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**EXTENDED  
ABSTRACT**

# Influence of External Focus Feedback Frequencies on Dart Throwing Among Young Adults

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## I. INTRODUCTION

Feedback plays a crucial role in facilitating motor learning. Among various feedback strategies, external focus feedback, which directs the learner's attention toward the outcome of the movement rather than the movement itself, has consistently been shown to improve both performance and retention [1]. However, the frequency at which feedback is delivered remains a critical factor [2]. While high-frequency feedback may enhance immediate performance, it can lead to learner dependency. In contrast, reduced feedback frequencies are believed to encourage self-regulation and support long-term learning, as proposed by the guidance hypothesis. Therefore, this study aims to examine the effects of varying frequencies of external focus feedback (100%, 50%, and 33%) on dart-throwing performance.

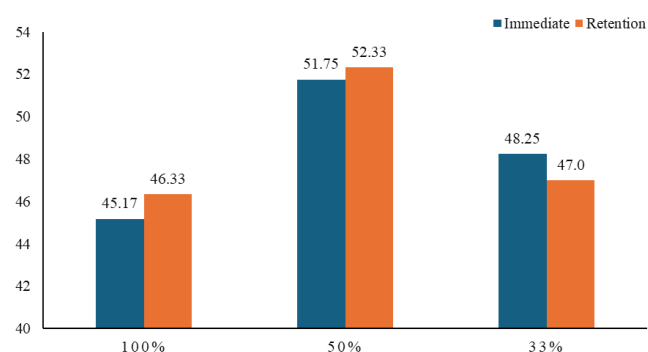
## II. METHODS

Thirty-six young adults were randomly and equally assigned to one of three groups, each receiving external focus feedback at a frequency of 100%, 50%, or 33%. The group assignment was based on pre-test scores to ensure comparable skill levels among all groups. Following a pre-test of nine dart throws, all participants completed 48 acquisition trials, organized into six blocks of eight throws (6 blocks × 8 throws). Verbal external focus feedback was administered according to the assigned frequency for each group. Dart throwing performance was scored on a scale from 0 to 10, based on the accuracy of dart placement [3]. A post-test involving nine throws was conducted immediately after, while a delayed retention test was administered 24 hours later.

## III. RESULTS AND DISCUSSION

### A. Comparison Between Feedback Frequency

One-way ANOVA showed no significant group differences in immediate or delayed retention performance. Yet, the 50% feedback group had the highest mean scores across both phases. This trend implies that moderate feedback may be more effective for performance, even if not statistically conclusive.



\* $p < 0.05$

Fig. 1 Comparison between different feedback frequencies during immediate and retention.

## IV. CONCLUSIONS

Although no significant differences were found between groups, the 50% feedback group showed the highest mean scores and consistent improvement. This suggests that a moderate frequency of external focus feedback may be most effective for enhancing performance and long-term retention. Reduced feedback allows learners to rely more on intrinsic cues, promoting deeper learning. Excessive feedback, on the other hand, may lead to dependency, improving short-term performance but hindering independent skill execution [4][5] [6].

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