EFFECT OF GOAL SETTING ON LAY-UP AND DRIBBLING DURING TEN WEEKS BASKETBALL EXERCISE

(Research Research)

Ibrahim Efe Etiler [a] Turhan Toros [b]

[a] Mersin University Faculty of Sport Sciences, PhD Student, *Mersin, Turkey*
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Abstract

This study investigated the effects of systematic goal setting on basketball-specific motor skills development, specifically dribbling and lay-up performance, among youth athletes. Seventy male students from regional sports schools were randomly assigned to either an experimental group (N=35) that received goal-setting interventions concurrent with basketball training or a control group (N=35) that received only basketball training. Both groups participated in a 10-week training program. Performance was assessed using the validated Dribbling Assessment Form and Lay-up Assessment Form (Çamur, 2001). Data normality was evaluated via Kolmogorov-Smirnov and Shapiro-Wilk tests. Between-group differences were analyzed by the Wilcoxon Signed-Rank Test with statistical significance set at $p < 0.05$. The experimental group demonstrated significant improvements in lay-up performance compared to the control group ($P < 0.05$). While goal setting alone showed the lowest significance magnitude among measured variables, the combined intervention of goal setting and structured training yielded improvements in both lay-up and dribbling skills over the 10-week period. In conclusion, incorporating structured goal-setting protocols into youth basketball training programs may enhance skill acquisition, particularly for complex motor tasks like lay-ups.

Keywords: Skill, talent, basketball, goal setting

[1]Corresponding author (İbrahim Efe Etiler).   ORCID ID.: 0000-0001-6715-4037   E-mail: turhantoros@yahoo.com

1. Introduction

Sport-specific learning environments facilitate unique neurological processes that distinguish them from other forms of learning. During skill acquisition, these environments stimulate enhanced neuronal circuit generation compared to traditional learning contexts (Carlson, 2011). This heightened neural activity contributes to both neuronal development and the refinement of motor behavior functions in athletes (Boivin et al., 2015). The integration of psychomotor behaviors—defined as the coordinated function of the musculoskeletal system and brain—forms the foundation of movement patterns essential for athletic performance (Fidan, 2012).

Goal setting has emerged as a vital psychological intervention in sports performance enhancement. Botterill's (2002) seminal research with young ice hockey players demonstrated that specific, challenging goals more effectively improve performance compared to general or easily attainable objectives like "do your best". While goal setting is inherent in daily life, the study highlighted a critical consideration: excessive goal-setting can potentially diminish goal commitment. Through a season-long implementation of a goal-setting and role clarification program with adolescent ice hockey players (aged 15-16), Botterill documented consistent performance improvements throughout the competitive season.

Further evidence supporting the efficacy of team goal-setting interventions comes from Senecal's (2008) research with basketball players aged between 14 and 18. The study revealed significantly higher social cohesion levels in the experimental group compared to controls, suggesting that team goal-setting programs enhance collaborative dynamics and interpersonal interaction among team members.

However, the relationship between goal setting and team dynamics is complex, as demonstrated by Durdubas et al. (2019). Their longitudinal study, which implemented a team goal-setting program with three experimental and three control teams, revealed an unexpected decrease in cohesion within the experimental group, attributed to an increasing ego-oriented motivational climate. These findings underscore the importance of monitoring coaching behaviors and environmental variables when implementing team goal-setting interventions.

The impact of goal setting extends to specific skill execution in sports. Research examining penalty kicks in football demonstrated that goal-setting interventions integrated with technical training significantly enhanced performance outcomes. The findings emphasize that optimal athletic performance requires attention to both physical and psychological factors (Toros et al., 2010). Given this theoretical and empirical foundation, the present study examines the impact of a ten-week goal-setting intervention on basketball-specific skills, specifically dribbling and lay-up performance.

2. Method

Research Design

A quasi-experimental pre-test-post-test control group design was used to investigate the impact of a ten-week goal-setting intervention on basketball-specific skill performance, specifically dribbling and lay-up proficiency. Participants were randomly assigned to experimental or control groups to mitigate selection bias and enhance internal validity.

Participants

Seventy male student athletes from sports academies volunteered to participate in this study. After obtaining ethical approval from the institutional review board, a 10-week controlled intervention was conducted. Participants were randomly assigned to either the experimental group ($N = 35$), which received goal-setting training, or a matched control group ($N = 35$), which followed identical training protocols without the inclusion of goal-setting strategies.

Data Collection Instruments

Two instruments were employed for data collection: a dribbling assessment form and a lay-up assessment form.

