in Nutritional Science, before working as a health policy advisor and health science researcher.

In 2015, she enrolled in a PhD under the supervision of Dr Claire Hiller, A/Prof Evangelos Pappas and A/Prof Emmanuel Stamatakis investigating injury epidemiology in recreational and professional dance.

In addition to her Safe Dance work Amy has published dance injury, dance participation and dance for health studies in academic journals and has presented her research widely at both national and international conferences. She is a contributing member of the Dance Research Collaborative (based at The University of Sydney), the International Association for Dance Medicine and Science and the Australasian Injury Prevention Network and is the Chair of Higher Degree by Research Student Executive Group at the Faculty of Health Sciences, University of Sydney.

Amy is also passionate about the promotion of women in science and improving public health through dance participation.

You can connect with Amy via Twitter - @amyjvassallo

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Also thank you to the individuals across many dance companies who assisted with data collection and members of the Dance Research Collaborative based at The University of Sydney for your advice and support.

I also wish to extend a personal thank you to all the dancers who took the time to contribute to and complete this study. Your contribution will be of great value to future generations of professional dancers in Australia.

FOREWORD

The Safe Dance Report IV continues an important lineage for the Australian dance community regarding investigating injuries in professional dancers.

Commencing with the groundbreaking *Safe Dance Report I* by Tony Geeves in 1990, this report captured for the first time an accurate picture of the experience of injuries within the Australian dance industry. Uncovering the concerning fact that 65% of Australian professional dancers suffered chronic injuries with 52% evident by the age of 18, led to sector-wide recognition that urgent revision of the approach to the education and training of our dancers was required—with further research required to uncover information that could be used to inform recommendations.

Tony Geeves continued this exploration by researching into the injury patterns, associated risk factors and lifestyle considerations for adolescents in pre-professional training, resulting in *Safe Dance Report II* in 1997. The analysis revealed that the average age at onset of injury was 14.5 years, that overuse injuries were responsible for 47% of the injuries, and of these injuries, 52% occurred in the first year during which the student underwent more than twelve hours per week of intensive training. Implications included the introduction of graduated workloads in training schedules; the need for educational programs regarding health and wellbeing issues and access to professional support; a crucial shift away from the 'culture of pain' mindset; and the inclusion of active relaxation within programs. A key observation from the findings indicated that further investigation was required regarding methods of training which needed to include teachers, rehearsal directors, administrators and production managers—not just dance students. Furthermore, report recommendations directly informed the development of *The Australian Guidelines for Dance Teachers* by Ausdance National, with safe dance practice guidelines included that covered areas such as safe teaching spaces and performance venues; physical differences and abilities; dance and its impact on the body; and injury prevention and management.

In 1999 Debra Crookshanks revisited the original data collection methodology regarding injuries in professional dancers in Australia, to assist in providing a comparison point for evaluation including observations on what may or may not have shifted in the nearly 10 years since the original report. *Safe Dance Report III* identified that while there were less full-time positions for dancers (resulting in more individuals being ineligible to complete the survey), the overall picture had improved. Results indicated that there was a decrease in the prevalence of chronic and acute injuries; improved understanding of the importance of appropriate and early management of injuries; improved self-care of dancers in terms of their diet; and increased support was now being provided by dance companies for their employees. Further research was invited with the aim of continuing to advance the dance medicine and science field in Australia, and assist with the continued identification of injury risk factors and recommendations for preventative strategies to address any future findings.

Safe Dance Report IV answers this call in 2017 with the continuation of this research by Amy Jo Vassallo. Expansion of the participant pool to include independent dancers and professionals in smaller companies provides a more accurate representation of the current dance sector. Findings identified that 73% experienced an injury in the past 12 months; 62% of respondents believe that stigma still exists regarding sustaining injuries, although 75% of dancers would seek professional opinion if they suspected they had sustained an injury; and fatigue (48%), new or difficult choreography (39%), or ignoring early warning signs (31%) were seen to be the major contributors to injury. Recommendations have outlined that access to high quality and dance-educated or dance-specialised healthcare services is essential; addressing the cultural aspects of injury reporting is critical; and that a better acknowledgement of the psychological and psychosocial aspects of injury is required. Ongoing safe dance practice research has also been encouraged, with a focus on the establishment of accurate data measures to assist with regular comparative analyses and evaluations.

Having had the pleasure to have been taught by Tony Geeves in the early 1990s at the Queensland University of Technology, I experienced first-hand the application of this work in changing the way in which dance training was undertaken. A focus on not just what we did IN the dance studio, but OUTSIDE of it, became central to ensuring we were preparing for sustainable, healthy, and productive dancing careers. Hearing the words 'safe dance practice' being so much a part of our language and approach within the dance sector today, is a testament to the impact and contribution of the collective Safe Dance Reports within our industry. Ausdance National is proud to continue this significant line of inquiry through the publication and dissemination of this report and looks forward to supporting further research into safe dance practice in Australia into the future.

A handwritten signature in black ink that reads "Gene Moyle". The signature is written in a cursive, flowing style with a large, prominent 'G' and 'M'.

Professor Gene Moyle ARAD MAPS MCSEP GAICD SFHEA
President
Ausdance National Council – Ausdance Inc.

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EXECUTIVE SUMMARY

Background

The high physical demands of professional practice place dancers at significant risk of musculoskeletal injury. In order to better understand the Australian context and occurrence of injury in Australian dancers, Ausdance National established the Safe Dance research projects in 1988. This is the fourth instalment of this work, and for the first time the scope of the 'professional dancer' has been expanded to include independent dancers and those based in smaller companies. It is anticipated that the results of this work will be reflective of the increasing diversity of the dance industry and help inform what services and resources may be of most benefit in the future.

Methods

Data were collected for this report using a retrospective survey that was available in both electronic and hard copy paper form. The questionnaire was designed to extract information on dancer demographics, their early dance training and current dance working environments, the occurrence of musculoskeletal injury, and the sites, types, contributing factors, management and return to dance for their most significant injury in the past 12 months. This report contains a descriptive analysis of these results.

The inclusion criteria for Safe Dance IV were that a participant must be aged over 18 years, paid to work, rehearse or perform as dancer in Australia for a combined period of 3 months or more over the past 12 months, and personally identify primarily as a professional dancer. A dance-related injury was defined as 'a physical problem deriving from stress or other causes to do with performance, rehearsal, training, touring or other circumstances of dance life, which affects ability to participate fully in normal dance training, performance or physical activity'.

Results

A total of 268 surveys were returned, 195 of those met the Safe Dance study inclusion criteria, and 146 dancers completed all injury-related questions.

Survey respondents' employment as a dance performer was most commonly with a dance company (66%) or as an independent dance artist (38%).

Almost all dancers (97%) reported experiencing at least one significant injury in their dance career to date. A total of 73% of dancers reported experiencing a dance-related injury in the past 12 months.

When asked to expand on their most significant injury in the past 12 months, the most common site of injury was the ankle (26%), followed by the knee (11%) and hip (10%).

The most common injury type was a strain (25%), followed by chronic inflammation (19%) and a sprain (18%).

There was one accidental or traumatic injury for every two overuse or gradual injuries. The most common responses regarding the self-reported contributor to injury were fatigue (48%), followed by new or difficult choreography (39%) and ignoring early warning signs (31%).

A total of 58% of injured dancers in this study sought treatment within two days for their injury, though it took an average of 8 days for all injured dancers to seek treatment. Both initial and follow-up treatment following an injury was most often sought from a physiotherapist.

A total of 71% of dancers were able to make modifications to their practice to continue dancing throughout their injury.

Despite 62% of respondents reporting belief that there is still stigma associated with sustaining injuries as a professional dancer, 75% of dancers did say they would seek professional opinion if they suspected an injury. However, only 50% stated they would tell someone within their dance employment and 49% said they would also take their own preventative steps to manage their injury.

