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ARTICLE

# SLIP RESISTANCE: Facing Up to Falling Down

By Helen Eva

**THE MAJOR CAUSE OF INJURY IN AUSTRALIA IS NOT ROAD OR INDUSTRIAL ACCIDENTS BUT EVERYDAY SLIPS, TRIPS AND FALLS.**

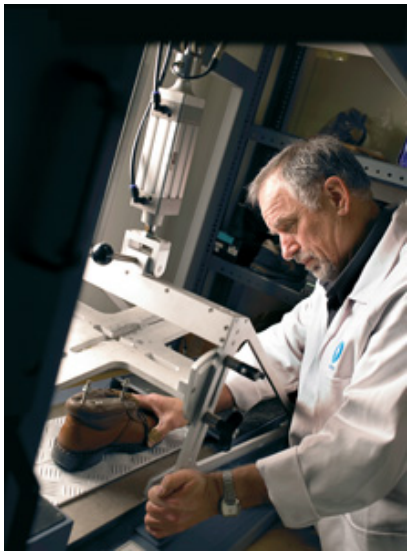
While science continues to take giant leaps for mankind, the relatively simple concept of keeping people on their feet as they go about their daily business can prove somewhat trickier. After all, humans were not designed to totter across a terrazzo floor with a pair of stilettos strapped to their feet, or launch themselves off polished boards to slam dunk a basketball. And buildings or workplaces – certainly in the past – were often designed with aesthetics, not ergonomics, uppermost in mind.

It is a paradox that scientists at CSIRO's Division of Manufacturing and Infrastructure Technology (CMIT) have been grappling with for more than 10 years in their research and ongoing technical work on minimising the risks and associated costs of people taking a tumble.

With Australian slip resistance standards among the highest in the world, CSIRO continues to be a leader in this highly complex and litigious field. The importance of their R&D is supported by the fact that slips, trips and falls have become one of the main health and safety risks in our community, and the most expensive occupational health and safety cost for business and industry.

In stark economic terms, injuries from falls are estimated to cost Australian society more than $2,360 million each year. In human terms, 14 Australians died and more than 26,000 were injured as a result of falls at work in 2003 alone, according to figures from the National Occupational Health and Safety Commission.

"Ask most people what the major cause of injury is in Australia and the answer would probably focus on car injuries or industrial accidents, but the real answer is the slips and falls that occur mostly in our everyday lives," says Richard Bowman, principal slip resistance scientist with CMIT.



The slip resistance team – with staff in Melbourne and in Sydney – receives hundreds of inquiries each year from organisations and individuals seeking advice on current best-practice slip resistance policies, on-site inspections, forensic investigation or legal testimony. Given that most falls involve a complex interaction of factors such as the slip resistance of the surface, footwear, activities, age, biomedical status and the environment at the time, the team's work is rarely straightforward.

Sydney-based CSIRO technical officer Carl Strautins says customers range from manufacturers, supermarkets and flooring companies to builders, cleaners, architects, disability access consultants and WorkCover authorities, to name a few. "Essentially, whoever owns a floor or walks on a floor, we talk to."

The test laboratories at Melbourne's Highett site and Sydney's North Ryde site have been the focus of much of the slip resistance team's R&D work over the past decade, and companies such as McDonald's continue to use these testing services.

"The laboratories host state-of-the-art testing equipment that enables testing and evaluation to Australian and international standards," says Melbourne technical manager, Peter Westgate.

The equipment comprises a strange array of gadgets and machinery such as the SATRA STM 603 – a computer-controlled robotic foot used to measure slip resistance between various footwear soles and flooring materials.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“The robotic foot has been used to evaluate the slip resistance of footwear for specific environments and occupations, such as prison guards, who don’t always have the luxury of being able to closely examine where they are walking,” says Mr Bowman.

Then there is the aptly named ‘Tortus’, a slow-moving, self-propelled weight covered in rubber material which is used on a dry floor to test friction. Other tests use inclining ramps, wet or oily surfaces and even barefooted ‘human subjects’ to determine slip resistance standards.

McDonald’s Australia has worked with CSIRO for a number of years in testing and consultation regarding the floor surfaces of its restaurants. Patrick Leong, Development Manager – Design for the company, says the issue of slips, trips and falls is a concern and focus of many businesses. “McDonald’s caters for all members of the community … the floor surface is one key component in addressing the issue of slips, trips and falls. Due to the complexity of the issue, with so many contributing factors, the company continually reviews incidents and seeks solutions for potential hazards.”

Another group that has formed a strong relationship with the scientists and their testing procedures is Wyong Council, on the NSW Central Coast. Council engineer Gary Kinney says people who slip and injure themselves on a public pedestrian area usually hold Council responsible, irrespective of contributing factors within their control at the time. “That notwithstanding, Council has an obligation to provide and maintain a surface with adequate slip resistance … we have developed a systematic approach in conjunction with CSIRO to assist in the management of slips and reduce risk in this area.”

As well as developing world-renowned guidelines and standards in this area, Richard Bowman believes CSIRO’s most significant achievement has been “that architects are now using a risk-based approach to the specification of flooring and walkway materials that are being classified using the most relevant testing methods”.

So, when you find yourself treading on a coarse or rippled surface, it’s probably not an architectural whim but the result of high technology designed specifically to keep you on your feet.

APPLICATION Work by CSIRO scientists has led to Australia having some of the world's highest slip resistance standards for floors and walkways.

BENEFIT Incorporating these standards will address the $2,360 million costs of trips and falls.

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