

G-Force: Angles Helping Pilots Go Faster

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Gravity induced loss of consciousness, better known as G-LOC, occurs when excessive gravitational forces are applied to the body resulting in decreased intracerebral blood flow. Even after pilots undergo G-LOC, there is a period of functional incapacitation following it that usually lasts around 15 seconds, but could last up to 30 seconds, after the pilot initially regains consciousness. This is a problem because in newer, more advanced military aircraft like the Lockheed Martin F-35 Lightning II, jets are capable of going 1.6 times the speed of sound exerting higher levels of g-force than in the past. After doing this experiment to prove changing the angle of the ejection seat could help during flight, with the data that is collected, a seat to lower the risk of G-LOC could be engineered. It was hypothesized that if the body is put at a 10 degree angle, the least amount of g-force possible will be put on the brain, lowering the risk of G-LOC. By doing this you have changed the direction of $-G_z$ to $+G_z$. After conducting the experiment, it was found that the hypothesis was correct. Reclining the angle of where G_z has contact with the body, decreases the stress on the blood in the direction of $+G_z$ to $-G_z$. In conclusion, it would be very beneficial to create a seat for aircraft combat maneuvering that could change the direction of G_z while in flight.

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