Recommendations arising from Safe Dance IV

1. Improved fatigue management by dancers and employers
2. Access to high quality and dance educated or dance specialised healthcare services
3. Support for injury self-management
4. Address fear and stigma regarding injury reporting
5. Better acknowledgement of psychological and psychosocial aspects of injury
6. Development of accurate data measures for dance research
7. Continuation of local Safe Dance research

1. INTRODUCTION

Professional dance can be a vibrant and fulfilling career. However, the very high physical demands of this role place dancers at significant risk for musculoskeletal injury. Effective injury prevention, appropriate management of sustained injuries, and considered return to dance is essential for longevity in a dance career, as well as optimal mental and physical wellbeing upon retirement or transition out of dance performance roles. Injury prevention models demonstrate that in order to achieve this, information needs to be available on the current occurrence of injury^{1, 2} as well as how, where and when they occurred³. This information also needs to be specific to the population of interest and therefore, as Australia has a unique and diverse dance employment environment, it is important for injury occurrence to be investigated locally.

Safe Dance research was initiated by Ausdance National in 1988 to determine the type and extent of injury and related problems in Australian professional dancers. It also aimed to give specialists in dance movement, teaching and treatment access to this information. The Safe Dance I report was published in 1990 and found that 65% of all included dancers suffered from a long-term dance injury, and 52% of these were originally sustained during pre-professional training before the age of 18⁴. Author Tony Geeves expanded on this finding in 1997 with Safe Dance II, documenting adolescent health and lifestyle during intensive pre-professional dance training⁵. The third instalment, Safe Dance III, was released in 1999 and found that, compared to Safe Dance I, there was a decreased prevalence of both long-term and recent injuries and improved understanding of the importance of appropriate early management of injuries, as well as self-care⁶. Since this time further progress has been made with the widespread implementation of evidence-based Safe Dance recommendations, policies and procedures. However, there was a recommendation of the previous Safe Dance work to continue repeating this professional dancer survey at realistic intervals to provide evidence and ongoing appraisal of interventions implemented.

Safe Dance IV is the next instalment in this series, the first in over 18 years, and aimed to investigate injury occurrence, management and return to dance in Australia's professional dancers. It will be used to determine the progress of the dance community in terms of preventing and managing dance injuries. The findings of this study will also update what we know about the dance population more generally as, for the first time, the scope of the 'professional dancer' has been expanded to include independent dancers and those based in smaller companies that were not included in previous studies. It is anticipated that the results of this work will be reflective of the increasing diversity of the dance industry and help inform the services and resources which may be of most benefit in the future.

2. METHODS

This study was a national, cross-sectional survey of independent and company-based dancers in Australia. Both electronic and paper-based surveys were distributed. The study was conducted following ethics approval from The University of Sydney Human Research Ethics Committee.

2.1 Survey development

The Safe Dance IV survey was developed based on previous versions of Safe Dance⁴⁻⁶ as well as the Fit to Dance 2 survey from the UK⁷, a literature review and advice from key informants. The final survey was pilot tested with a small group of recently retired professional dancers to ensure the language and questions were relevant and understandable to the intended audience⁸.

The questionnaire was designed to extract information on dancer demographics; early dance training and current dance working environments; the occurrence of musculoskeletal injury, and the sites, types, contributing factors, management and return to dance for the most significant injury in the past 12 months. The questionnaire predominantly contained closed questions with limited options; however, there were also some open-ended questions allowing for expansion or personal opinion of the dancer to be documented.

A professional career in the arts does not necessarily mean full-time or continuous work, and it was important for a broad range of dance employment types to be included in this study. Australian Bureau of Statistics data from the 2011 Census⁹ indicate that 1,135 Australians were employed as dancers or choreographers in 2011, demonstrating the large number of dancers who work outside the major dance companies. Therefore, the inclusion criteria for Safe Dance IV were: a participant must be aged over 18 years and paid to work, rehearse or perform as dancer in Australia for a combined period of three months or more over the past 12 months, and that they personally identify primarily as a professional dancer. It is acknowledged that this definition does not encompass all dancers working in Australia; however, it was intended to capture a breadth of dance experiences, and incorporate dancers who placed a significant physical load on their bodies due to dance during the previous 12 month period.

There are also many definitions of a 'dance-related injury'. Time lost from work is generally the most widely accepted approach to defining an injury in a professional sporting context³. Therefore, for the purposes of this study, an injury was defined as 'a physical problem deriving from stress or other causes to do with performance, rehearsal, training, touring or other circumstances of dance life, which affects your ability to participate fully in normal dance training, performance or physical activity'. This definition was also consistent with previous national surveys of professional dancers^{7,10} and was by no means intended to represent the full burden of injury in dance, but instead to represent those injuries that cannot be ignored and are therefore more reliably measured due to their impact on a dancer's practice³.

The injury reporting period was extended from the previous six months in Safe Dance reports I–III to the previous 12 months, due to anticipated large numbers of part-time dancers incorporated into Safe Dance IV. Previous research in professional competitive sport has demonstrated the relative accuracy of retrospective self-report of sports injuries sustained in the preceding 12 months¹¹.

2.2 Recruitment

A summary of the large, medium and small companies approached to participate in Safe Dance IV is included in Appendix A. Independent dancers were sourced through Ausdance National networks, recent graduates from tertiary dance schools, state and territory Ausdance offices, Dance House, Media Entertainment and Arts Alliance (MEAA), and local dance festivals and gatherings including the DANscienCE Festival, Salamanca Moves festival, Fringe Festival and the Australian Dance Awards. An open link to the electronic survey was also available, and able to be forwarded between dancers.

2.3 Data analysis

Data were analysed using the statistical analysis software IBM SPSS Statistics for Windows, version 22 (IBM Corp. Armonk, NY). Descriptive statistics were used to determine the demographics of Australian dancers and their occurrence and characteristics of injury.

3. FINDINGS

3.1 Demographics of survey respondents

268 surveys were returned and 195 of those met the Safe Dance study inclusion criteria. 139 dancers completed the survey in its entirety and 146 dancers completed all injury-related questions. The remaining 49 dancers who met the inclusion criteria submitted partially completed questionnaires.

The average age of survey respondents was 28.5, with the youngest being 18 and the oldest 62 years of age. This is consistent with previous Australian based research suggesting that dancers are younger than the typical Australian¹². In terms of gender 65% of respondents identified as female (Figure 1).

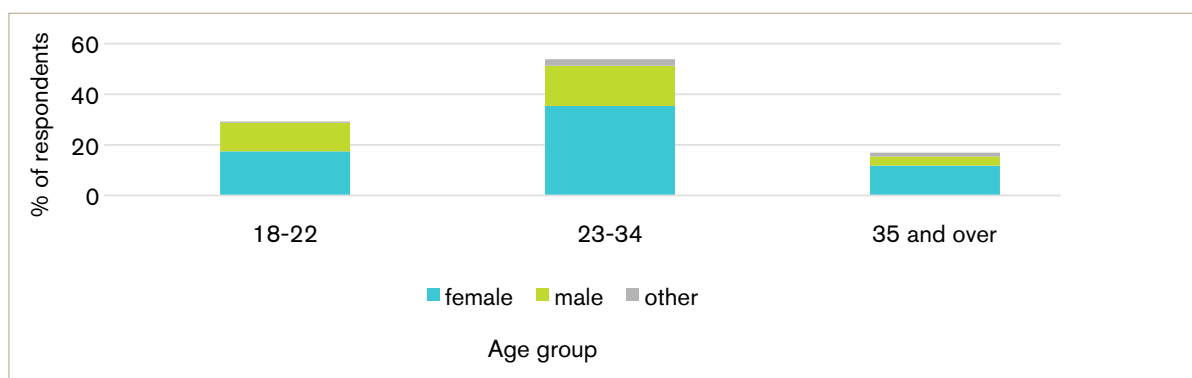


Figure 1: Age and gender of Safe Dance IV respondents

Engagement with dance started early in a professional dancer's life. The average age that respondents commenced dancing was 7 years of age (range 1–30 years, mean 7.0, standard deviation (SD) 4.1). The first style that Australian professional dancers typically participated in was ballet (76% of respondents), followed by jazz (45% of respondents), (Figure 2). On average dancers commenced dancing with two dance styles.

