

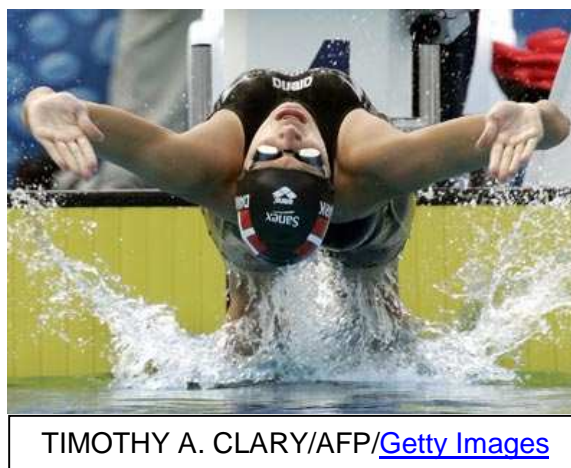
EXAMEN : baccalauréat Général – Série S –SVT ou S-SI	SESSION 2014
EPREUVE : Evaluation spécifique de Langue en section européenne	
PHYSIQUE – CHIMIE en langue ANGLAISE	
THEME : MECANIQUE : Lois de Newton	Sujet n°09

Law of Force Pairs

Adapt from : <http://science.howstuffworks.com/innovation/scientific-experiments/newton-law-of-motion4.htm>

Let's start by considering a swimmer facing the wall of a pool. If she places her feet on the wall and pushes hard, what happens? She shoots backward, away from the wall.

Clearly, the swimmer is applying a force to the wall, but her motion indicates that a force is being applied to her, too. This force comes from the wall, and it's equal in magnitude and opposite in direction.



These examples don't show a practical application of Newton's third law. Is there a way to put force pairs to good use? **Jet propulsion** is one application. Used by animals such as squid and octopi, as well as by certain airplanes and rockets, jet propulsion involves forcing a substance through an opening at high speed. In squid and octopi, the substance is seawater, which is sucked in through the mantle and ejected through a siphon. Because the animal exerts a force on the water jet, the water jet exerts a force on the animal, causing it to move. A similar principle is at work in turbine-equipped jet planes and rockets in space.

Octopi : pieuvres ; squid : poulpe

1. Present and comment on this document.
2. Do not forget to focus on the describing parameter that is used to present the propulsion process.
3. Do you know any other Newton's law and their uses?