Undulating turns

Essence

During a turn, to intentionally vary the back elevator pressure and control its effect in ALT.

Objective

Find the right match between pitch and bank Aoβ° - G_{REQ} curve to maintain ALT.

Bring attention to the changes in G loads and feel them despite Weber's low difference threshold.

Applicability

- Level turns shallow | medium | steep

Takeaway

Maintaining a constant Aoβ° is important to measure up the appropriate match in back elevator pressure

Parameters

Start level, trimmed for slow cruise

* 30° bank angle
* In a 90° sector, climb 100 ft ~ 466 fpm

Performance

1. Coordinate your entry into a turn (see 01-Dutch Rolls).
2. Maintain Aoβ° by neutralizing the ailerons.

3. Release any side loads with the pedals.

4. Trim slightly nose down - to make the back pressure a bit more conspicuous.

5. Maintain ALT with back elevator pressure.
- feel the G load | see the amount of back yoke deflection
- see the nose relation with the horizon

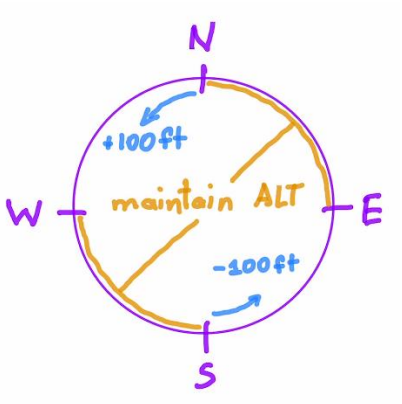
6. Reference: amount of Aft elevator pressure required G_{REQ} to keep the nose tracking the horizon

7. Scan rhythm: outside | outside | outside | inside
Quality check: **ATT** - constant
Quality check: **ALT** - maintain | reach [ALT +/- 100 ft] in 90°
Quality check: **TC** - ball centered only 1/3 of the times inside

8. Blocked practice on varying the amount of back pressure

- Use HDG change as references

N	climb	G_{REQ} ++	
W	maintain	G_{REQ}	ALT + 100 ft
S	descend	G_{REQ} --	
E	maintain	G_{REQ}	ALT



9. Coordinate your roll out.

- Maintain ALT as you resume level flight.

10. Repeat step 1, opposite side.

Tips

Entry / roll out (see – 01-DutchRolls)

Ignore the ball. It lags.

Relax and sit with the airplane

Apply relaxed and fluid control inputs. Hands and legs.

Pitch very smoothly: 30° Aoβ° has a G_{REQ} of 1.15 Gs.

Throughout the turn

Ignore the VSI

Coordinate
- Aileron and rudder while banking
- Aileron and elevator while banking
- Aoβ° and elevator while turning

Maintain constant Aoβ°. Even with opposite ailerons if necessary.

Maintain the rudder coordinated

Upgrade parameters:

* Change **one** at a time

Start level, trimmed for **slow flight.**

* S**teepen** bank angle, in 5° increments, up to 60°.

* In a 90° sector, **+50 ft** increments in the amount of ft.

Step 3 – do not trim forward

Step 3 – instead of trimming, add **power** in 100 RPM increments

Quality Check, **AS** for minimum variation