How Judges marks are handled in CIVA'a scoring system

Perception Zeros (PZ), numeric marks from 0.0 to 10.0 and Hard Zeros (HZ).

The "PZ" is a 0.0 with a special name so it can be reviewed separately when results are calculated. If FPS rejects a PZ it is replaced by an average of the non-zero judges marks, to the nearest half mark.

Since its introduction the PZ has established a significant improvement over the previous 'Soft Zero' for instances of perceived error, the SZ being too often misused – leading to wrongly assessed low marks.

The PZ comes from a judges 'perception' that a subtle but important aspect of a figure has failed to satisfy specific criteria (see next page). Such errors can not be confirmed by reference to the video recording, which is employed as necessary to prove or deny clearly visible matters of fact. CIVA regulations demand that HZ's in a figure must be confirmed or rejected by majority vote after judges have reviewed the video.

Here's what happens during the FPS processing of marks -

1. For each separate figure in a sequence FPS makes a table with the marks from all judges for all pilots. Each judge's complete set of marks is 'normalised' to balance or equalise the judges marking styles.
2. An 'Uncertainty Value' is calculated for every normalised mark. The uncertainty rises as the difference between the mark and the average of the marks from all judges increases, i.e. the mark is less likely to be satisfactory. The 'Uncertainty Value' is used to assess every judges mark as follows –

   a. For PZ's
   - If the uncertainty is *lower* than the FPS criterion (1.96 SD's or standard deviations) the PZ is accepted as a valid mark. The final adjusted value of the PZ will be low, normally close to zero.
   - If the uncertainty is *higher* than the FPS criterion the PZ is rejected. The judges PZ will be replaced by an average of the non-zero judges raw marks, calculated to the nearest half-mark. The table of figure marks for all pilots / all judges is rebuilt and the process restarts at step-1. For RI purposes the judge is considered to have originally given the replacement mark.

   b. For numeric marks 0.0 to 10.0
   - If the uncertainty of the normalised mark is *lower* that the FPS criterion (1.96 SD) it remains unchanged. In other words the mark is considered satisfactory because it fits within an acceptable range of the marks from all judges.
   - If the uncertainty of the normalised mark is *higher* than the FPS criterion, i.e. it is considered to be unacceptable to some degree, it is proportionally adjusted toward an idealised 'Fitted Value' that FPS calculates to match the style of each figure / each judge / each pilot.

   c. For HZ's
   - If the HZ is *not* confirmed by the Chief Judge then any judges' HZ mark for this figure / this pilot is replaced by an idealised 'Fitted Value' that FPS calculates to match the style of the judge.
   - If the HZ *is* confirmed by the Chief Judge then the figure is set as a Confirmed Hard Zero or "CHZ", and all marks for this pilot / figure are automatically set to HZ, i.e. they are fixed at zero.

It is important to understand that it is not possible to replace the PZ by the HZ in the CIVA judging system because the judging panel *must* be able to use the video to prove or disprove all Hard Zeros as factual errors, i.e. clearly identified missed figures/elements, mistakes in the direction of flight or cumulative rolling errors greater than 90^0 etc. From the video it is impossible to tell if a flick did auto-rotate, if a true

stall did precede a spin, if a tail-slide did slide backwards by the required amount etc. so to remove the PZ from CIVA regulations would require approval of an alternative method to mark matters of perception.

For reference – Zeros and their use in CIVA judging

The numeric zero (0.0)

When a judge detects ten or more downgrade points during a single figure the mark awarded should be a numeric zero or "0.0". This mark goes into the scoring database without further assessment by the judging panel, and remains unchanged until results calculations commence.

The Perception Zero (PZ)

When –

- *In a flick or snap roll the initial pitch and yaw are inadequate or do not lead to auto-rotation*
- *In a spin the required initial stall is missing or the spin does not develop as an auto-rotation*
- *In a tail slide the aircraft does not slide backwards by the required amount*
- *In a rolling turn a flick-roll is observed*
- *A straight line of length greater than the looping radius is observed between a roll and any adjacent looping segment, or between a looping segment and an adjacent roll*
- *More than 45^0 of roll are flown in a straight line on the exit axis of a rolling turn*

And for gliders only –

- *Any figures are flown too far outside the performance zone to be marked correctly*
- *If a stall occurs in a loop or part loop*

the judge must award a **Perception Zero**, shown as a "PZ". Perception zeros can *not* be assessed or confirmed / denied using the video because by definition these moments are too subtle to be identified in this way. Only a Confirmed Hard Zero (CHZ) for the figure can override a PZ or a 0.0.

The Hard Zero (HZ)

In any figure, unless the HZ is unanimous from all judges, the Chief Judge will normally hold a post-flight review using the video recording to determine whether the HZ is the correct mark or not –

- If a majority of the judges *agree* that an HZ should be awarded to the figure then the Chief Judge's Flight Summary Sheet will record the figure as having a Confirmed Hard Zero (CHZ).
- If the majority view of the panel is that a mark of HZ should *not* be awarded to the figure then no further action is taken. All remaining HZ's will be replaced by their Fitted Value, as described above.

When a figure has been declared CHZ and any judge has awarded a 0.0 or a PZ the Chief Judge will instruct these judges to revise their mark to HZ, with the same result for the pilot. No other alteration is permitted.

Is there a feasible alternative to the PZ?

It would appear that the only realistic alternative would be to establish a range of downgrades, for example 1 to 3 points, for instances currently defined as perceived errors. These would be applied with the other figure downgrades instead of the using the PZ. They could only however add to the fixed downgrade total for the figure itself, and when applied would lead to pilots receiving lower scores from most judges.

The PZ provides a simple, effective and safe solution, clearly identifying the perceived fault to the pilot. The reality is that PZ's are quite often rejected by FPS when the underlying issue is not widely identified by the panel of judges, leading to little or no damaging effect being imposed by the PZ's at all.