THE EFFECTS OF RANDOMIZED COMPUTERIZED REACTION TIME TRAINING IN COLLEGE AGED BASEBALL ATHLETES

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INTRODUCTION

In the fast-paced world of college baseball, improving reaction time is crucial for enhancing key skills such as batting, fielding, and base running. As players continually seek ways to gain a competitive edge, effective training methods that target reaction speed are essential. Recent advancements in training technology have introduced LED-based tools designed to promote agility and quick reflexes through dynamic, reaction-based drills. These tools engage athletes in exercises that challenge cognitive processing and physical response times.

PURPOSE

Although emerging training technologies offer interactive methods to enhance reaction speed, their effectiveness in this context is underexplored. This study evaluates the impact of computerized, randomized reaction time training on college-aged baseball athletes.

METHODS

Participants

- 39 collegiate baseball athletes (ages 18–24) participated in a six-week study.
- Randomly assigned to:
  - Control group (n = 16): continued regular team training.
  - Treatment group (n = 23): completed regular training plus reaction time drills.

Reaction Time Training Protocol

- Six LED light pods were mounted on a board and synced with a customizable app.
- Sessions used:
  - One target color
  - Multiple distractor colors

Subjects were instructed to hit the target color as quickly as possible.

- Each session included 3 x 30-second rounds with 10 seconds rest between trials.
- Reaction time and total hit count were recorded and averaged per session.
- Training was performed twice weekly for six weeks.

Data Collection & Analysis

- Data was analyzed using SPSS with a mixed-design ANOVA.
- Compared pre- and post-training changes in reaction time and hit count between groups.
- Statistical significance set at p < 0.05.

Figure 3. Standardized Setup Used For Every Athlete

RESULTS

Figure 1. Total Hits Pre And Post Test

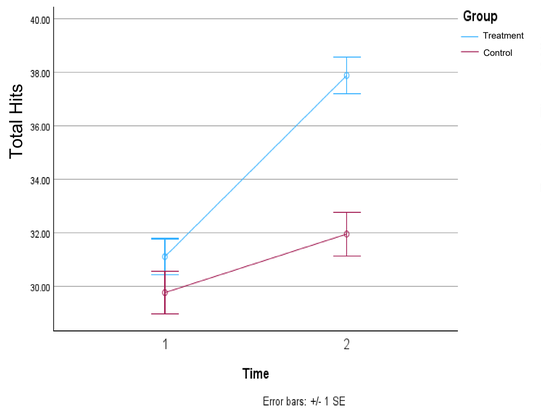

Figure 2. Reaction Time Pre And Post Test

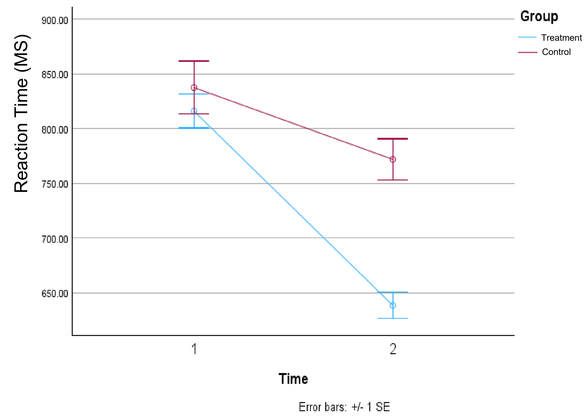

Table 1. Statistical Analysis Of The Treatment Group vs Control Group

Groups		Mean	Std. Deviation	N	Cohens D
Pre Hits	Treatment	31.11	2.77	23	
	Control	29.77	3.79	16	
	Total	30.56	3.25	39	0.40
Post Hits	Treatment	37.88	2.78	23	
	Control	31.95	3.81	16	
	Total	35.45	4.35	39	1.78
Pre Reaction Time	Treatment	815.84	87.17	23	
	Control	837.33	117.91	16	
	Total	822.09	96.47	39	0.20
Post Reaction Time	Treatment	638.39	62.17	23	
	Control	771.73	101.97	16	
	Total	677.18	96.66	39	1.58

The treatment group demonstrated significantly faster reaction times (638.39 ms ± 62.18) compared to the control group (771.73 ms ± 101.98) after training (p < 0 .001, Cohen's d=1.58). Total hit counts were also higher for the treatment group (37.88 ± 2.78) versus the control (31.96 ± 3.81) (p < 0.001, Cohen's d= 1.78)

Conclusion

This study shows that randomized computerized reaction time training using Technology significantly improves reaction speed and accuracy in collegiate baseball athletes. These findings point to the potential benefits of using technology in sports training programs.

•**Enhanced Reaction Time:**
Athletes who participated in the reaction training showed significant improvements in both speed and precision.

•**Potential for Broader Impact:**
The results from this study support the idea of adding technology-based drills into regular training routines. As sports continue to evolve, there is a growing need for interventions that improve both physical skills and cognitive decision-making. Using innovative drills like these can help teams gain an advantage.

Discussion

Performance Gains in Baseball

- This study shows that technology-based reaction time training—can significantly improve both reaction speed and total hit count in collegiate baseball athletes.
- These improvements have the potential to translate to better in-game decisions, faster reactions to pitches, and improved defensive performance.

Efficient & Practical

- Reaction training with technology requires minimal time compared to traditional methods.
- Athletes can see meaningful progress in just a few short sessions, making it an efficient option during busy practice or competition periods.

Limitations & Future Directions

Study Duration

- Conducted over six weeks. Longer-term studies are necessary to assess sustained benefits over a season or career.

Controlled Setting

- Training was performed in a structured environment.
- Future research should evaluate performance transfer to live-game scenarios with real-time decision demands.

Next Steps

- Explore combining reaction training with other physical or cognitive drills for potential synergistic effects.
- Investigate how improvements impact specific metrics (e.g., batting average, fielding %).
- Consider using multiple sport contexts and levels of competition for broader applicability

Practical Application

Technology-based training improves performance

- Treatment group showed significantly greater gains using Blaze Pods
- Supports integrating tech drills into regular training programs

Coaches

- Use technology to enhance decision-making and reaction speed
- Improve athlete performance under pressure

Athletes

- Regular use boosts reaction time, coordination,
- Has potential to Enhance readiness during game-critical moments

Researchers

- Explore links to performance metrics (e.g., batting average, fielding %)
- Future research: long-term effects, injury prevention, and use in other sports

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