



## SLIP AND FALL MISHAP AT A WEDDING RECEPTION

An ESi investigation results in a quick settlement following testing and an engineering analysis of the biomechanics and human factors surrounding a slip and fall incident in a ballroom during a wedding reception.

### SITUATION

In June 2017, a 58-year-old woman attended a family friend's wedding and reception with several hundred other guests. The reception was held in a ballroom equipped with banquet tables, a bar, and dance floor. Upon entering the ballroom, the woman changed from high-heeled dress shoes into flip-flops.

Towards the end of the evening, after several hours that had included multiple trips to the bar, dance floor, and restroom, the woman and her husband decided to leave. She visited the restroom one more time, and as she returned to her seat to meet her husband and collect her belongings, she slipped and fell in an area between the bar and dance floor, injuring her right wrist. After the fall, she stated there was something wet on the floor that had caused her to slip.

ESi was asked by counsel for the ballroom venue to inspect the subject flooring, analyze the incident from a human factors and biomechanics perspective, and address the issues raised by an expert hired by the woman's counsel.

**Practice:** Biomechanics & Safety

#### ESi Consultant

Dave Fortenbaugh, Ph.D.  
Senior Staff Consultant  
dmfortenbaugh@engsys.com  
719.535.0400

#### Services Utilized

- Biomechanical Engineering
- Human Factors
- Coefficient of Friction Testing
- Haddon Matrix

#### About ESi

For over 30 years, ESi has leveraged its multidisciplinary team of engineers, scientists, and professional technical staff to investigate many major accidents and disasters. Our technical expertise, hands-on experience and state-of-the-art facilities, combined with diagnostic, analytical and physical testing capabilities create an ideal environment for quickly identifying and interpreting the facts of a case.

#### Contact ESi

For more information visit our website or call us toll free at 866.596.3994

[www.engsys.com](http://www.engsys.com)

## SOLUTION

ESi reviewed the depositions of the woman who fell, the acting owner of the ballroom venue, and a security guard hired by the venue for the wedding reception. The acting owner was not present during the reception but had been part of the set-up during the day and was intimately familiar with the venue, its staff, and their responsibilities. The security guard did not witness the subject incident but had been present around the premises throughout the evening and responded to the incident within minutes of its occurrence.

ESi inspected the site and, using a BOT 3000E tribometer, performed 96 tests of the subject floor's coefficient of friction at various locations throughout the venue, including the approximate location of the woman's fall. Both wet and dry conditions were tested following the appropriate ANSI standard protocol. Each test collected hundreds of samples, providing a thorough analysis of the floor's properties. The results were then cross-referenced against the standard's recommendations for flooring coefficient of friction.

The subject incident was then analyzed by ESi using the Haddon Matrix approach, which considers factors related to the human (the woman), equipment (her footwear), and environment (the flooring) in a systematic, time-sequenced manner.

---

## RESULTS

The deposition testimony indicated that the woman had walked on the ballroom floor several times throughout the evening, familiarizing her with its slip resistance. Neither she nor anyone else with whom she spoke ever saw anything on the floor, and she did not remember her clothes being wet or stained at any point before or after the fall. The ballroom venue owner testified that the floors were routinely cleaned before and after events, that a janitor was on-site to clean up spills during events, and that a team effort was made by the rest of the staff to assist the janitor with floor maintenance. The owner was also unaware of any previous falls at events or complaints of the flooring.

ESi testing demonstrated the ballroom flooring provided appropriate friction in both wet and dry conditions, well above the recommended values from applicable industry standards and practices.

Several factors were identified by ESi that likely increased the woman's risk of falling, including a history of falls, alcohol consumption during the evening, and her footwear choice. In fact, her testimony of her slip mechanics were consistent with hydroplaning, a primary concern when wearing flip-flops.

A review of the opposing expert's report found, among other things, methodological errors in data collection, high variability among test results, inappropriate interpretations of standards, and a complete lack of consideration of any other relevant factors to the subject incident besides the floor's frictional properties.

ESi's investigation and analysis evaluated the entire system related to the woman's fall and determined that the flooring surface was reasonably safe for its intended purpose, and the venue had a reasonable approach to floor maintenance. The case settled shortly after the ESi report was disclosed.



### WHY ESi.

The biomechanical & safety engineering practice group is comprised of consultants with backgrounds in:

- Human Error Analysis
- Biomechanics
- Risk Assessment
- Warnings and Instructions
- Consumer Products
- Human Factors
- Ergonomics
- Injury Mechanisms
- Slips, Trips, and Falls
- Occupant Kinematics
- Industrial Hygiene



**Engineering Consulting  
and Forensic Investigation**

[www.engsys.com](http://www.engsys.com)