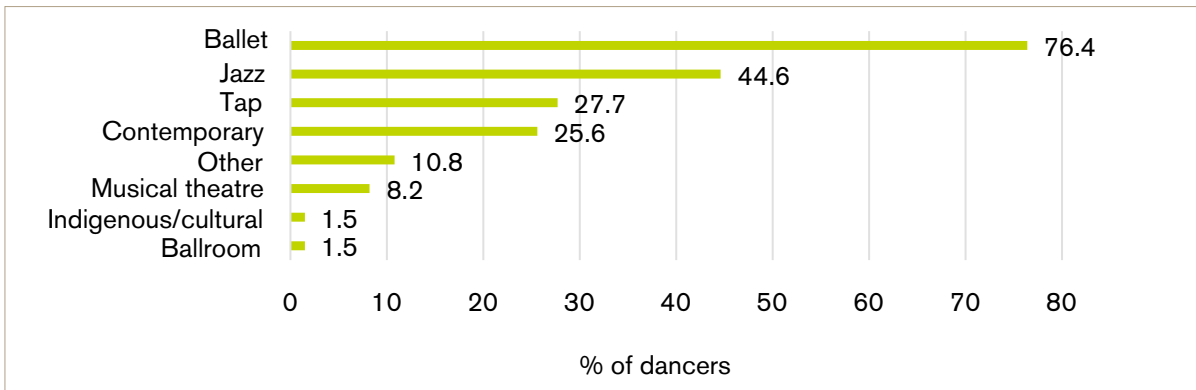


Figure 2: First dance style participated in by professional dancers

Australian dancers are highly trained and skilled individuals with 92% of survey respondents having completed full-time dance training, 70% of whom trained in Australia. This full-time training was an average of four years in length and typically started at 16 years old. The most common styles of full-time dance training were classical ballet followed by contemporary dance (Figure 3), and on average two styles of dance were incorporated into dancers full-time training courses.

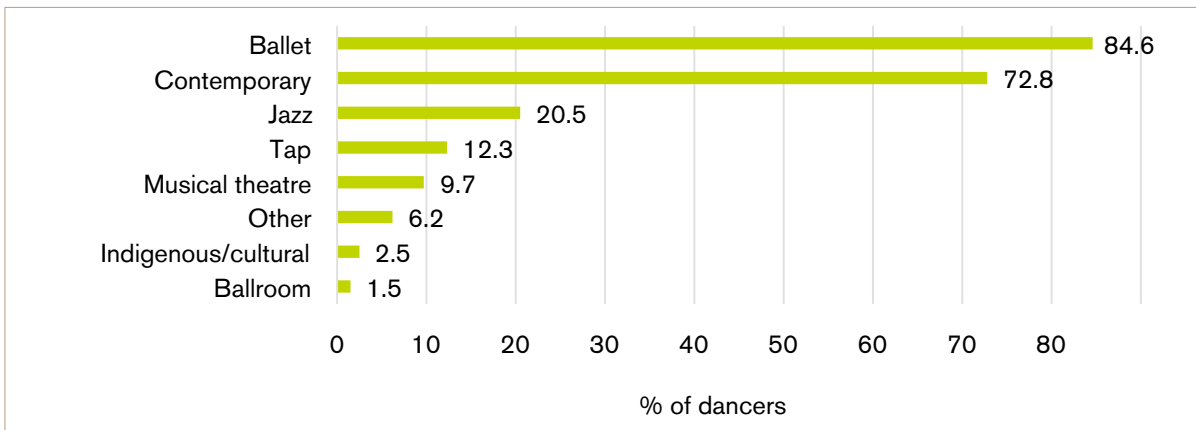


Figure 3: Style of full-time dance training

SUMMARY OF KEY FINDINGS

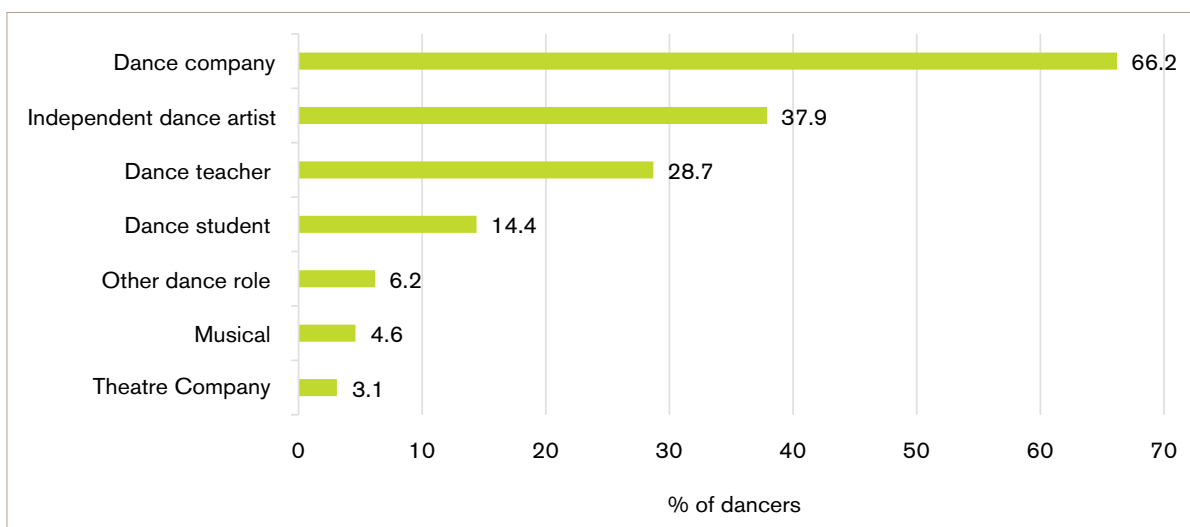
1. Dancers typically start dancing during childhood; however, there are professional dancers working in Australia who first engaged with dance in their mid to late adolescence.
2. Dancers are highly skilled individuals, with the majority undertaking some kind of full-time dance training.
3. Dancers often participate in multiple dance styles during their early and full-time training, and this may be a complementary or equal activity.

3.2 Professional dance participation and environment

Survey respondents represented a range of roles within the dance industry. Their employment as a dance performer was most often with a dance company (66.2%), a musical production (4.6%), a theatre company (3.1%) or as an independent dance artist (37.9%) (Figure 4).

Many dancers (38% of all respondents) maintained multiple roles within the dance industry and indicated participation in teaching (28.7%) and other roles (6.2%), typically management or choreography, in addition to performance.

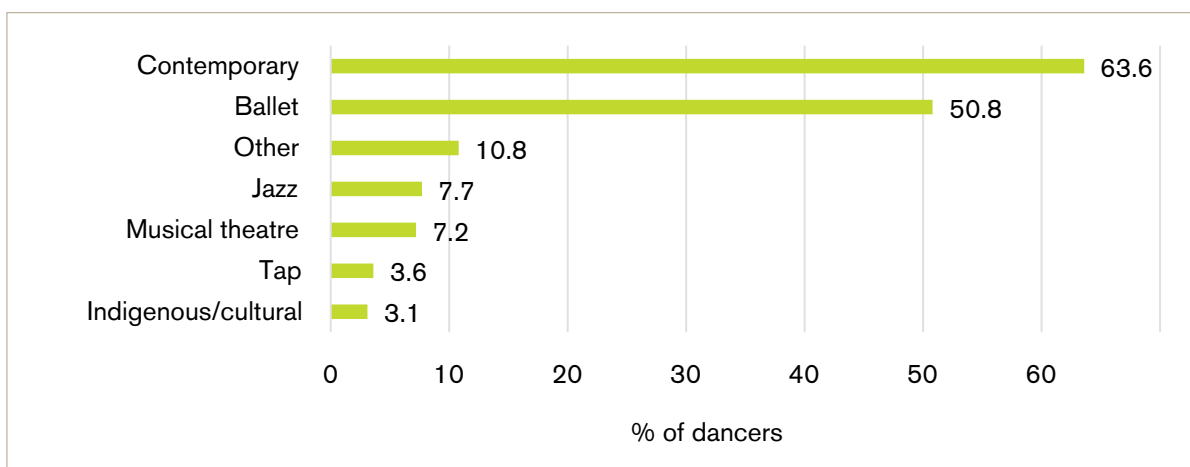
Despite performing professionally, 14.4% of respondents still also identified as a 'dance student', which demonstrates the philosophy of career-long learning and development that exists in the arts. This aligns with previous research in Australia which found that one third of professional dancers earned their first income as a dancer before their training had been completed¹³.



