



Reducing Injury During Post-Mortem Examinations of Obese Bodies

Client: Dr. Christopher Ball, Provincial Forensic Pathology Unit (PFPU)

Team Members: Emily Ding, Hillary Fung, Ava Guse, Sophia Kotelnikova

Supervisor: Professor Kamran Behdinan

Reducing strain injuries for forensic pathologists at PFPU

The PFPU annually processes thousands of bodies for autopsies. For each examination, it is necessary to move or flip the body over to access the back. This procedure is currently performed manually and can significantly strain workers, especially when the bodies being processed weigh over 100 kg. Often, it is necessary to wait long periods until more workers are available to help safely maneuver the body, interfering with the workflow in the facility. The client has requested a device to help automate the flipping and transfer of the body between the gurney and autopsy table, and vice versa. This device would improve the efficiency of autopsies conducted on heavy bodies and reduce worker injuries associated with handling those bodies.

A motorized, mobile mechanism to maneuver obese bodies

The final design is a wheeled mechanism with an I-beam. Similar to current medical lifts, it can transfer a body between surfaces; it has the added functionality of rolling a 600 kg body a full 180°. Several iterations ensured that the design was also safe and light enough to move manually, allowing it to be stored outside the autopsy bay and minimizing disruption to the working area. A motorized trolley system moves along the beam and carries the body horizontally. Flipping procedures are carried out by shortening or lengthening the cables attached to the sling and the I-beam. All movement is remotely controlled to minimize the physical strain associated with staff moving the body. The sling provides enough flexibility to accommodate a variety of body types, while also being sturdy enough to withstand existing cleaning protocols. Due to the high durability of the sling material, it can be reused. To ensure the design performs reliably in the future, a fully articulated prototype should be produced.