Dribbling proficiency was assessed through the *Dribbling Assessment Form*, a reliable measurement tool developed by Çamur (2001) to assess specific aspects of dribbling technique. This instrument evaluates performance across four parameters (ball control, stepping, body position, and coordination) utilizing a rating system ranging from 0 to 5. Each parameter comprises specific observable behaviors: (a) ball control (e.g., dribbling without looking at the ball, using fingertips, appropriate ball push angle), (b) stepping (e.g., bent knees, appropriate step length, forward-pointing toes), (c) body position (e.g., maintaining center of gravity, forward lean, head and shoulders up), and (d) coordination (e.g., slight knee spring, free movement).

Lay-up performance, on the other hand, was measured through the use of the *Lay-up Assessment Form* (Çamur, 2001), a measurement tool designed to assess specific aspects of lay-up technique. The form employs a rating scheme ranging from 0 to 5 to evaluate the degree to which participants demonstrate key behaviors within four categories: (a) stepping (e.g., holding the ball at abdomen level, initiating movement with the correct foot, taking two steps, finishing with the initiating foot), (b) jumping (e.g., pulling knees towards the abdomen, maintaining a straight and tense jumping leg,

maintaining body tension, focusing on the hoop), (c) ball release (e.g., extending the body towards the hoop, maintaining a straight and tense arm, bringing the ball up from abdomen level, using appropriate palm and wrist action), and (d) landing (e.g., landing on the jumping foot, using arm movements for balance, slightly bending the knee).

Statistical Analysis

Descriptive statistics were employed to determine the age and number of participants in the study groups. The Shapiro-Wilk test was used to assess normality for groups with fewer than 50 participants, while the Kolmogorov-Smirnov test was applied for groups exceeding this size. A p-value greater than 0.05 ($P > 0.05$) indicated a normal distribution (Aron & Aron, 2003). Additionally, one of the key assumptions of the paired t-test—namely, that the difference scores of two related sets of measurements are normally distributed—was not satisfied. Despite this, and even in cases where normality was confirmed, the Wilcoxon Signed Ranks test, a non-parametric alternative to the paired t-test, was utilized due to the group size being 35.

3. Findings

Table 1. Changes in Dribbling Performance Following the Goal-Setting Intervention in the Experimental Group (Wilcoxon Signed-Rank Test)

Experimental Group (Goal Setting) Pretest – Posttest Dribbling	n	Mean Rank	Sum of Ranks	Z	P
Negative Ranks	0[a]	.00	.00	3.800	.00
Positive Ranks	35[b]	11.50	402.50		
Ties	0[c]				

[a] posttest dribbling < pretest dribbling

[b] posttest dribbling > pretest dribbling

[c] posttest dribbling = pretest dribbling

Looking at the Table 1 in detail, a statistically significant difference can be observed between the pre-test and post-test dribbling scores of the goal-setting experimental group. The post-test dribbling scores of the 35 participants were higher than their pre-test scores (Z = 3.800, *P* < .001). These findings indicate that the difference favors positive ranks, which reflects an improvement in post-test scores, or effectiveness of the goal-setting protocol on this fundamental basketball skill.

Table 2. Changes in Lay-Up Performance Following the Goal-Setting Intervention in the Experimental Group (Wilcoxon Signed-Rank Test)

Experimental Group (Goal Setting) Pretest – Posttest Lay-Up	n	Mean Rank	Sum of Ranks	Z	P
Negative Ranks	0[a]	.00	.00	3.901	.00
Positive Ranks	35[b]	11.00	385.50		
Ties	0[c]				

[a] posttest lay-up < pretest lay-up

[b] posttest lay-up > pretest lay-up

[c] posttest lay-up = pretest lay-up

As can be seen in Table 2, analyses demonstrate a significant increase in lay-up performance among the goal-setting experimental group (Z = 3.901, *P* < .001). There was a statistically significant difference between the pre-test and post-test lay-up results of the goal-setting experimental group, and the post-test lay-up score of 35 participants was higher than the pre-test lay-up score, with positive rank differences confirming the systematic improvement in this basketball skill following the intervention period.

4. Discussion, Conclusion and Recommendations

The present study revealed a statistically significant improvement in dribbling performance among participants in the goal-setting experimental group, with 35 individuals demonstrating enhanced post-test scores compared to their pre-test measurements. These findings are consistent with existing literature on goal-setting interventions in sports contexts.

The observed improvements align with Botterill's (2002) foundational research with young ice hockey players, which established that specific, challenging goals yield superior performance outcomes compared to both general objectives and easily attainable targets. This principle was further validated in a longitudinal study implementing a goal-setting and role clarification program with adolescent ice hockey players (ages 15-16), where systematic performance improvements were documented throughout the competitive season.

The efficacy of goal-setting interventions extends beyond individual performance metrics to team dynamics, as demonstrated by a previous study by Senecal (2008). Their investigation revealed enhanced social cohesion among basketball players exposed to team goal-setting interventions, attributed to increased collaborative engagement and interpersonal interaction.