+Dancers could select multiple categories so the total is > 100%

Figure 4: Roles within dance employment

While the first dance style learnt by most dancers was ballet, current dance style of employment was most commonly contemporary (63.6%) followed by ballet (50.8%), (Figure 5). In contrast with early dance participation and full-time training, professional dancers more often focused on one style of dance (65% of respondents), with only 35% working in two or more dance styles.



+Dancers could select multiple categories so the total is > 100%

Figure 5: Dance style of employment

These professional dancers typically spent 5.9 hours per week in class, 12.6 hours per week in rehearsals, 3.7 hours per week in other in other physical activities, and 12.3 hours per week in performances. Their time spent in class, rehearsal and other activities did not typically decrease during performance weeks to compensate for this increase in dance time. Dancers participating in this study typically spent 14 weeks performing per year, though there was a large range of 1–40 weeks.

Dancers reported good warm-up routines and practices (Figure 6), with over 90% stating that they usually warm up before class and rehearsal and 98% reporting that they warm up before performances. However, cool down practices in dance were less popular, which is consistent with international research in this area⁷. Just over half (55%) of Safe Dance IV respondents reported cooling down after class, 43% after rehearsal and only 35% reported cooling down after performances. This is particularly concerning as the typical dance performance works up to a peak towards the end, and ends relatively abruptly. The purpose of an effective cool-down is to gradually return function to normal and prepare the body and mind for later activity¹⁴. The other likely benefits of an effective cool-down include reduced injury rates and delayed onset muscle soreness¹⁴. Therefore, dancers need to be better supported and encouraged to incorporate these practices into their post class, rehearsal and performance routines.

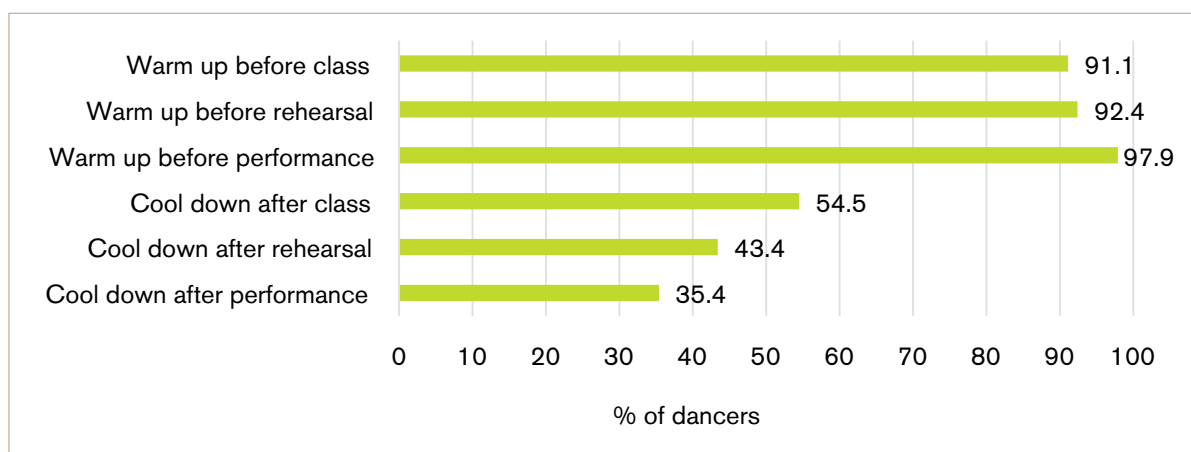


Figure 6: Warm up and cool down practices

SUMMARY OF KEY FINDINGS

1. A significant proportion of current Australian professional dancers maintain multiple roles within the dance industry.
2. Training load is higher for dancers during performance periods, as their other dance and physical activity does not typically decrease to compensate for the additional time spent dancing during performance periods.
3. Dancers need improved education and support to appropriately cool down on a more regular basis, particularly after performances.

3.3 Dance related injuries

A total of 146 dancers continued on to complete the dance-related injury sections of this study.

3.3.1 Occurrence of injury

A dance-related injury was defined as 'a physical problem deriving from stress or other causes to do with performance, rehearsal, training, touring or other circumstances of dance life, which affects your ability to participate fully in normal dance training, performance or physical activity'.

A total of 73% (n=107) of dancers reported experiencing a dance-related injury in the past 12 months. Of those dancers, 58% had sustained one injury in the past 12 months, 28% sustained 2 or 3, and 14% sustained over 3 injuries over this period (Figure7). A total of 46% of dancers reported a current dance-related injury.

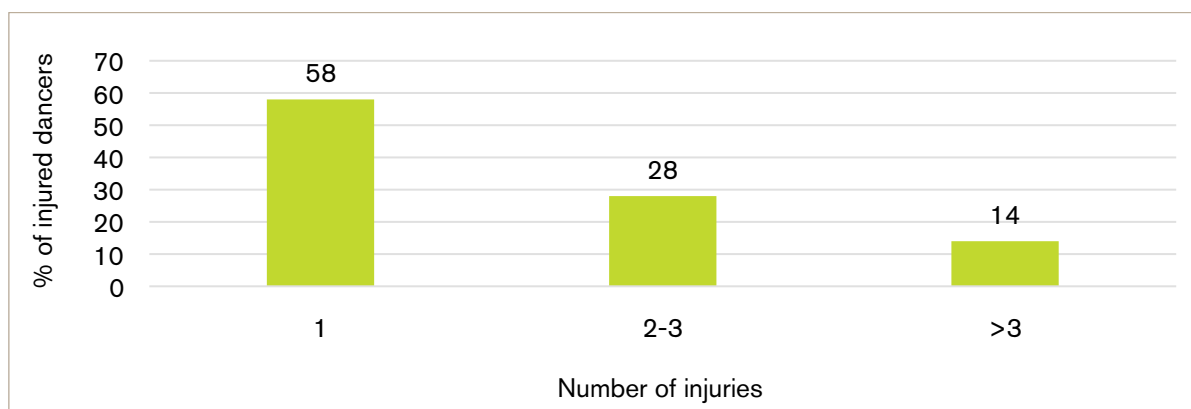


Figure 7: Number of injuries sustained in the past 12 months by injured dancers

3.3.2 Site and type of injury

Dancers were asked to provide further details on their one most significant injury sustained in the past 12 months. A predefined list of 25 different body regions was provided for dancers to choose from, including an 'other' option and a free text box to document any other body regions not previously mentioned. The most common site of injury was the ankle (26%), followed by the knee (11%) and hip (10%) (Table 1).

Table 1: Body region of most significant dance-related injury sustained in the past 12 months

Body region	Dancers reporting an injury (%)
Ankle	26
Knee	11
Hip	10
Foot	9
Lower leg (shin/calf)	8
Thoracic spine	7
Lumbar spine	7
Shoulder	6
Neck	4

Body region	Dancers reporting an injury (%)
Hamstring	4
Toe	3
Other	4
Head	1

Table 2 outlines the different injury definitions that were used in Safe Dance IV. The most common injury type of the dancer's most significant injury in the past 12 months was a strain (25%), followed by chronic inflammation (19%) and a sprain (18%) (Figure 8).

