IJSTS
International Journal of Sport Technology and Science

International Journal of Sports Technology and Science
https://www.globsportsjournal.com/
ISSN: 3023-6266

EFFECT OF VERBAL FEEDBACK ON LAY-UP AND DRIBBLING DURING TEN WEEKS OF BASKETBALL TRAINING

(Research Research)

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* This is a summary of İbrahim Efe ETİLER's doctoral thesis, supervised by Prof. Dr. Turhan Toros.

Received: 07.11.2024 Revised version received: 21.11.2024 Accepted: 13.12.2024

Abstract

This study sought to examine the impact of verbal feedback on dribbling and lay-up skills in basketball training. The study group consisted of 70 male students voluntarily participating from sports schools. Thirty-five students received 10 weeks of training with verbal feedback (experimental group), while another 35 students underwent 10 weeks of training without verbal feedback (control group). Data collection instruments included the Dribbling Assessment Form and the Lay-up Assessment Form, the validity and reliability of which were previously established by Çamur (2001). Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine whether the scores were normally distributed. The Wilcoxon Signed-Rank Test was employed to determine the difference between the pre-test and post-test scores of the groups. The significance level was set at 0.05 for all statistical analyses. The findings revealed a statistically significant difference between the pre-test and post-test scores of the experimental group in both dribbling and lay-up skills ($P < 0.05$). In conclusion, we observed that verbal feedback provided during ten weeks of basketball training had a positive effect on lay-up and dribbling skills.

Keywords: Skill, talent, basketball, verbal feedback

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1. Introduction

Skill acquisition is a complex and multifaceted process that requires a lengthy program with various contributing factors for an individual to achieve a target goal. Coaches and sports psychologists serve a vital role in the learning phase. Therefore, coaches possessing adequate technical and psychological skills will facilitate accurate and permanent learning. It is observed that coaches frequently utilize feedback methods during the teaching or development of a new skill (Schmidt & Wrisberg, 2012).

Within the domain of athletic performance, feedback, conceptualized as the sensory information acquired by an individual during or following skill execution, assumes an essential role in performance enhancement and skill acquisition (Schmidt & Wrisberg, 2012). Beyond merely external commentary, feedback encompasses a broader spectrum, including the internal sensory information athletes receive regarding their movements (Singer, 1975). This internal feedback, derived from proprioceptive sources such as muscles and tendons, provides a mixture of bodily sensations key to self-assessment. Motor learning theorists and practitioners widely acknowledge the importance of feedback in facilitating the comparison between actual performance and the desired skill outcome, ultimately driving more permanent learning gains.

Two primary modalities of feedback are recognized as critical in this process. Intrinsic feedback, the aforementioned internal sensory information, provides the athlete with a direct and immediate understanding of their movement execution. Extrinsic feedback, on the other hand, typically delivered by coaches, offers an external perspective particularly valuable when the athlete's intrinsic feedback mechanisms are underdeveloped, as is often the case in the early stages of skill acquisition (Magill, 2010). The interplay between these two forms of feedback is dynamic, evolving as the athlete progresses. While novice athletes often rely heavily on frequent extrinsic feedback, the necessity for such frequent external input diminishes as expertise develops, and athletes become more attuned to their intrinsic feedback signals (Zelaznik, 1996).

This study attempted to address the multifaceted field of sport psychology, which encompasses skill acquisition, cognitive, and affective domains, investigating the impact of verbal feedback on dribbling and lay-up skills in basketball, a topic that has been the subject of numerous studies and is thought to play a significant role in skill learning. The primary aim was to determine whether verbal feedback provided during ten weeks of training has an effect on dribbling and lay-up skills in basketball.

2. Method

2.1. Research Design

The study employed a quasi-experimental design, specifically a pre-test-post-test control group design. The groups were formed using a random assignment (sampling) method.

2.2. Participants

The study comprised 70 male students from sports academies who volunteered as participants. Following a written approval from the ethics committee, the researchers implemented a controlled intervention spanning 10 weeks. Thirty-five participants (N = 35) were randomly allocated to the experimental group, receiving structured training supplemented with verbal feedback. A matched control group (N = 35) underwent identical training protocols without verbal feedback components.

