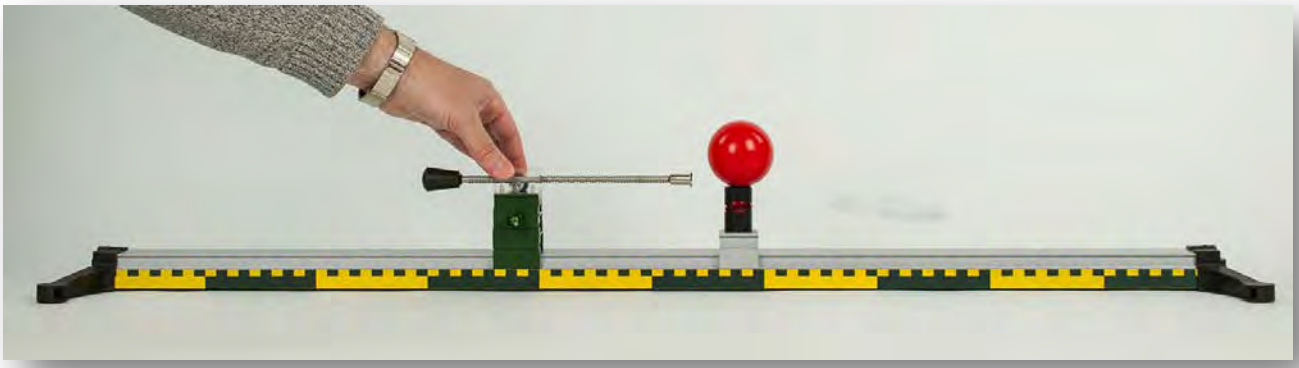
INERTIA OF MASS – STAYING AT REST OR MOVING

MED 07.03



Material

Item-no.	Qty.	Description
DS101-3B	1	Stand rail with scale, L=1000 mm
DS112-1E	2	Rail claw, simple
DM344-1S	1	Projectile launcher 02
DS103-1H	1	Holder for guide rail
DM362-1E	1	Baffle block
DM300-2A	1	Dynamics trolley, demo, 50 g
DM341-2A	1	Ball holder for trolley
DS102-2G	2	Clamp saddle
DS093-04	1	Sliding saddle "Sepp", H=40 mm
DM370-1A	1	Plate for experiments with inertia
DM360-5R	1	Ball, D=60 mm, plastics, red

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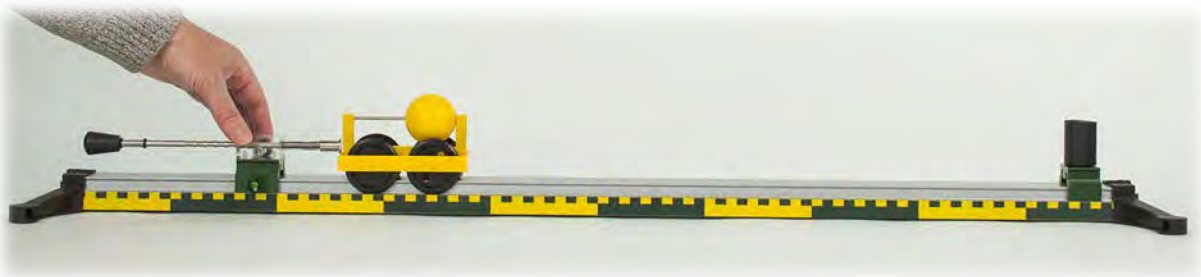
Purpose
To demonstrate the inertia of the mass (reference system bound to the body)

Preparation
Attach the two rail claws to the stand rail; afterwards fix the holder for guide rail on the right side of the track and attach the baffle block to this holder.
Place the projectile launcher on the left side as shown on the image.



Experiment 1
Attach the ball holder to the trolley, the ball should be positioned in the front as shown on the image.

The projectile apparatus is set to the maximum;
place the trolley is right after the projectile apparatus.

Push the button on the projectile launcher.
What is happening?

Result
When launching the ball is thrown back at the car.
Once the car hits the baffle block the ball is thrown forward again.
(= Inertia as maintenance of the speed).

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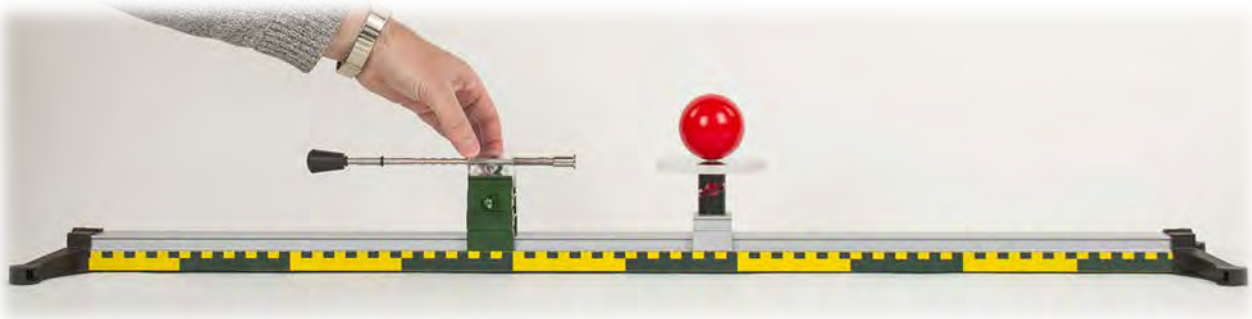
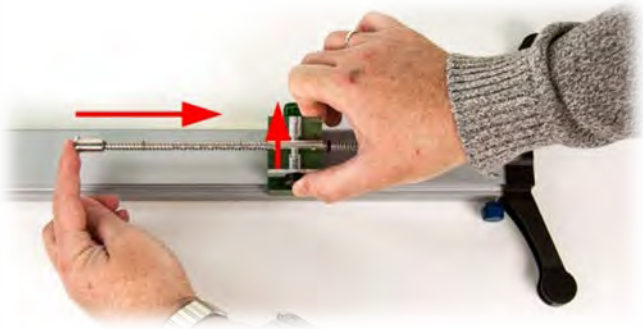


Experiment 2
Place the two clamp saddles on top of each other at the 40 cm mark of the track; afterwards attach the projectile apparatus to the clamp saddle.

The sliding saddle is placed 16 cm after the projectile apparatus; the plate for experiments with inertia is placed centrally on this sliding saddle.

Again the projectile apparatus is set to the maximum; place the ball on the plate. The small hole in the plate prevents the ball from rolling away.

Push the button on the projectile launcher.
What is happening?



Result
The plate gets pushed away after the launch, the ball however rests on the sliding saddle due to inertia.

Note
This experiment is a demonstration of the impact of a shock from behind or from the front or the effects of inertia and friction.

If you place a body with a higher centre of gravity on the plate and the friction is large enough (rubber pad) a sufficient torque is created and the body falls over.

(Example: pulling the carpet away - counterexample: pulling the tablecloth away quickly - dishes remain on the table).