Table 2: Injury definitions used in Safe Dance IV

Injury category	Definition
Strain	An injury to a tendon or muscle resulting from overuse or trauma ¹⁵
Sprain	An injury (stretch or tear) to a ligament resulting from overuse or trauma ¹⁵
Dislocation	Complete dislocation of a joint resulting from trauma ¹⁵
Fracture	A break in bone or cartilage usually the result of trauma; however, also from overuse (stress fracture) ¹⁵
Chronic inflammation	Persistent low-grade inflammation
Pinched nerve and/or disc issue	Any nerve or disc related complaint
Other	All other conditions not incorporated into any of the previous categories

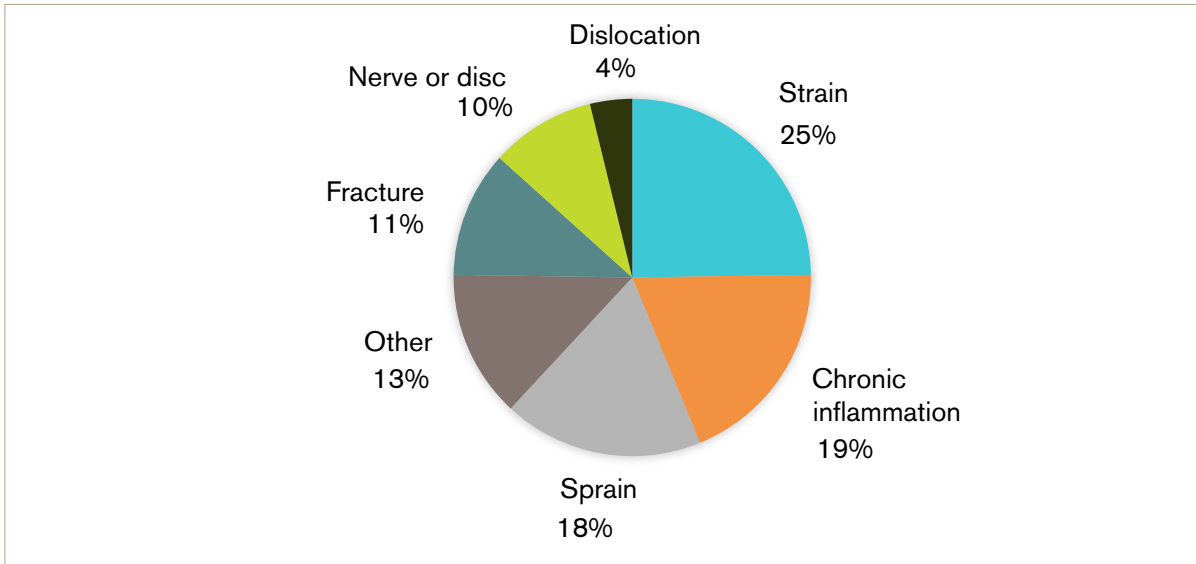


Figure 8: Injury type of most significant injury of the past 12 months

Musculoskeletal injuries are often broadly classified as either 'acute' associated with traumatic events or 'overuse' associated with repetitive microtrauma¹⁻³. In this study, 28% of reported most significant injuries were considered to be accidental/traumatic injuries and 58.5% were overuse/gradual. In terms of new or recurring injuries, 57% of injured dancers reported that this was the first time they experienced this particular injury.

3.3.3 Factors contributing to injury occurrence

As with all studies incorporating retrospective reporting of injuries, it is difficult to determine an exact injury cause. However, there are some known common risk factors for injuries in dance¹⁶, and it is likely that a combination of intrinsic (or personal) and extrinsic (or environmental) factors are involved¹⁷⁻¹⁹.

Only 16% of dancers reported that their most significant injury in the past 12 months occurred within three weeks after returning from a break or holiday of one month or more. Approximately 75% of these injuries occurred during performance times of the year, even if dancers were not actively performing at the time of injury. This is of relevance as participation in other dance classes and rehearsals and other physical activity did not typically decrease during these times of the year to compensate for the increased time and physical effort spent performing (see section 3.3). This finding may be only a reflection of a greater volume of dance exposure during these periods, or they may be due to an increased susceptibility to injury due to fatigue (see Figure 11).

Dancers were asked about the activity they were participating in at the time of their most significant injury of the past 12 months, and 30% could not identify the particular time their injury occurred. This is expected of more overuse/chronic injuries which have a longer term onset. Of those that could identify the moment, 40.5% reported that the injury occurred during rehearsal, 27% during class, 20.3% during performances, and 12.2% reported other dance related times (Figure 9). This is likely to be due to dancers typically spending the largest volume of their time (in hours per week) in rehearsal, rather than class or performance, as opposed to rehearsal being a riskier activity for injury.

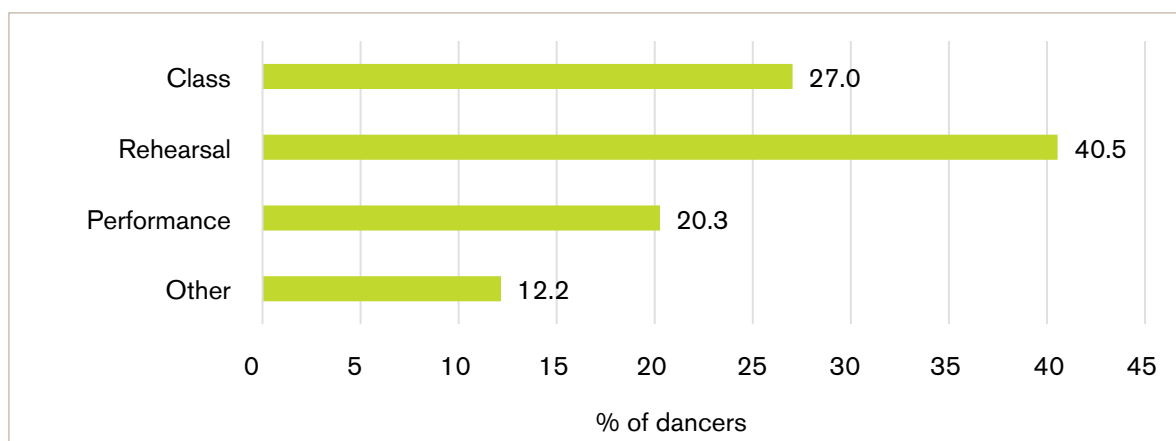
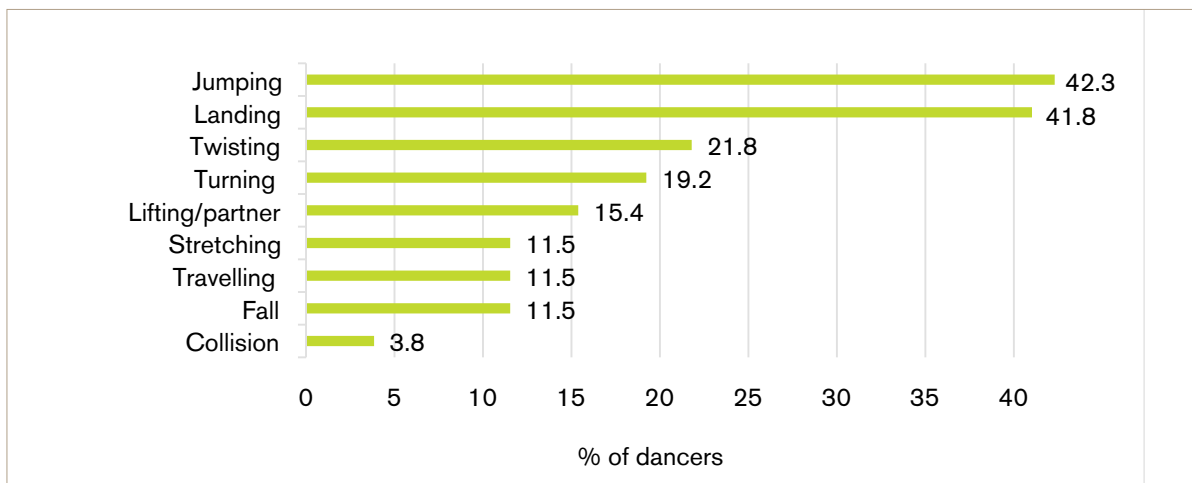


