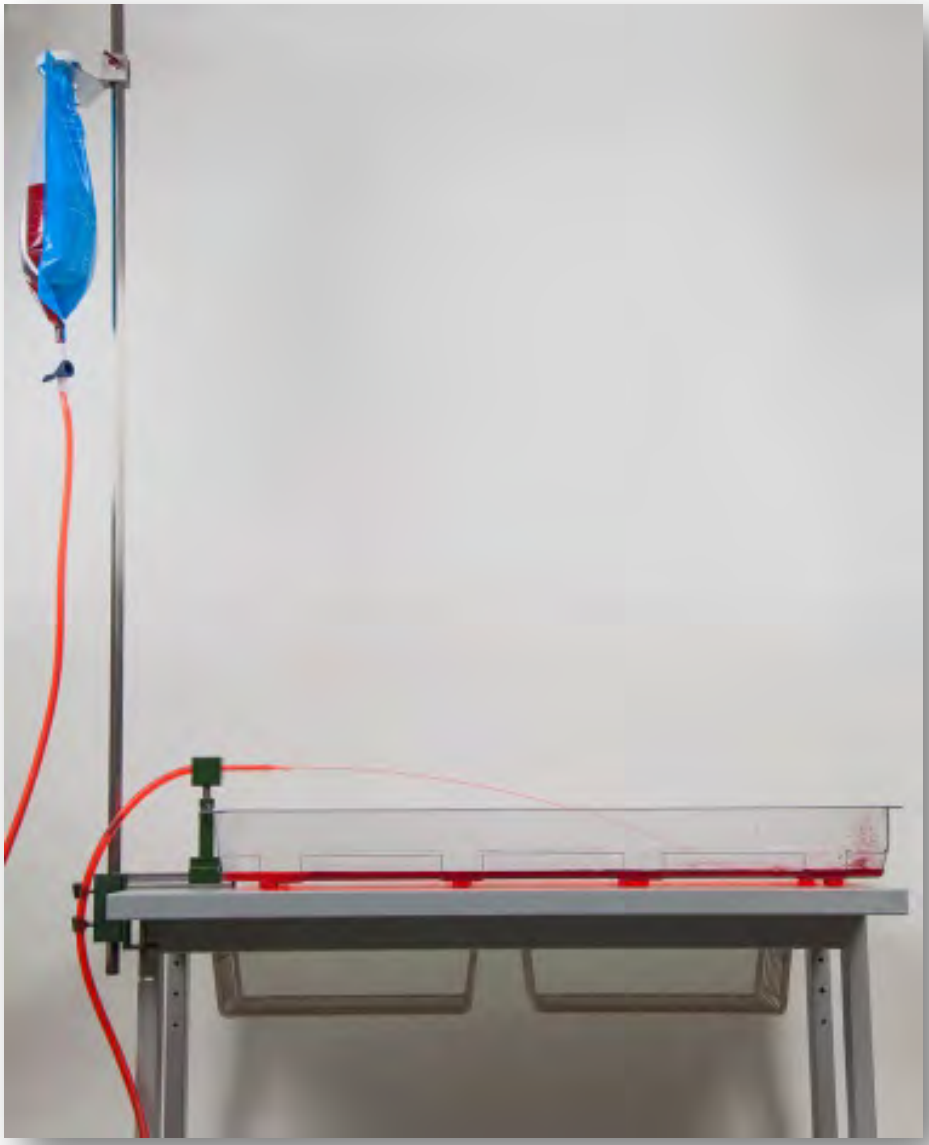
OUTFLOW VELOCITY OF LIQUIDS

MED 15.08



Material:

Item-no.	Qty.	Description
DM682-1B	1	Water basin, long
DS500-1B	1	Table clamp, large
DS102-12	1	Stand rail base, L=125 mm
DS300-00	1	Support rod, squared, L=1000 mm, 12x12 mm
DS103-7G	1	Sliding saddle, H=70 mm
DS404-1G	1	Plate clamp on support
DM461-1B	1	Discharge bag 3000 ml, with stopcock and holder
C6030-1C	1	Glass tube 3, straight, L=110 mm, with tip

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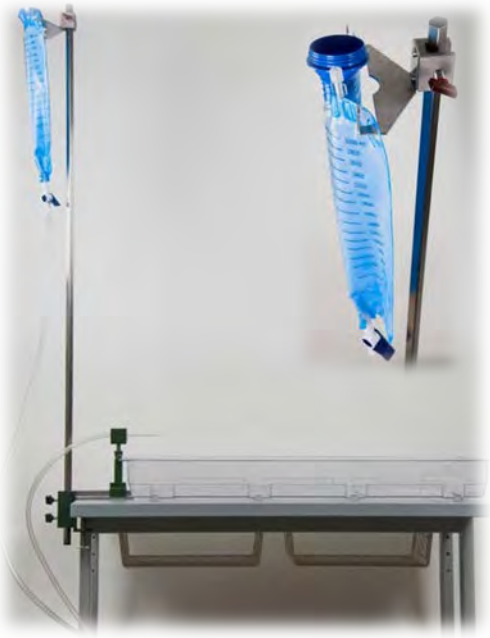
Purpose
Demonstrating that weight pressure changes the outflow velocity of a liquid.

