# Essay on physics of stopping and car safety

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In physics and in physics it is a belief that ones safety is not related to the speed in which one is travelling or moving in but it is rather how fast you stop. When a collision occurs ones safety will not be based on the speed in which he was moving in before the collision occurred, but rather it would be matter of how fast he stopped when the collision occurred. The urgency in which one stops a moving object during a collision process would dictate the magnitude of the collision. A person who reacts and stops the car quickly is more likely to survive than the one who reacts slowly to the collision.

In discussing the physics of stopping it becomes quite impossible for one to elude factors such a inertia, mass, momentum and impulse. One also needs to take into account the changes that occur in momentum.

Changes in the momentum are caused by impulse. Impulse is the product of time interval and the force that one applies. If one accelerates quickly, he would have a smaller impulse than the one who accelerates slowly. An individual who decelerates quickly would experience a shorter impulse and thus a rough stoppage, (Marion, 38).

Inertia is very critical in physics of stopping. It refers to the tendency of an object to remain in the state it was in before. That is, if an object was at rest, it should remain so and if the object was in a state of motion, then it should remain in the same state. Closely related to inertia is the inertia force which is imaginary forces that accelerate an object. They are always proportional to the weight of the object and acts in the opposite direction of the moving object. When people are in a moving buss, their bodies would always tend to remain in their original positions provided the bus maintains its speed. If the

speed of the bus is accelerated, the passengers would be thrown in the opposite direction, they would be thrown backward with a motion equivalent to the motion of the bus. If the driver of the bus decides to suddenly decelerate the bus, the bodies of the passengers lurch in the direction the bus was moving. The mass of an object would always determine the inertia of an object. According to Newton, the force that acts on an object s equivalent to the speed that the object seems to be undergoing multiplied by the mass of the object. This implies that a stronger force would always be required to make larger objects travel at a similar speed with a much smaller object. In essence the law of inertia implies that the more inertia you have the more prone to injury.

Momentum is a moving inertia. Momentum is the product of velocity and mass. When either the velocity or even mass of an object is to be increased, then there would be a corresponding increase in the momentum of the object. If we were to decrease either the velocity or mass of the object, then we would automatically witness a decrease in the momentum of the object. This implies that when one moves faster he/she experiences a higher momentum.

If collusion was to occur, then the level and magnitude of the accident would to a large extent be pegged on how fast the driver reacts. A driver who reacts quickly and starts adjusting earlier is more likely to have a collision of a lesser magnitude than one who applies emergency breaks. The passengers in the first scenario would experience inertia but of lower intensity than the passengers in the second car who are more likely to incur more serious injuries. The passengers in the second vehicle would be lurched forward with

a lot of force than their counter parts in the first vehicle. The theory of inertia holds that the faster you go the more likely you are to get injured and more so if you had no seatbelts, (Landau, 109).

One safety feature in modern cars that help prove this statement is the existence of seatbelts in the cars. When a collision occurs and one does not use seatbelts then he is sure of being banged up on the steering wheel or even the dashboard. A properly worn seatbelt would always act to prevent human collisions from taking place. If seatbelts are properly worn the serious injurious would be reduced by a very big margin. Studies have sown that when one wears a safety belt, then the chances of the occupants of front seat dying is reduced by a massive fifty percent. Seeks helps keep the occupants of a vehicle from lurching forward incase the cars stops abruptly because of the effects of inertia. When an accident occurs, seatbelts exerts force on the occupants thus preventing them from lurching forward and slamming himself on the windshield or the dashboard which could have otherwise occurred with a lot of force, (Goldstein, 135).

## Works cited

Goldstein, K. Classical Mechanics, New York: Addison publishers, 1980. print

Landau, L. Mechanics London: Pergamon Press, 1976. Print

Marion, J. Classical Dynamics of Systems and Particles Boston: Thomson. 1995. print