Figure 9: Dance activity at moment of injury

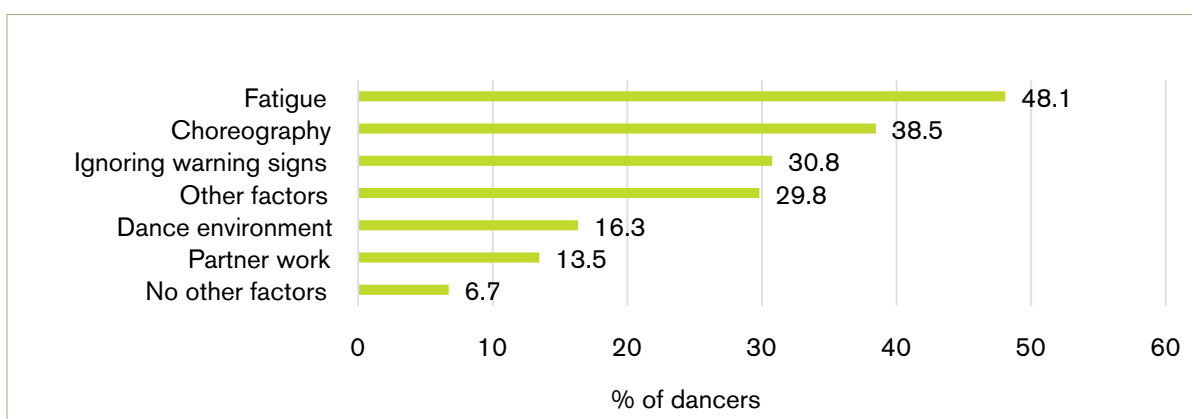
Dancers were asked if they could identify any dance movements that contributed to their most significant injury in the last 12 months. In those that could, the most commonly reported movements were jumping (42%) and landing (41%), followed by twisting (22%), turning (19%), and partner work (15%) (Figure 10). More accidental contributors such as a fall (12%) or collision (4%) were less common.



+Dancers could select multiple categories so the total is >100%

Figure 10: Self-identified dance movement that contributed to injury

Those who reported an injury in the past 12 months were asked about what other factors they believe contributed to their injury. The most common response was fatigue (48%), followed by new or difficult choreography (39%) and ignoring early warning signs (31%) (Figure 11). Reported other factors (30%) included an increased workload that couldn't be avoided, flare up of an existing problem and incorrect technique. The dance environment was reported as a contributing factor to their injury by 16% of dancers. The dance environment includes the floor a dancer trains and performs on, and 78% of all respondents (injured or not) reported training on a sprung floor, though only 68% reported performing on a sprung floor.



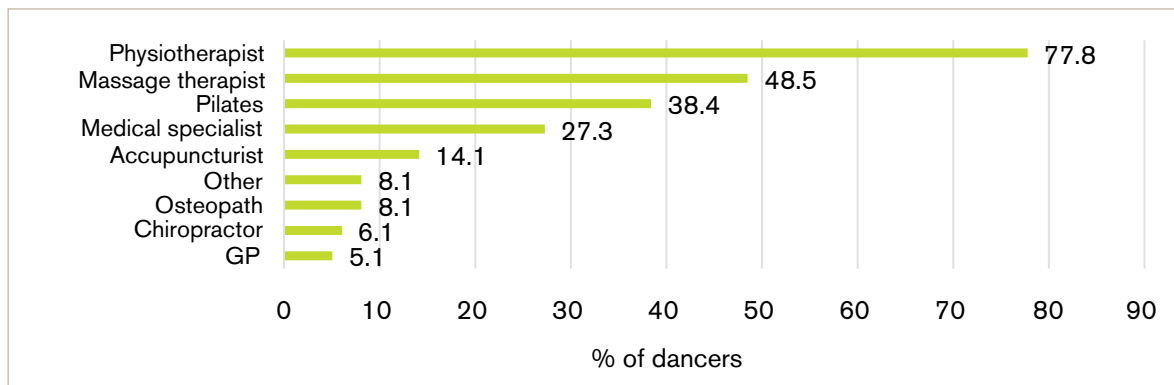
+Dancers could select multiple categories so the total is >100%

Figure 11: Self identified other factors that contributed to injury

3.3.4 Treatment of injuries

Access to timely, quality and understanding health care is essential for effective management of injuries^{20, 21}. A total of 58% of injured dancers in this study reported seeking treatment within two days for their most significant injury of the past 12 months, though it took a median of eight days for all injured dancers to seek treatment.

Dancers most commonly sought initial treatment following their most significant injury with a physiotherapist (63.8%), followed by a medical specialist (11.4%), osteopath (5.7%) and GP (4.8%). Follow up treatment was most often sought from a physiotherapist (77.7%) massage therapist (48.5%), and Pilates instructors (38.4%) (Figure 12).



+Dancers could select multiple categories so the total is >100%

Figure 12: Health professionals seen by dancers for ongoing injury treatment

Out of the dancers who reported an injury in the past 12 months, 50% of dancers reported that their dance company or employer paid for injury treatment, 38.5% reported paying themselves, and 23% reported workers compensation. Small numbers of dancers reported utilising private health insurance (6.7%) or Medicare (5.8%) and 4% reported a family member was required to assist with the costs of injury treatment.

3.3.5 Return to dance practices

When asked about their dance participation following their most significant injury in the past 12 months, 16.2% reported being unable to dance in any capacity for a period after sustaining their injury, and 71.4% of dancers reporting making some modifications to their practice to continue dancing throughout their injury. Some of these modifications included shortening dance frequency, wearing different footwear, modified choreography, and tailored warm up or conditioning activities. However, it was also common for dancers to say that they danced through the pain of an injury.

Full time-loss injuries, where a dancer is unable to dance in any capacity, is generally considered the most significant from a research or clinical perspective. However, dancers in this study particularly referred to the difficulties of managing partial time-loss injuries, for example, 'It is really hard to have an injury that only partially stops you from dancing'. While full time-loss injuries may be the most detrimental injuries in terms of maintaining dance employment, injuries that prevent a dancer from participating in dance to their full capacity clearly also warrant attention.

When asked if their most significant injury of the past 12 months had completely resolved, 63% of injured dancers said no. Those who responded no were asked if they expected the injury to completely resolve in the future, 37% said yes, 23% said no and 40% were unsure. Of those dancers who were unsure if their injury would completely resolve, 96% had previously seen a clinician for treatment of their injury and 62% were still currently seeing a clinician for their injury.

Of those dancers who reported an injury, 86% had returned to normal performance. Of those dancers who had returned to normal performances, it took a median of 14 days to do so. Within a week of being injured 43% had returned to performances (Figure 13). However, regardless of whether they had returned to performances or not, 40% of dancers with an injury in the past 12 months expected the injury to have some longer-term impact on their dancing.

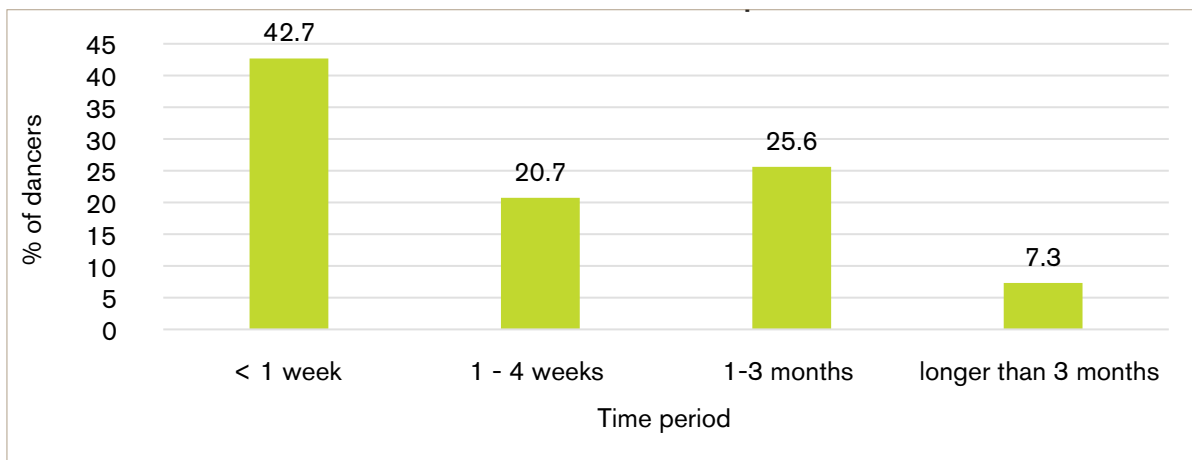


Figure 13: Time taken to return to full performance after injury

3.3.6 Impact of dance injuries

The previous sections focused on the injury that dancers considered to be the most significant in the past 12 months. The reasons for this significance are varied; however, dance and work-related reasons were more often cited than personal reasons of pain or inconvenience.