3.3 . Data Collection Instruments

The study utilized a dribbling assessment form and a lay-up assessment form.

2.4. Dribbling Assessment Form

To assess the participants' proficiency in dribbling skills, the Dribbling Assessment Form developed by Çamur (2001) was employed. This form is a measurement tool that evaluates the extent to which the following parameters are met, using a scale of 0-5:

- **A. Behaviors to be observed for ball control:** Dribbling the ball in front, not looking at the ball, dribbling with fingertips without the ball touching the palm, pushing the ball to the ground at an angle, first with the elbow and then with the wrist.
- **B. Behaviors to be observed for stepping:** Stepping with knees bent, not taking wide steps, toes pointing forward, knees forming an angle forward.
- **C. Behaviors to be observed for body position:** Maintaining the center of gravity at the hips, moving with the body leaning forward, head and shoulders up and facing forward.
- **D. Behaviors to be observed for coordination:** The whole body springing slightly from the knees, moving freely.

2.5. Lay-up Assessment Form

To measure the participants' proficiency in lay-up skills, the Lay-up Assessment Form developed by Çamur (2001) was used. This form is a measurement tool that evaluates the extent to which the following parameters are met, using a scale of 0-5:

- **A. Behaviors to be observed for stepping:** Holding the ball at abdomen level, starting the movement with the right foot when entering a right-hand lay-up, taking two steps, finishing with the same foot that started the movement, knees touching the ground with an angle forward.
- **B. Behaviors to be observed for jumping:** Pulling the knees towards the abdomen, keeping the jumping leg straight and tense, keeping the body tense, looking at the hoop.
- **C. Behaviors to be observed for ball release:** Extending the body towards the hoop, keeping the arm straight and tense above, bringing the ball up from abdomen level, palm facing towards oneself when releasing the ball, pulling the wrist towards oneself (to impart backspin), shoulder turning slightly towards the hoop.
- **D. Behaviors to be observed for landing:** Landing with the jumping foot, pulling the arms down for balance, slightly bending the knee upon landing.

2.6. Statistical Analysis

Participant age and group sizes were analyzed through descriptive statistics. Normality was assessed with the Shapiro-Wilk test for groups smaller than 50 and the Kolmogorov-Smirnov test for larger groups (Aron & Aron, 2003). Data were considered normally distributed if the calculated p-value exceeded .05. Although the assumption of normality for difference scores in the paired t-test was not met, the non-parametric Wilcoxon Signed-Rank test was employed due to the sample size of 35. This decision reflects the greater suitability of the Wilcoxon Signed-Rank test for smaller sample sizes, even when normality assumptions are satisfied.

3. Findings

Table 1. Wilcoxon Signed Rank Test Findings for the Comparison of Pre-test and Post-test Dribbling Scores in the Verbal Feedback Experimental Group

Experimental Group (Verbal Feedback) Pretest – Posttest Dribbling	n	Mean Rank	Sum of Ranks	Z	P
Negative Ranks	0[a]	.00	.00	3.841	.00
Positive Ranks	35[b]	11.00	385.00		
Ties	0[c]				

[a] posttest dribbling < pretest dribbling
[b] posttest dribbling > pretest dribbling
[c] posttest dribbling = pretest dribbling

As shown in Table 1, Wilcoxon signed-rank test analysis revealed a statistically significant improvement in dribbling performance from pre-test to post-test conditions in the verbal feedback intervention group (Z=3.841, $P < .001$). Within the sample ($N = 35$), post-test scores consistently exceeded pre-test measurements, with positive ranks predominating the distribution. This directional effect indicates that the verbal feedback intervention was associated with enhanced dribbling proficiency.

