

# Specifying Dance Floors

## WHITE PAPER SUMMARY



### 1. Overview

**Professional dancers can spend six to eight hours a day working in a dance studio and as their place of work it should offer a safe environment fit for the purpose.**

The dance floor makes an important contribution to safe performance without risk of slips and falls or longer-term stress injuries. A good dance floor instils confidence in dancers to give full expression to their creativity, safe in the knowledge the dance floor will offer a consistent response. This publication reviews the issues relevant to specifying floors suitable for dance, progress on defining standards and new research.

### 2. What dancers need from a dance floor

A floor developed specifically for dance will enable a dancer to effectively forget about the floor and concentrate on putting all their focus and concentration into the artistic performance. A confidence that comes from a reassurance they are not going to slip and fall, that lifts can be performed safely and on landing from jumps the response of the floor consistently returns the right amount of energy absorption. Anyone specifying floors for dance should remember that dancers may not be the commissioning clients, but they are the end users. Major dance companies understand this, which is why it is not uncommon to ask their dancers to “test” floors before the final choice is made.

### 3. Specifying the wrong floor

There are recognised international standards for general types of floor, but not yet for dance floors. Although it is customary to specify compliance with a published and recognised standard, it is a mistaken belief that using general flooring or sports floor standards will be suitable for dance. There have been some high profile examples where floors have had to be replaced by a dance company after the building is complete and needless to say replacing floors after construction is complete is an expensive error that should be avoided at all costs.

### 4. Why sports floors are not suitable for dance

It is tempting to presume that as the elite athleticism of top dancers is on a par with sports people, that a sports floor is appropriate. It is not. There are some critical factors that distinguish the requirements of dancers from those of sports played on a sports floor.



| Athletes   | Dancers  |
|--|--|
| footwear is generally cushioned and provides grip to protect against impact injuries                           | footwear varies according to dance style and doesn't cushion landings  |
| floor surface needs to ensure that it does not block movement potentially resulting in twisted ankles or knees | need the right degree of traction from the dance surface to prevent slips during performance                   |
| require a firm floor which allows balls to bounce predictably at 90 percent ball bounce specified in DIN 18032 | need more absorption or cushioning on landing from jumps to ease pressure on joints and prevent shock injuries |

## 5. Developing an international standard for dance floors



As already noted, at present there is no published standard for dance floors, but work on developing such a standard is in progress. The approach builds on the adoption of the DIN 18032 standard, but utilising test criteria specifically for dance. Similar tests have also been adopted for the European Standard EN14904, the standard for sports surfaces for multi-use sports. This recognises the different requirements of sports people and of dancers.

There are many different styles of dance, some performed in hard shoes such as tap and Irish dancing, others in soft shoes such as ballet or indeed barefoot as in much contemporary dance. A social or ballroom dancer will appreciate the slide and speed of a traditionally finished wooden surface, but a barefoot contemporary dancer will fear splinters from such a floor and the tap dancer may be concerned about the damage their shoes may cause.

## 6. Research studies seek to establish essential data

Correlating the subjective evaluation of floors as judged by dancers with measurement criteria has prompted a number of avenues for research, particularly in the field of biomechanics. One researcher is dance scientist and biomechanics expert Luke Hopper with his pioneering research investigating the effects of dance floors on dancer performance and injury. Luke explained, "Dance floors are an integral part of the dance environment, yet little information is available for the dance community that concerns how dance floors may affect dancer performance and injury."

Another researcher is Dr Boni Rietveld an orthopaedic surgeon at the Centre for Medicine, Dance and Music in The Hague, Netherlands. He is also Past President of the International Association for Dance Medicine and Science. Boni Rietveld observed, "There is a distinction to make between injuries caused by the floor and those caused accidentally. As far as the former are concerned, it is evident that there is a cause and effect relationship between dancers' injuries and the floor on which they perform."

Both Luke Hopper and Boni Rietveld are currently involved in further research with dancers, which is vital for dance research in the interests of dancer health.

## 7. Researching dancer protection



Whilst the EN14904 standard stipulates that a floor used for sport must offer a minimum of 25 percent force reduction to people using the floor, it does not in any way quantify the impact protection on contact with the floor, a factor considered particularly important for young dancers of school age.

A five year study by the biomechanics department of the University of Poitiers in France concluded that force reduction, while being essential in the determination of a safe dance floor (i.e. protection against long-term injuries), is not always sufficient for the profile of the people that use it. Protection is crucial against immediate injury risk such as bruising and even more important when it comes to the protection of younger dancers.

## 8. The role of the flooring manufacturer



Harlequin Floors is widely recognised as the leading authority and manufacturer of dance floors, globally. As an enlightened manufacturer Harlequin has always worked closely with the dance community to develop floors that dancers want to dance on. Flooring products in the Harlequin portfolio were typically evolved to meet the specific needs of a particular dance style and have been developed in conjunction with dancers themselves.

Aware of the high injury level among dancers, Harlequin is an active supporter of IADMS (International Association for Dance Medicine and Science) and of NIDMS (National Institute of Dance Medicine and Science). NIDMS "through shared expertise and a network of multidisciplinary partners, is working to provide better and more affordable access for all dancers to high quality, evidence-based, dance specific health care and dance science support services."

Harlequin Floors also provides backing and support for research work and is leading the quest for a relevant international standard for dance floors that can, in due course, be referred to in specification documents. Meanwhile the information derived from research studies already informs new product development.



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*Harlequin Floors offers free advice to ensure dance companies install dance floors best suited to their particular use.*

The full-length White Paper is available from Harlequin on request, or downloadable from [www.harlequinfloors.com](http://www.harlequinfloors.com)