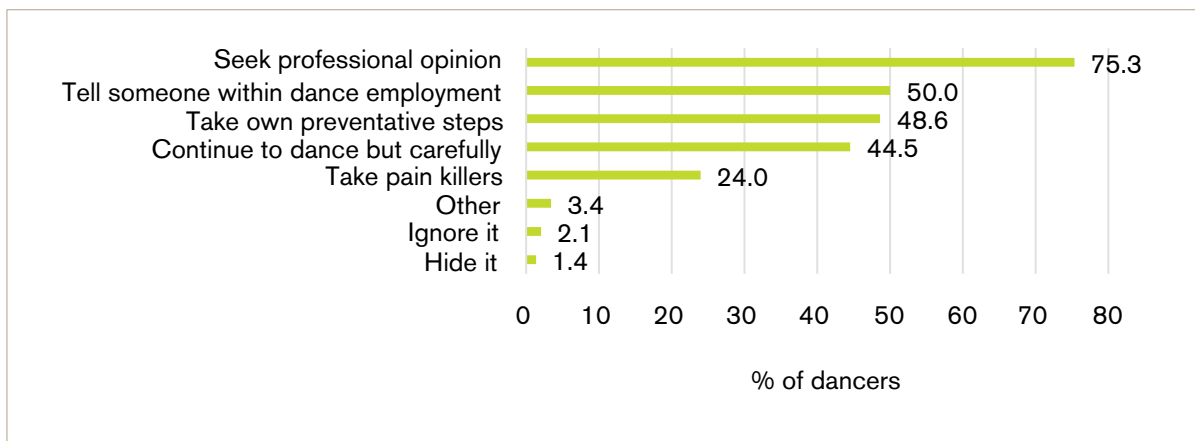
'It stopped me dancing for a period of time. It prevented me from earning an income.'

'It made me feel like I was letting other people down.'

'I love to dance, and any injury that prevents me from doing that to the utmost of my ability, I find really annoying.'

'I would ignore injuries as to not lose my contracts and tours'

A total of 62% of respondents reported a belief that there is still stigma associated with sustaining injuries as a professional dancer. Yet despite the continued stigma, 75% of dancers said they would seek professional opinion if they suspected an injury (Figure 18). However, only 50% stated they would tell someone within their dance employment about their suspected injury and 49% said they would also take their own preventative steps to manage their injury. 45% stated they would continue to dance, despite suspecting an injury. Only very low proportions of respondents reported that they would ignore (2.1%) or hide (1.4%) an injury.



+Dancers could select multiple categories so the total is >100%

Figure 18: What would dancers do when they suspect an injury

SUMMARY OF KEY FINDINGS

1. Injuries remain common in professional dance, with 73% of professional dancers reporting experiencing an injury in the past 12 months. The ankle was the most commonly injured region followed by the knee, and a strain to a muscle or tendon the most common injury type for the most significant injury of the past 12 months.
2. This demonstrates a potential role for preventative care practitioners, who have an understanding of the physical demands involved with different genres of dance and can work with dancers to further reduce this injury rate.
3. Acceptability and understanding of injuries in the dance sector has dramatically improved since the first iteration of Safe Dance, yet over 60% of respondents still reported the belief of a stigma associated with sustaining injuries as a professional dancer. As this could have a negative impact on injury reporting, self-care behaviours and seeking timely injury treatment, further work is clearly required to understand and reduce this stigma.

4. 50% of dancers stated a desire to self-manage their injuries, which may be due to personal preference or the time and cost involved with seeking clinical treatment. This finding is in line with a greater system level shift in the way that healthcare is recommended to be provided in the community, particularly for chronic conditions. Therefore, further research and action are required to determine what education and skills dancers may require to appropriately self-manage certain musculoskeletal conditions arising from their dance practice.
5. Despite seeing a clinician for treatment of their injury, 40% of dancers whose injury was currently unresolved were unsure if their injury would resolve in the foreseeable future. This indicates that many dancers need to be provided with improved and realistic expectations of their injury, capacity to dance during their injury and likely return to full dance ability.

3.4 Other health related and lifestyle behaviours

Other health related behaviours are important to investigate in this context, as they may be relevant intrinsic (or personal) factors related to injury occurrence. Dancers completing this study were generally in good self-rated health. However, many dancers used the free text sections of this survey to highlight the importance of body image and the psychological aspects of the injury experience and recovery, and that these issues require greater consideration within the dance community and future dance research. There is evidence that both impact and recovery from injury are directly influenced by individual differences in personality, styles of coping and social support²⁶.

Respondents average reported BMI was 20.95 (SD2.7) (Males=22.7 SD: 1.8; Females: 20.3 SD: 2.6). They typically slept for 7.4 hours per night, 90% of dancers were non-smokers and 61% drank alcohol on at least a weekly basis. 34% reported following a specific type of diet such as vegetarianism or gluten-free. 25% of dancers regularly take some kind of prescription medication, and 37% regularly take non-prescription or over the counter medications, typically vitamin supplements. Only 19% reported living with a chronic condition for 12 months or longer. 56% of dancers reported having more mobile joints than non-dancers, which could indicate hypermobility.

'I wish to have a long dance career and a physical lifestyle.'

It was popular for dancers to incorporate other types of physical activity into their routine, which may or may not be intended to enhance their dance practice. These most commonly included Pilates, yoga, swimming, cycling and other cardio and gym work.

SUMMARY OF KEY FINDINGS

1. Smoking and alcohol consumption behaviours have improved within the professional dance industry, with 90% of current professionals being a current non-smoker.
2. In general, dancers reported enjoying active and happy lifestyles, and a desire to do so long into the future.

4. SAFE DANCE: ARE WE MAKING A DIFFERENCE?

The table below contains a comparison of Safe Dance IV survey characteristics and findings with the previous study iterations focussing on professional dancers, Safe Dance I and Safe Dance III.

Table 3: Comparison of key findings from Safe Dance I (Geeves⁴), III (Crookshanks⁶) and IV (Vassallo)

Feature	Geeves 1990	Crookshanks 1999	Vassallo 2017
Number of responses	172	139	195
Inclusion criteria	Large company dancers only	Company (large, small & commercial) dancers	All company & independent dancers
Career prevalence of injuries (%)	89	89	97
Sustained a recent injury (%)	56 (last 6 months)	48 (last 6 months)	78 (last 12 months)
Injury sites	All spinal 34% Ankle 23% Knee 13% Foot 12% Hip 7%	Ankle 24% All spinal 23% Foot 13% Knee 10% Hip 10%	Ankle 26% All spinal 18% Knee 11% Hip 10% Foot 9%
Injury types	Muscle/tendon 33% Ligament 25% Stress fracture 12% Spinal joint 10%	Muscle/tendon 25% Ligament 14% Spinal joint 9% Stress fracture 4%	Muscle/tendon 25% Ligament 18% Nerve or disc 10% Stress fracture 6.5%
Injury occurred during (%)			
Performance	29	39	20
Rehearsal	42	24	41
Class	15	10	27
Other or overtime	10	25	12
Injured within 3 weeks from returning from break (%)	14	22	16
Self-reported contributor to injury (%)			
Fatigue, overwork or repetition	26	33	48 (fatigue only)
New technique, high-risk step or difficult choreography	21	30	39
Poor technique	15	19	NR
Consulted someone within 4 days of injury (%)	80	72	70
Practitioners consulted (%)			
Physiotherapist	68	63	78
Massage therapist	48	47	49
Osteopath	28	28	8
GP	31	27	5
Specialist doctor	22	16	27
Acupuncturists	13	14	14
Chiropractor	3	13	6
Treatment costs paid by company and/or workers compensation (%)	67	86	73
Time taken to return to full workload (days)	16	14	14 (time taken to return to full performance)

Since the first Safe Dance report, there has been an increase in career prevalence of injury, from 89% to 97% of dancers. There may be a variety of possible explanations for this; however, this observation may be because dancers are able to dance for longer, giving them more time to sustain an injury, or due to the expanded inclusion criteria of this iteration of Safe Dance.

