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The Effects of Goal Setting Type and Feedback on Basketball Skill Improvement

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**THE EFFECTS OF GOAL SETTING TYPE AND FEEDBACK ON
BASKETBALL SKILL IMPROVEMENT**

A Master's Thesis

Presented to

The Graduate College of

Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Psychology

By

Shelby Diane White

December 2017

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THE EFFECTS OF GOAL SETTING TYPES AND FEEDBACK ON BASKETBALL SKILL IMPROVEMENT

Psychology

Missouri State University, December 2017

Master of Science

Shelby Diane White

ABSTRACT

Goal setting is a process that is used by many people in a variety of settings. For example, goals can be set for weight loss, career milestones, or anything a person would like to increase or decrease. According to Locke and Latham (1984), the best way to set a goal is to make sure the goal is specific. If someone wants to lose weight, the individual should state exactly how much weight they would like to lose and set a specific deadline for achieving the weight loss. A second aspect to goal setting is to make sure the goal is attainable (Locke & Latham, 1984). It is important to make the goal practical and realistic. The primary aim of this study was to assess the magnitude of the effects of goal setting (goals defined by a coach vs goals defined by the athlete) on the shooting and passing accuracy of high school female basketball players. It was found that coach defined goals resulted in overall greater improvement in shooting and passing basketball performance.

KEYWORDS: basketball, goal-setting, multiple baseline, coaches, athletes

This abstract is approved as to form and content

D.Wayne Mitchell, PhD
Chairperson, Advisory Committee
Missouri State University

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In the interest of academic freedom and the principle of free speech, approval of this thesis indicates the format is acceptable and meets the academic criteria for the discipline as determined by the faculty that constitute the thesis committee. The content and views expressed in this thesis are those of the student-scholar and are not endorsed by Missouri State University, its Graduate College, or its employees.

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INTRODUCTION

With all the fighting and hatred that we have in the world, there is one thing that seems to bring the world together, sports. Every four years the Olympics are held and several nations are asked to send their best athletes to compete against other nations. The athletes that compete in the Olympics sometimes spend their entire lives training for this one event. It may be assumed, these individuals set goals at a young age to make it to the Olympics one day. The purpose of this introduction is to (1) review goal setting theory, (2) review moderators that could impact goals, (3) provide a rationale for using feedback alongside goal setting, (4) provide a brief review of measuring commitment to a goal, and (5) provide a rationale for this study.

Goal Setting Theory

Goal setting theory is built upon the principle that human behavior is purposeful (Latham & Locke, 1991; Locke & Latham, 2002). Goals are used for a variety of behavioral actions. Individuals in today's society set goals for weight, sports, the amount of water they drink per day, or even the amount of steps a person takes throughout the day. Goals can be set for just about anything, but the way the goals are set can determine if the goals are achieved or not. Latham, Erez, & Locke (1988), found that goals that are specific, difficult, but are attainable, have shown to be most effective. Individuals who set specific and challenging goals are more likely to perform at a higher level than individuals who set easy or vague goals such as telling someone to do their best (Locke & Latham, 2006). When athletes are told to do their best, they are left with a wide range of

performance standards that may be acceptable. When given a goal that is specific, the risk of being uncertain about the behavioral performance needed to achieve a goal is reduced (Locke & Latham, 2002). And moreover, success at achieving the goal is argued to strengthen self-efficacy (Bandura, 1977), a primary component of goal-setting theory. For instance, via successful accomplishment, such as performing a behavioral task and attaining a goal, self-efficacy is enhanced over time (Bandura, 1977). By boosting self-efficacy, the probability of setting and reaching future goals will be greater, and therefore more challenging behavioral goals will be set – providing the opportunity to further enhance self-efficacy if those goals are then attained (Bandura, 1977).

A study conducted by Lambert, Moore, and Dixon (1999) evaluated the difference between self-set goals and coach-set goals. Lambert et al., evaluated the locus of control of four gymnasts. Locus of control can be defined as “an individual’s perception of being able or unable to control what happens to her/himself” (Lambert et al., 1999, p. 73). It was hypothesized that individuals who have more external control would perform better with a more structured goal set by the coach, while those who have more internal control would have a better performance if they were to set their goal themselves (Lambert et al., 1999). A survey was used to determine if the gymnast has more internal or external locus of control. Each of the participants were able to set their own goals in one condition and in the next condition they were given a goal by their coach (Lambert et al., 1999). When the participants set their own goals, they were asked to set three goals concerning quantitative dimensions of a specific behavior they needed to perform during training. The other participants received the same type of goal from their coach, but they were not given any type of say about their goals that the coach set

for them. The results of this study did confirm the researcher's hypothesis, individuals who had more internal control performed better when they were able to set their own goals (Lambert et al., 1999). This result could be due to the participants not receiving any kind of say in their goal when the coach set the goal for them. The participants in the Lambert et al., study did not have the opportunity to say if the goal was too hard for them, if they felt confident in their goal, or if they fully understood what they needed to do to achieve the goal that was set for them. Individuals who were able to set their own goals were in control of what they wanted their goals to be, resulting in more confidence and little question about what they needed to do to meet that goal. If the participants who were given goals by their coach were able to ask questions and give feedback to their coach about how confident they felt about the goal, the results may have ended in the participant feeling more confident and meeting the goal.