Preparation
- fix the 125 mm stand rail base to the table edge with the table clamp

- insert the 1000 mm support rod into the table clamp and fix it with the two screws

- fix the sliding saddle to the stand rail base, afterwards fix the plate clamp with support to the sliding saddle

- the discharge bag is mounted on the upper end of the rod



- the long water basin is placed next to stand rail base

- moisten the end of the glass tube before the experiment so that it can be easily removed afterwards, then connect the straight glass tube with the end of the hose of the discharge bag

- the glass tube with the end of the silicone hose is mounted horizontally in the plate clamp

- the glass tube should be positioned 5 cm above the upper edge of the water basin

- close the stopcock of the discharge bag

- open the inlet screw of the discharge bag and pour around 2.5 litres of strong coloured water into it

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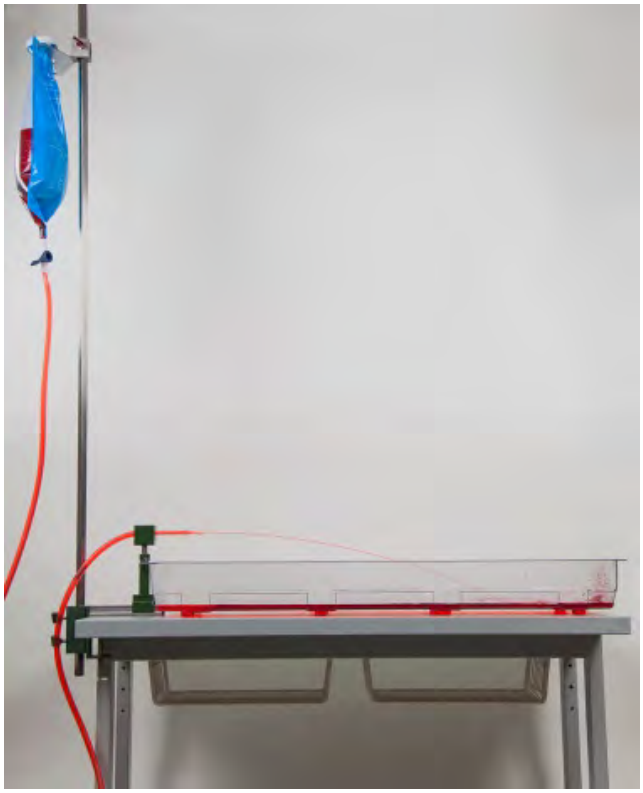
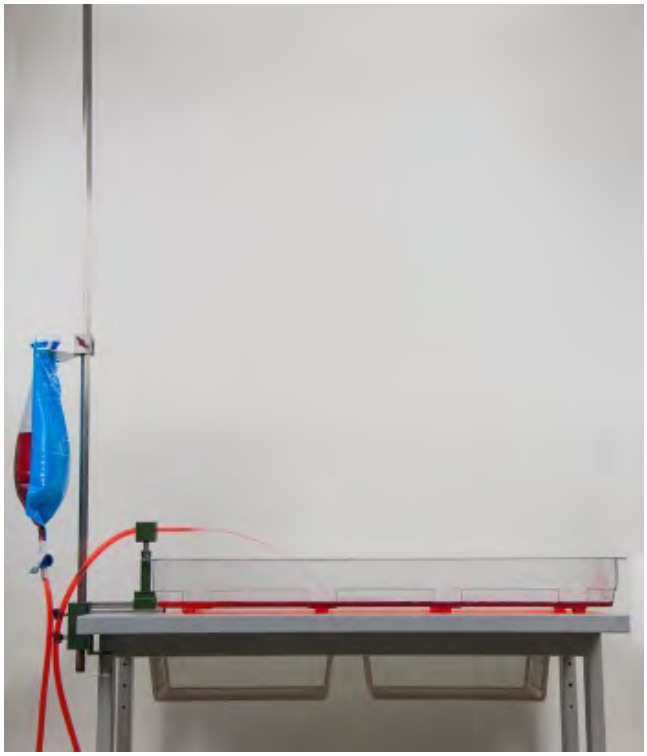
Experiment

Open the stopcock of the discharge beaker and observe the throwing distance of the water jet.



Loosen the holder of the discharge bag and move it further down. Repeat the experiment and observe the throwing distance of the water jet again.

Repeat the experiment with the discharge bag in different positions.



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Result
The higher the position of the discharge beaker (water reservoir) is above the outlet opening the further is the throwing distance of the water jet.

The higher the water pillar is above the outlet opening the higher is the pressure and thus the outflow velocity.

The theoretical outflow velocity results from the (fall) height:

$$v = \sqrt{2 \times g \times h}$$