Visual Training Program Effect on Visuomotor Reaction Time of College Students
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BACKGROUND AND PURPOSE

- Slow neurocognitive reaction time (RT) has been associated with increased incidence of lower extremity injuries
- Visuomotor RT appears to be a critical factor for impact avoidance and protective responses to external forces
- More rapid detection of environmental stimuli may be facilitated by improved brain processing of visual input
- The purpose of this study was to assess the possible beneficial effect of a perceptual-learning program performed
  on either a tablet or laptop for improvement of visuomotor RT

PARTICIPANT CHARACTERISTICS AND PROCEDURES

- Participants were 22 university graduates (7 males; 15 females)
- Visuomotor testing conducted using Dynavision D2 system (Dynavision International, West Chester, OH)
- Board height adjusted to position tachistoscope (T-scope) at eye level (Figures 1 and 2)
- All participants completed 2 familiarization trials for 2 different modes of test administration (60 s each):
  - Proactive mode: Target buttons illuminated until hit; T-scope inactive
  - Reactive mode: Target buttons illuminated for 1 s only; recitation of sentences scrolled across T-scope
- Pre-training and Post-training, 60-s tests performed (average of 2) for both Proactive and Reactive modes
  - Performance represented by average elapsed time (ms) between button illumination and completed response
  - Proactive-Outer: Outer-roost rings
  - Inner 2 inner-roost rings
- Participants completed 9-week, 24-session perceptual learning program using ULTIMEYES® software (Figure 3)
  - 24-min training sessions conducted 4 days per week
  - Devices used to complete training: 13 tablets and 12 laptops
  - Repeated measures ANOVA used to evaluate pre-training to post-training visuomotor RT change (α = .05)

RESULTS

- Means and standard deviations for Pre-training and Post-training trials (2-test average) presented in Table 1
  - A statistically significant training effect was evident for Proactive-Outer RT (F1,21 = 5.98, p = .023)
  - A statistically significant training effect was evident for Proactive-Outer/Inner Ratio (F1,21 = 4.81, p = .041)
  - Gender x Trial interaction assessed for each performance variable, none of which were statistically significant
  - Device x Trial interaction assessed for each performance variable, none of which were statistically significant

Table 1

<table>
<thead>
<tr>
<th>Performance Variable</th>
<th>Pre-Training</th>
<th>Post-Training</th>
<th>P-value</th>
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<tbody>
<tr>
<td>Proactive-Outer RT (ms)</td>
<td>548 ± 51</td>
<td>546 ± 66</td>
<td>.747</td>
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<tr>
<td>Proactive-Outer/Inner RT Ratio</td>
<td>1.36 ± 0.10</td>
<td>1.28 ± 0.09</td>
<td>.525</td>
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REFERENCES