In general the distribution of body region of injury, as well as common injury types, has remained consistent over time. An exception to this is the proportion of spinal injuries reported by dancers, which decreased from 34% in 1990 and 23% in 1999 to 18% in 2017. This change may reflect the increased diversity in dance styles incorporated into the Safe Dance surveys over the years.

The proportion of dancers reporting fatigue as a contributing factor to their injury has increased from 26% in 1990 and 33% in 1999 to 48% in 2017. However, fewer dancers reported poor technique or environment as a contributor to their injury. This demonstrates the benefits of education, policies and interventions regarding safe dancing practice for dancers and teachers at all stages of a dance career, including early teaching and pre-professional training. Yet professional dancers continue to maintain high dance workloads, and previous research in Australia has found that 64% of professional dancers maintained employment outside of the dance industry in addition to their professional dance role²⁷.

The proportion of dancers who consulted someone within four days of their injury has decreased from 80% in 1990 and 72% in 1999 to 70% in 2017. This may be a reflection of the increased diversity of participants in Safe Dance studies over time. More dancers working outside the structured support system of large dance companies participated in this study compared to previous years and, unlike their large company counterparts, they do not have as ready access to clinicians within the structures of their employment. There are also more general issues regarding access to and cost of healthcare in Australia, particularly in the community setting, that are of relevance to the injured dancer.

There has been some shift in the pattern of health care use in terms of practitioners seen by dancers for their injuries. There was a dramatic decrease in dancers reporting seeing a GP for treatment of their injury from 31% in 1990 and 27% in 1999 to 5% in 2017. Perhaps this may be due to increasing cost and access issues over time to see these practitioners; however, there has been a reported increase in consultations with specialist doctors as the supply of dance/sports medicine specialist doctors has increased over time. Dancers reporting consultations with chiropractors and osteopaths have both dramatically decreased over time. However, physiotherapists have consistently been the clinician most often seen by dancers for both initial assessment and ongoing management of their injuries. Visits to massage therapists and acupuncturists have also remained relatively consistent over time, with 50% and 15% of dancers reporting visiting these clinicians respectively.

There has been a decrease in the proportion of dancers reporting that their dance company/ employer and/or workers compensation paid for their injury treatment, from 86% in 1999 to 73% in 2017. This again is likely to be a reflection of the more diverse participants in this iteration of Safe Dance research and inclusion of independent dancers who work outside of the support systems of a dance company. In the 2017 survey 43% of dancers reported that they or a family member needed to pay for the treatment of their injuries. This may be an explanation for the finding that a lower percentage of dancers were consulting someone within four days of their injury. These last three discussion points indicate that access to and affordability of clinicians with relevant expertise in dance is an area that warrants future research and support.

Time taken to return to full dance performance has remained similar over time. However, particularly in Safe Dance IV, there was a great range in the reported time taken to return to dance performance. The majority of injuries resolve in less than a week; however, there were also more severe injuries reported by dancers which required many months, and in some cases a year, of rest and rehabilitation before a return to dance.

5. RECOMMENDATIONS

In professional dance, as with all physical and athletic endeavours, there will always be a realistic expectation of some musculoskeletal complaints. The information gathered through the Safe Dance research studies develops a better understanding of the changing profile of professional dancers in Australia and their experience of injury. The findings can be used to assist in the tailoring and evaluation of evidence based injury prevention initiatives with the long-term goal of safely sustaining dancers in their professional dance careers for as long as they choose.

Recommendations arising from the Safe Dance IV research project

1. Improved fatigue management by dancers and employers

Fatigue was a highly cited contributing factor to injury, and this has increased since the initial Safe Dance survey in 1990. Australian dancers have a high workload, whether that is through participation in multiple productions per year, or maintaining multiple roles within their dance employment. Therefore, as fatigue is one of the more modifiable injury risk factors, improved prevention, recognition and management of fatigue should be practised by dancers and promoted by employers. Future safe dancing practice guidelines would benefit from incorporation of fatigue management principles, as well as education in the identification of early warning signs.

2. Access to high quality and dance-educated or dance specialised healthcare services

Dancers who primarily work outside large companies require better support and access to affordable and specialised dance health care professionals, for both injury prevention as well as treatment and rehabilitation. This could be achieved through better information provision, for example, a web directory of dance specialist clinicians in different locations around Australia. It could also be through enabling better access to these services via financial support or subsidies. Community based clinicians also require support to familiarise themselves with the physical demands of different genres of dance in order to effectively treat injured dancers and provide practical advice regarding injury prevention, management and return to dance.

3. Support for injury self-management by dancers

Education and initiatives should be implemented to support dancers to be proactive regarding injury prevention and self-management of sustained injuries. There is an identified need for this by local dancers, as half the survey respondents in Safe Dance IV indicated they would take their own preventative or management steps when they suspect an injury. There is also an identified desire from dancers to be more proactively involved in their injury rehabilitation, as a number of Safe Dance I and III respondents reported that they were not given as much information as they would have liked from their treating clinician/s about their injury and recovery.

4. Address fear and stigma regarding injury reporting

The observed culture of stigma and fear surrounding both the experience and reporting of dance-related injuries is improving within the dance sector. However, there remains a continuing need to acknowledge and support the development of a preventative approach mindset towards injury reporting and help-seeking behaviour regarding injuries within this professional environment.

5. Better acknowledgement of psychological and psychosocial aspects of injury

The dance sector as a whole (i.e., dancers, teachers, clinicians, administrators, and researchers), requires greater understanding of the non-physical aspects of dance injury prevention and management. This includes appropriate self-care practices for injury prevention as well as recognition of the psychological aspects of injury prevention, management and rehabilitation.

6. Development of accurate data measures for dance research

Further research is required into the development of meaningful and accurate individual dance activity (or 'exposure measurements') in order to report injury rate data in future Safe Dance research studies. This should be an area of focus for local dance injury researchers, as well as the fostering of collaborations with international colleagues who are making progress in this field.

7. Continuation of local Safe Dance research

The Safe Dance research study should continue to be repeated at meaningful intervals, and interpreted within the context of an increasingly diverse professional dance environment in Australia. These future studies need to be designed and implemented in consultation with the companies and groups that regularly participate in this research, to ensure acceptance of this study as a standard evaluation based practice within the sector.

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APPENDIX A: DANCE COMPANIES APPROACHED TO PARTICIPATE IN SAFE DANCE IV

Large, medium and small dance companies approached to participate in Safe Dance IV:

- Australian Dance Theatre
- Austinmer Dance Company
- Ballet Lab
- Bangarra Dance Theatre
- Chunky Move
- Co3
- Critical Path
- Dance North
- DeQuincey Co
- Djukimala
- Expressions Dance Company
- fLING
- Force Majeure
- Gordon Frost organisation
- KAGE
- Leigh Warren & Dancers
- Lucy Guerin Inc.
- Makeshift Dance Collective Brisbane
- Melbourne City Ballet
- Ochre Dance Company
- Performing lines
- Phly Crew
- Praxis
- Q12 Dance
- Queensland Ballet
- Shaun Parker & Company
- Stompin
- Strut Dance
- Sydney Dance Company
- Tasdance
- The Australian Ballet
- Tracks Dance Company