

Unit N°2

Aerodynamics, flight mechanics, piloting

Aerodynamics: effects of a fluid stream on an object

Flight mechanics: effects of the forces on a trajectory

1. PRELIMINARIES

- ✓ Vectors
- ✓ Pressure
- ✓ Stream on an object, Cx

2. AERODYNAMICS

How does a paraglider fly, common misconceptions.

A. The profile

- ✓ Forces and application point
 - Aerodynamic forces
 - Pressure point
 - Lift and drag
- ✓ Angle of attack variation and limits
 - Collapse
 - Stall

B. The wing

- ✓ Reality of air circulation around the wing, induced drag
- ✓ Total drag and glider polar

C. The complete paraglider

- ✓ When in equilibrium
 - Global balance pilot/wing
 - Attitude, glide angle
 - Balance: lift / drag
 - Numeric evaluation of drag
 - Load factor and consequences

- ✓ Transitory movements
 - Pendulum effect
 - Migration of pressure point
 - Profile stability and instability
 - What's happening when you «brake»: 2 cases
 - Inertia and damping
- ✓ Rain and profile
- ✓ Wind gradient

3. FLIGHT MECHANICS

- ✓ The pitch
- ✓ How does a paraglider turn?

4. PILOTING

- ✓ What is piloting?
 - Aerodynamic and pendulum movements
 - Pitch piloting, generate, damp, stop
 - Roll movement, generate and damp
 - Piloting skills
- ✓ Piloting mistakes
 - Over piloting
 - Under piloting
 - Wrongly timed piloting
- ✓ S.I.V.
 - How to pilot classic incidents
 - Asymmetrical collapse
 - Cravate
 - Symmetrical collapse
 - Stall
 - Spin
 - Spiral
 - Cascade
 - Spiral neutrality