Goal Setting Moderators

In the goal setting theory, there are four key moderators that can affect the outcome of goal setting. The first is feedback, which is important for people to keep track of their progress (Locke & Latham, 2006). According to Smith and Ward (2006), feedback is when the individual, others, or some type of equipment provides information about the individual's performance. Another important aspect of goal setting is commitment to their goal (Locke & Latham, 2006). It has been documented that if the individual is truly committed to their goal they are more likely to achieve that goal (Locke & Latham, 2002). The third, is task complexity. The individual setting the goal has a higher percentage of achieving the goal if the goal is difficult (Locke & Latham,

2006). With that being said, the individual would not want to set a goal so high that they realistically would not be able to achieve. The goal should be challenging and require the individual to push their talents or knowledge, but should not be too difficult to the point the goal is discouraging to the individual (Locke & Latham, 2002). Lastly, Locke and Latham (2006) explain the final key moderator of goal setting are situational constraints. Situational constraints are external factors that may have an impact on the goal that is being set (Griffin, Neal, & Neale, 2000). For example, if an individual would like to go to the basketball gym for two hours a day, but by the time the individual gets off work the gym is only open for one hour prior to the individual getting off work, it may not be feasible for the individual to set a goal of getting to be in the basketball gym for two hours. With the situational constraints in the following example the appropriate goal that should be set is to spend one hour in the gym per day.

Other attributes that may influence these key moderators include acceptance, clarity, influence, certainty, and satisfaction (Fairall & Rodgers, 1997). Goal acceptance can be defined as the degree to which the individual accepts the goal they have been given or that has been set (Fairall & Rodgers, 1997). If an individual is able to accept their goal, the commitment to the goal will improve in a positive way. Goal clarity is how well the athlete understands the goal and what they will need to do to achieve that goal (Fairall & Rodgers, 1997). The influence of a goal can be seen while the athlete is playing in a game or in practice. If an individual is really committed to their goal, the goal may have some type of impact on the athlete's performance (Fairall & Rodgers, 1997). The certainty the athlete has about their goal can also be thought of as the confidence level the athlete has about their goal. If the athlete has confidence in their

ability to achieve this goal they most likely will, the opposite could be said about an athlete who isn't very confident in their abilities (Fairall & Rodgers, 1997). Lastly, goal satisfaction has been seen to improve when the athlete is involved in the goal setting process (Fairall & Rodgers, 1997). One way to insure the participant is satisfied with their goal is to give them feedback and allowing the participant to give their thoughts about the goal as well. Allowing the participant to have open feedback with the coach can insure them that they can ask any questions they may have about the goal they were asked to set or given, which in the end should lead to a more confident and committed participant.

Feedback

There are several different ways to use feedback with goal setting. Public posting would be hanging the results of an exam in the hallway at school (Smith & Ward, 2006). Verbal feedback is one of the most popular methods of feedback and consists of verbally expressing what the individual did correctly or what they need to change to reach a better result (Smith & Ward, 2006). Stokes, Luiselli, Reed, and Fleming (2010) increased offensive line blocking for high school football players when the coach was asked to use descriptive feedback combined with modeling. Descriptive feedback included verbal praise and correction (Stokes, et al., 2010). Feedback is effective whether it is presented publically or verbally, when it is tied to the comparison of the individual, and when feedback is compared to a specific standard (Smith & Ward, 2006). The individual setting the goal needs to make sure they have the ability to achieve that goal. According to Smith and Ward, "goal setting is strengthened when (a) the goals are made public, and

(b) the goals emphasize short-term immediate outcomes” (p. 385). In this study, the researchers compared different types of feedback on a Division II football players. The researchers combined public posting, verbal feedback, and goal setting to see which produced the best results and to which combination the coaches and player preferred. The players reported that they preferred goal setting by itself the least because they did not have any type of visual feedback (Smith & Ward, 2006). This finding demonstrated that athletes need to have some type of feedback to help them assess their respective goal achievement. Overall, both the players and coaches preferred the combination of all the methods, public posting with verbal feedback, and goal setting (Smith & Ward, 2006).

