

## Learn To Fly Trike Weight-Shift Control LSA - Ground Lesson 2 – Basic Aerodynamics - Stability, Control, Forces, Stall

Content:

Check list of concepts presented in lesson to learn and understand.

The forces acting on an aircraft : All forces overview: \_\_\_\_ Lift verses Weight \_\_\_\_ Thrust verses Drag

**Weight** empty \_\_\_\_ max \_\_\_\_ usable load \_\_\_\_

### **Lift**

\_\_\_\_ Streamline/turbulent flow \_\_\_\_ Bernoulli's Principle \_\_\_\_ Newton's Third Law  
\_\_\_\_ Dynamic/static pressure \_\_\_\_ Airspeed \_\_\_\_ Airfoil shape  
\_\_\_\_ Pressure distribution/center of pressure (CP) movement

### **Drag**

#### **Parasite drag and increases in speed**

**Form drag** \_\_\_\_ cowling \_\_\_\_ cross bar \_\_\_\_ tubes \_\_\_\_ tires \_\_\_\_ antenna  
\_\_\_\_ Skin-friction drag \_\_\_\_ Interference drag

#### **Induced drag/angle-of-attack**

\_\_\_\_ wing twist effect \_\_\_\_ wing tip vortices \_\_\_\_ aerodynamic force  
\_\_\_\_ Wing design \_\_\_\_ Total drag \_\_\_\_ minimum drag

### **Thrust**

\_\_\_\_ Propeller motion \_\_\_\_ Forces on a propeller blade \_\_\_\_ Propeller efficiency  
Takeoff and flight effects of propellers  
\_\_\_\_ Propeller torque effect \_\_\_\_ P-factor

### **All forces**

\_\_\_\_ Straight-and-level \_\_\_\_ Climbing \_\_\_\_ Descending \_\_\_\_ Lift/drag ratio  
\_\_\_\_ Turning and load factor \_\_\_\_ Forces in a turn \_\_\_\_ Thrust in a turn \_\_\_\_ Steep turns

### **Control**

\_\_\_\_ Control bar roll wing twist \_\_\_\_ Control bar pitch \_\_\_\_ Yaw stable \_\_\_\_ Trim

### **Stability**

\_\_\_\_ Aircraft equilibrium \_\_\_\_ Stability \_\_\_\_ Static/dynamic stability \_\_\_\_ Stability vs. maneuverability  
\_\_\_\_ Pitching moments \_\_\_\_ Longitudinal/directional/lateral stability

### **Stalls**

\_\_\_\_ Stalls \_\_\_\_ Stalling in a turn \_\_\_\_ Awareness \_\_\_\_ Avoidance \_\_\_\_ Recovery procedure

### **Spirals**

\_\_\_\_ Forces \_\_\_\_ Recovery