

**“For every action there is an equal or opposite reaction”
Newtons Third Law**

Atomic Human Movement Experts provide research analysis, expert witness opinion and sworn testimony regarding human motion in both criminal law cases, civil law cases and other forums such as sports tribunals. This is done using principles of biomechanics, forensic biomechanics, kinesiology and other human movement related fields.

Dr. Simone Lewis, Principal Researcher at Atomic Human Movement Experts has extensive experience undertaking expert analysis of Closed-Circuit Television (CCTV) and other video footage (i.e. mobile phone footage). This includes frame-by frame analysis to identify key events and determine the timing of these events.

With a background in sports biomechanics, athlete talent identification, athlete development and experience preparing athletes for the Olympic games, consultation in sports biomechanics is also available.

What is Biomechanics?

Biomechanics is the study of motion. Biomechanics uses the principles of physics and the knowledge of anatomy to describe and measure motion.

Forensic Biomechanics

Forensic biomechanics applies the principles of biomechanics, used in the fields of sports science, injury causation, injury prevention, rehabilitation, sports equipment design and vehicle crash science and applies these to criminal and civil legal cases. This is done when a case requires a question to be answered about human motion or the cause of an injury.



Sample Forensic Biomechanics Questions

- What was the cause of an injury?
- Is an event outlined in a witness or police statement biomechanically possible or could the event not have occurred as described in the statement?
- What was the striking or impacting object used to cause injury based on the pattern of injuries? Are there defensive wounds or was an action undertaken in self-defence?
- Was the accused physically capable of striking with force or co-ordination?
- Did the individual slip or trip on an obstacle or did they fall due to a problem with their gait?
- How can an individual's pre-existing medical conditions or past injuries affect a person's biomechanics or gait (walking or running) and increase the likelihood of an injury, trip or fall.
- Can an individual be identified on video by the unique features of how they walk or run?

Expertise

- In-depth knowledge of human biomechanics and anatomy
- In-depth knowledge of injury causation
- Understanding injury patterns and the ability to determine the original cause of injury
- Analysis of human motion to determine the likelihood of an injury occurring
- Analysis of Closed-Circuit Television (CCTV), surveillance and other security footage
- Analysis of mobile phone and other video footage
- Gait analysis (walking, running, stepping on and off a raised surface, trips and falls)

Services

Atomic Human Experts can provide the following services:

- Analysis of injuries and injury patterns, to determine the original cause and order of each injury
- Analysis of human motion in complex situations such as alleged crime, assaults, accidents and falls
- Analysis of Closed-Circuit Television (CCTV), mobile phone and other video footage
- Presentation of forensic biomechanics evidence in Court or other settings
- Preparation of reports containing forensic biomechanics analysis and evidence

