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Proposed Methodology

4 Elite Goalkeepers will use SM-ETG (Eye Tracking Glasses) in 4 training environments to locate the QE under an emerging number of constraints that create opportunities for action (Newell, 1976, 2017, 2018). The tasks will be evaluated via a crofted measure (representative match simulation) (Tr 14), which will be analysed against 3 different points on the Environment Design Continuum (Newcombe et al. in preparation).

Training environments will be designed following principles of environment design as described in Newcombe et al. (in review) (Fig 1) –

- Trial 1 – Practice Opposed
- Trial 2 – Practice Variable
- Trial 3 – Small-Sided Games
- Trial 4 – Representative Performance Principle 11 x 11

Each Goalkeeper will perform 19 Intensive actions per training environment over a 6 week period with video footage from the SM-ETG and an external camera to capture the skilled action will be collected. The video will be clipped and manually coded (Via Sporotrack GatewayWare, BeEyes from tracsys and VBA analysis tool from Quickseyolutions.com) to establish the start and end of each skilled action.

QE duration: (Trial 1, 2, 3 or 4) x factorial ANOVA
QE location: Descriptive statistical analysis
Level of fidelity: Mean QE duration (Trial 1 or 2) x Mean QE duration Trial 4 x QE location – factorial ANOVA (Pres and Vickers, 2011).

Variance judged via an effect size measure. The variance with the smallest effect size will be determined as the one with the highest level of fidelity to that competitive performance.

Considerations and Critical Questions

It is worth considering that individual players may possess variability in eye movements and not follow optimum patterns for which has usually been the case in perceptual based research (Davids & Araújo, 2016). However, when looking at averaged gaze behaviour across environments, rather than assuming optimum patterns across individuals, we believe that inter-individual variance does not play an important role.

If a trial environment from the continuum is too close to the simulated game (in regards to high variability) then similar patterns will emerge naturally due to the task dynamics. Within gaze patterns may remain near identical in nature of the QE, it may not be optimum for athletes to attune to the relevant invariants, thus just remaining near identical in nature of the QE.

The problem with elite soccer is that any substantial improvements due to the huge temporal and financial constraints imposed on elite sport programmes. Research reflects this far have demonstrated the difficulties of linking schedules, dealing with changes in staff, injuries, as well as loss of form and cultural suppositions.