Table 2. Wilcoxon Signed Rank Test Findings for the Comparison of Pre-test and Post-test Lay-Up Scores in the Verbal Feedback Experimental Group

Experimental Group (Verbal Feedback) Pretest – Posttest Lay-Up	n	Mean Rank	Sum of Ranks	Z	P
Negative Ranks	0[a]	.00	.00	3.830	.00
Positive Ranks	35[b]	10.50	367.50		
Ties	0[c]				

[a] posttest lay-up < pretest lay-up
[b] posttest lay-up > pretest lay-up
[c] posttest lay-up = pretest lay-up

Analysis of the Wilcoxon signed-rank test revealed a statistically significant improvement in lay-up performance from pre-test to post-test conditions in the verbal feedback intervention group ($Z = 3.830$, $P < .001$). Of the participants ($N = 35$), post-test scores demonstrated superior performance compared to pre-test baselines, with positive ranks predominating the distribution. This directional effect indicates that the verbal feedback intervention was associated with enhanced lay-up execution.

4. Discussion, Conclusion and Recommendations

The results demonstrated significant improvement in dribbling performance among participants in the experimental group (N = 35) following verbal feedback intervention, with post-test scores consistently exceeding pre-test measurements. Such a level of improvement in dribbling aligns with existing literature on motor skill acquisition and feedback mechanisms in sports science. For instance, the findings corroborate Akıncı's (2004) research on feedback modalities in basketball skill acquisition, particularly regarding dribbling and lay-up performance. While Akıncı found that combined visual and verbal feedback yielded optimal retention, verbal feedback alone produced significantly superior results compared to visual feedback in recall testing. The hierarchical effectiveness of feedback modalities—with combined feedback showing maximal improvement and isolated visual feedback showing minimal gains—provides important context for our findings.

Our results also seem to corroborate those previously reported in tennis skill acquisition studies involving female university students, where verbal feedback intervention groups demonstrated significantly elevated performance metrics compared to control conditions (Hebert & Landin, 1994). Such cross-sport consistency signifies potential generalizability of verbal feedback's efficacy in motor skill development.

Kangalgil's (2013) research further supports our findings, underlining that although feedback generally enhances performance, the combination of verbal and visual feedback proves especially beneficial for complex motor skills. Importantly, Kangalgil noted that visual feedback alone may be insufficient for challenging skills, underscoring the critical role of verbal instruction.

However, we should also note contrasting evidence from Taylor's (2006) study on body feint skills in football, which found no significant differences between groups receiving visual and verbal feedback versus those receiving no feedback. Taylor attributed this to cognitive overload, positing that video feedback's complexity may have impeded students' ability to isolate and focus on specific technical errors.

Feedback mechanisms play a fundamental role in novel skill acquisition within athletic contexts. A critical consideration for practitioners is the importance of delivering feedback in a clear, comprehensible manner that minimizes cognitive load while maximizing skill acquisition. Otherwise, if feedback clarity is compromised, the multiplicity of environmental and instructional stimuli may interfere with performance optimization and skill mastery.

External feedback serves as a critical intervention mechanism for athletes experiencing performance deficits during skill acquisition phases. Such feedback, delivered through either verbal or visual modalities, addresses perceived inadequacies in skill execution. The present investigation demonstrated that structured verbal performance feedback, administered at predetermined intervals across a ten-week training protocol, facilitated significant improvements in basketball dribbling proficiency. The systematic approach to feedback delivery implies the efficacy of temporally structured verbal cues in enhancing fundamental basketball skills.

There was a statistically significant difference between the pre-test and post-test lay-up scores in the verbal feedback experimental group, with 35 individuals having higher post-test lay-up scores than their pre-test scores. Such enhancement in lay-up execution following systematic verbal feedback aligns with existing literature on motor skill acquisition in basketball. The observed performance gains demonstrate the efficacy of structured verbal feedback protocols in developing complex basketball skills, corroborating previous research on feedback modalities in sports science.

These findings align with a 2006-study of verbal feedback in gymnastics skill acquisition among sixth-grade students. In that study, participants receiving verbal feedback during instruction of fundamental gymnastics skills (forward roll, backward roll, and handstand) demonstrated superior performance metrics compared to control conditions in both achievement and retention measures (Aktaş, 2006). Such cross-disciplinary concordance seems to confirm the robustness of verbal feedback as an intervention strategy across diverse motor skill domains and developmental stages.

