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Beach lifeguards: visual search patterns, detection rates and the influence of experience

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Why?

- Little open water literature
- More research in swimming pools
- BLG fitness standards based on a BLG identifying a person in difficulty immediately
- No research has investigated the best scanning methods to employ when beach life-guarding
- Our project investigates scanning by beach lifeguards with the aims of developing a training package for new lifeguards

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Why?

- Visual scanning
  - Ability to pass information about outside world to the brain
  - Taking in relevant cues is essential for effective decision making
  - Used to train
    - Medical diagnostics
    - Pilots
    - Sports performers
- Lifeguards deal with complex displays
  - Temperature
  - Lighting levels
  - Noise
  - Fatigue

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Overall Aims:

- To determine:
  - scanning patterns of beach lifeguards.
  - scanning patterns of lifeguards in two scenarios.
  - differences in the scanning patterns of experienced and less experienced lifeguards.
  - differences in the scanning patterns of lifeguards from surf and non surf beaches.
  - differences in the scanning patterns of male and female lifeguards.
  - the acceptability to BLG of adopting different scanning techniques.
- To use all of the above to produce a training package for beach lifeguards.

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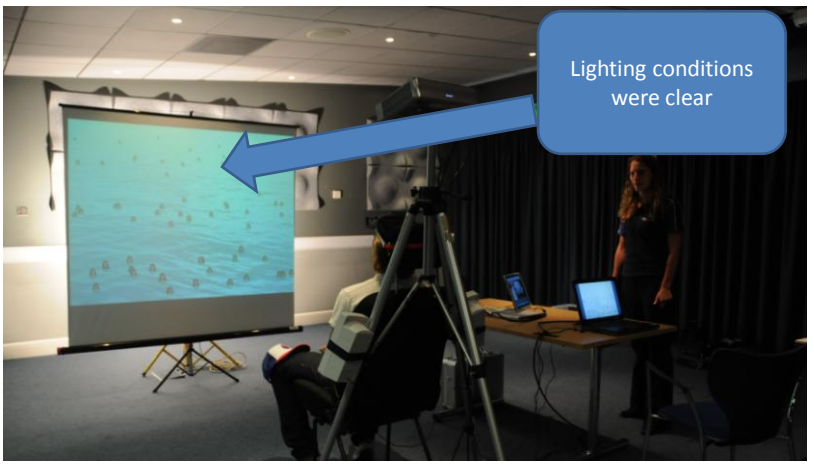
Method



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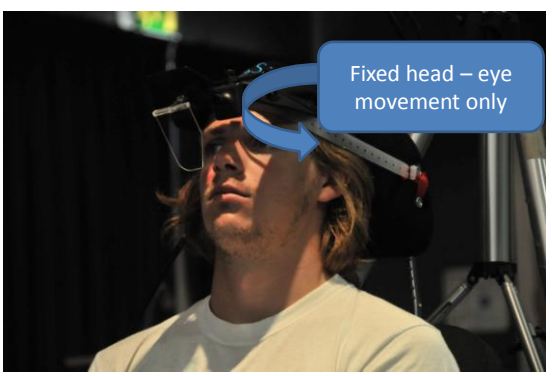
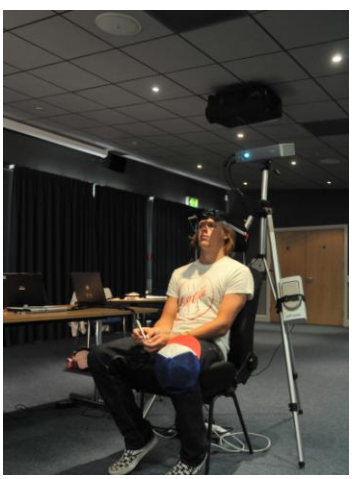
Method





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Method

Animation

12 minutes - Person disappeared at 10 minutes

Person took 5 s to fully disappear

Counter-balanced
1) Non biased
2) Biased - rip

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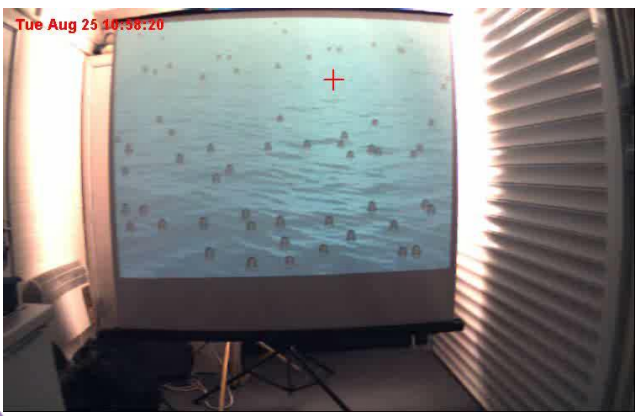
Method



Cross hair = eye movement

Tracked at 30 frames per second

Analysed 8 minutes and final 3.5 s

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Method

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Results - detection

Experienced	5 x	Less experienced
Biased	2 x	Non biased

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Results – detection (%)

Biased (rip)	29	16	Non-biased
Experienced Biased (rip)	32	17	Less experienced Biased (rip)
Experienced Non biased	19	0	Less experienced Non biased

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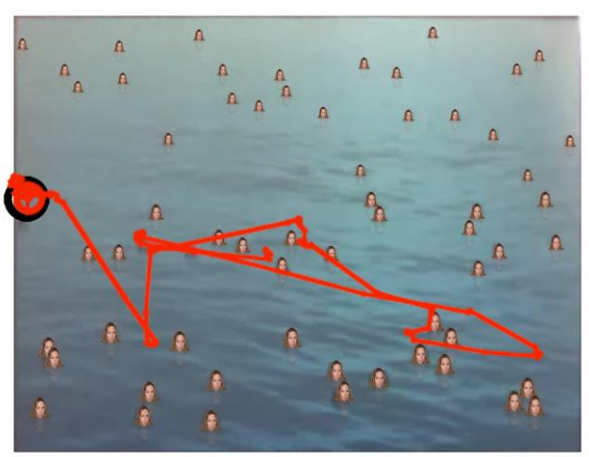
Results



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Results

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Results – non biased

12 out of 69 lifeguards (17.4%) fixated in grid square 8 in final 3.5 s
Of the 12, 7 (58.3%) identified the person disappearing
8.6% who did not identify the person disappearing fixated in the relevant grid square

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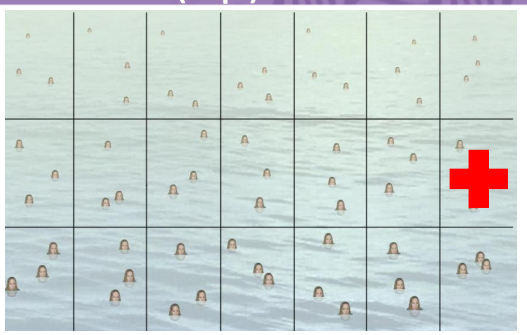
Results – biased (rip)



25 out of 69 lifeguards (36.2%) fixated in grid square 14 in final 3.5 s.
Of the 25, 15 (60%) identified the person disappearing
20.4% of the lifeguards who did not identify the person disappearing fixated in the relevant grid square

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Conclusions

- The methods we have used are valid and reliable as a measure of scanning when life-guarding
- Experienced lifeguards have better detection rates than less experienced lifeguards
- It is possible to instruct lifeguards and change their scanning techniques and detection rates
- Future work should establish the best methods of scanning and build on this to develop a training package to help new lifeguards

Thank you for listening

Any Questions?