Durdubas et al. (2019) provide a critical perspective on these findings through their longitudinal investigation of high school basketball teams. Employing three measurement points across a season (at the beginning, mid-season, and end of the season), they examined the interplay between goal-setting programs, motivational climate, and team cohesion. Their results indicated that team cohesion within the goal-setting group decreased as the ego climate increased over the season. The researchers underscore the need to consider and monitor contextual variables, such as coaching behaviors and the prevailing motivational climate, when implementing goal-setting interventions.

The positive impact of goal setting on specific skill execution is further corroborated by research in soccer, where structured goal-setting activities integrated with technical training significantly enhanced penalty kick performance (Toros et al., 2010). These findings reinforce the necessity of addressing both physical and psychological factors in athletic skill development.

A particularly noteworthy aspect of the current study's findings relates to the psychological progression observed during basketball dribbling training, particularly through the implementation of progressive goal-setting strategies. Initially, participants who perceived themselves as likely to fail experienced performance anxiety and a sense of incompetence. However, as they achieved incrementally challenging goals, their successes fostered a growing sense of self-efficacy and resilience. Such process not only enhanced their physical performance but also significantly boosted their motivation and willingness to tackle more demanding objectives. Over time, the structured integration of goal-setting into training helped diminish their initial fear of failure, replacing it with increased enthusiasm and confidence in mastering new skills. The dual impact of goal-setting underscores its value as both a physical and psychological training tool.

Drawing on our results as well as findings from relevant research in the literature, the present study demonstrates that a ten-week goal-setting intervention significantly contributes to basketball skill development. Analysis revealed statistically significant improvements in lay-up performance among participants in the goal-setting experimental group, with 35 individuals demonstrating superior post-test scores compared to their pre-test measurements. These findings partially align with existing literature, revealing both consistencies and variations in the effects of goal-setting interventions.

These results can be contextualized within broader research on team-based goal-setting interventions. Durdubaş (2020) investigated the impact of team goal-setting programs on collective efficacy, team cohesion, and individual performance. Their research revealed significant between-group differences in collective efficacy and cohesion variables, with experimental groups showing increased perceptions throughout the season while control groups exhibited declining trends. However, individual performance metrics showed no significant pre-season to post-season differences in their experimental group, which seems to indicate that goal-setting interventions may influence team dynamics more readily than individual performance measures.

The psychological dimensions of athletic performance were further illuminated by Hocaoğlu's (2019) investigation into the relationship between goal orientation, perceived athletic competence, and psychological skill utilization. Their findings revealed that sport experience significantly influenced internal speech patterns, while gender and sport type showed no significant effects. Besides, imagery use remained consistent across all demographic and experiential variables, with no significant difference found in imagery use based on gender, sport type, or sport experience. The researchers concluded that how athletes perceive their athletic competence and define success could determine how they utilize psychological skills (Hocaoğlu, 2019).

In the current study, the implementation of progressively challenging goals at regular intervals corresponded with observable improvements in athletic performance. This systematic approach to goal setting appears to enhance athlete motivation, potentially through increased self-efficacy. This observation aligns with established literature that has demonstrated a positive correlation between self-efficacy and motivation for skill acquisition.

Recent research by Çekceoğlu (2019) examining psychological resilience and goal commitment among high school students revealed gender-based differences in goal commitment levels; however, their findings indicated no significant relationship between sports participation and either psychological resilience or goal commitment levels, which appears to be contributing additional nuance to our understanding of these psychological constructs in athletic contexts.

The practical implementation of goal-setting interventions requires careful consideration of program design and delivery. Although the fundamental concept of goals can be easily communicated verbally to athletes, the key factor lies in developing tailored, developmentally appropriate goal structures. The present study employed an incremental approach to objective goal-setting during lay-up skill acquisition, and such progressive methodology yielded observable performance improvements as athletes successfully navigated increasingly challenging objectives. The sequential achievement of established goals appeared to strengthen goal

commitment while simultaneously enhancing both motivation and self-efficacy, creating a positive feedback loop that facilitated engagement with progressively demanding targets.

In conclusion, our findings contribute to the growing body of literature supporting the positive impact of goal setting on skill acquisition. The 10-week, incrementally progressive goal-setting intervention employed in our study effectively enhanced lay-up performance. Therefore, carefully structured, developmentally appropriate goal-setting programs can be a valuable tool for coaches and athletes seeking to improve basketball skills.

Recommendations and Future Research

- This study was conducted over a ten-week period. Future research could investigate the effects of goal setting applied over a longer duration on different skills, focusing on its permanence and the transfer process to other skills.

- The present study concentrated on lay-up and dribbling, fundamental basketball skills. Subsequent studies could explore the impact of goal setting on more complex basketball-specific skills, such as defensive maneuvers, shooting accuracy under pressure, or team coordination.

- Future research can examine the effect of goal setting by directly comparing its influence on various fundamental basketball-specific skills. Such comparisons may provide deeper insights into the relative efficacy of goal setting for skill development in basketball.

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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