Previous longitudinal research provides critical temporal insights regarding feedback efficacy in motor skill development. In their study of golf performance (N = 30), groups receiving combined verbal and visual feedback initially demonstrated lower performance metrics compared to controls during early testing phases (baseline and week 2). However, extended intervention produced significant performance gains, with feedback groups ultimately achieving superior results compared to controls. This temporal dependency led the researchers to establish a minimum five-week threshold for effective feedback implementation (Davis, Guadagnoli & Holcomb, 2002). These findings are further supported by another study that similarly identified a five-week minimum threshold for meaningful skill acquisition through feedback interventions, noting diminished effectiveness in shorter duration protocols (Arnold & Rothstein, 1976). The consensus in motor learning literature emphasizing this five-week minimum for retention optimization aligns with our study's ten-week intervention protocol, which exceeded this established temporal threshold.

A study on non-dominant hand overhand throwing compared the effects of verbal feedback alone versus verbal and video feedback combined. While both conditions yielded significant improvements in post-test performance among novice female participants, the verbal-only feedback group demonstrated superior outcomes (Arnold, Johnson & Kernodle, 2001). These findings parallel our results on the effectiveness of and potential advantages of isolated verbal feedback in motor skill acquisition within certain learning contexts.

An investigation into the effects of verbal feedback on the acquisition of psychomotor skills for accurate basketball shooting was conducted with groups receiving verbal feedback, outcome knowledge, and no feedback. The results indicated that after a four-week intervention period, the group provided with verbal feedback demonstrated significantly improved shooting accuracy compared to the outcome knowledge and control groups. In particular, the verbal feedback group exhibited a marked reduction in shot placement errors. These findings show that the provision of structured verbal guidance serves as an effective pedagogical approach for enhancing shooting performance among non-elite basketball players (Konttinen et al., 2004)

A detailed review of the relevant literature reveals that although some studies have shown improvement in performance with outcome knowledge feedback, such improvements are often not statistically significant. The superior performance of the verbal feedback group in our study aligns with this existing literature, highlighting the importance of performance-focused feedback for skill development.

In conclusion, our findings appear to reinforce the importance of performance-focused verbal feedback in motor skill acquisition, specifically regarding basketball dribbling proficiency and lay-up execution. Structured verbal feedback mechanisms facilitate accelerated skill development and enhanced self-efficacy by providing participants with precise technical guidance on movement patterns, including step sequencing and ball release timing during lay-up attempts. Building upon previous investigations demonstrating the efficacy of five-week feedback interventions, this study establishes the substantial benefits of an extended ten-week verbal feedback protocol on both dribbling and lay-up skill acquisition. The documented improvements underscore the efficacy of sustained, targeted feedback implemented across an expanded temporal scheme.

Recommendations and Future Research

This study contributes valuable insights into the role of verbal feedback in enhancing basketball skill acquisition. To further advance our understanding of feedback and motor learning, several avenues for future research are recommended:

- **Generalizability Across Sports:** While this study focused on basketball, future research should investigate the impact of verbal feedback on skill acquisition in other sports. This would help determine the extent to which the current findings generalize to different movement patterns, task demands, and learning contexts
- **Skill Complexity:** Within basketball, future studies could examine the influence of verbal feedback on more complex and intricate skills, such as crossover dribbling, jump shooting, or defensive maneuvers.
- **Gender Differences:** Investigating potential gender differences in response to verbal feedback might yield interesting results. Studies could involve examining whether males and females benefit equally from specific types of feedback, or if tailoring feedback to individual needs based on gender leads to greater improvement.

Acknowledgements

We would like to thank the study participants, our colleagues and all the scientists whose scientific resources we benefited from.

Declaration of Conflicting Interests and Ethics

"In this article, journal writing rules, publishing principles, research and publication ethics rules and journal ethics rules were followed. Liability for any violations that may arise regarding the article belongs to the authors. "The authors declare no conflict of interest.

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