In a similar study conducted by Ward and Carnes (2002), goal setting and feedback in college athletes were examined as in Smith and Ward (2006), but there were two major differences. Ward and Carnes (2002) did not have the coach or investigator devise the goals for the athletes, all the athletes set their own goals. Another difference was the public posting. Instead of showing the participants exactly how they performed (Smith & Ward, 2006), the public posting consisted of the participant’s name and a “Y” (if they met the goal) or a “N” (if they did not meet the goal) (Ward & Carnes, 2002). The results of the Ward and Carnes study indicated that public posting was an effective technique of feedback. Furthermore, the results of this study provide evidence that goal setting can be effective, but combining the two feedback methods can help an athlete be more committed to achieving their goal.

Commitment

Commitment is a crucial part of goal setting; without it the chances of the individual achieving their goal is very slim (Locke & Latham, 2006). A meta-analysis was conducted to determine if a scale developed by Hollenbeck, Williams, and Klein (HWK scale), was an appropriate scale to use to measure commitment (Klein, Wesson, Hollenbeck, Wright, & DeShon, 2001). The results of the study indicated that there are five key items out of the nine total items on the HWK scale that should be used to give the investigator a better idea of how committed the participant is to their goal. Klein et al., (2001) determined the five items that should be utilized are “It’s hard to take this goal seriously,” “Quite frankly, I don’t care if I achieve this goal or not,” “I am strongly committed to pursuing this goal,” “It wouldn’t take much to make me abandon this goal,” and “I think this is a good goal to shoot for” (p.34). Commitment to a goal can be a predictor in how likely the individual will achieve that goal (Klein et al., 2001).

Purpose of this Study

Research that has previously been conducted, has shown evidence that has indicated a relationship between goal setting and types of feedback. According to Smith and Ward (2006), the effectiveness of goal setting is increased when the goals are made public. Players and coaches also prefer verbal feedback combined with goal setting (Smith & Ward, 2006). There is limited research on whether goal setting is more effective when a coach is the one who is setting the goal for the athlete or if it is more beneficial for the athlete to set their own goal. The purpose of this study was to assess if there is a significant difference in shooting and passing basketball behavior when a coach

sets the behavioral goal versus when the athlete sets their personal behavioral goal. The results of this study are very important to coaches. The results of this study could help coaches gain a better understand if they should be setting their players goals or if their players should be the one setting their own goals. Coaches tend to spend a lot of time helping their players set goals as an individual and as a team for their season. If coaches were aware of the differences between athlete- versus coach-set goals, coaches then may be able to spend more time on other aspects of their sport.

The primary hypothesis was that coach goal setting will result in better behavioral performance and maintenance when combined with feedback versus participant athlete goal setting. A secondary hypothesis was that goal setting, whether set by the coach or the individual participant, would result in better behavioral performance than when goals are not set.

METHODS

Participants

In the present study, there were a total of seven female basketball players recruited to participate. The seven individuals were narrowed down to four participants who were matched on baseline shooting and baseline scores. Participants one, two, and four were 14-years-old and Participant three was 15 years old. Each of the participants had been playing basketball for at least six. The participants were recruited from the athletes who receive individual basketball lessons from the primary investigator (Shelby White). All participants were freshmen in high school in Southwest, Missouri. Prior to any participation in this study, approval from the institutional review board (IRB) at Missouri State University was given (07/26/2017; study # IRB-FY2018-45). Due to the participants being minors, a consent form was signed by both the participants and their parents.

Procedures

The primary dependent variables were shooting and passing basketball accuracy. All participants' current passing and shooting skills were assessed in order to establish a baseline skill level.

For the passing baseline assessment, a line was taped approximately 4.5 meters from the wall. A small square was taped on the wall in front of the participant as the passing target. The target on the wall was 63.5 cm horizontally by 45.72 cm vertically. The tape used to outline the target was 5.08 cm wide. The participant was instructed to

throw the ball at the wall 30 times, aiming for the center of the target. Accuracy (percent of on-target hits per 10 throws) was calculated and recorded. Depending upon percent correct (for example, greater than 50% per each of the 10 throws) the participant was instructed to move back 3 meters and repeat 30 more throws. In order for the pass to count as accurate, the ball had to hit inside the target. If any part of the ball hit inside of the target, it counted as an accurate pass, but if the ball hit on the tape or on the outside of the target it did not count as an accurate pass. The rationale of the baseline phase was to identify the level of competence in passing and to establish what behavior needs further development and to establish three baseline points prior to training. Once the passing baseline assessment was completed the participant was allowed to take a 15-minute rest break followed by the shooting baseline assessment.

For the shooting baseline assessment, there were a total of 10 spots on the floor around the basketball court perimeter. There were five spots, 4.5 meters from the basketball goal, and the other five spots that were at the three-point range (6 meters from the goal). Each of the participants shot a total of 10 shots at each spot, for a total of 100 shots. A 5-minute rest break was given prior to shooting from the three-point range. Accuracy (percent of on-target shots) was calculated for each of the 10 shooting positions. Based on the researcher's coaching experience, the level of accuracy at this stage of participant shooting development was predicted to be less than 50%, hence training and practice were needed. The aim was to identify four out of the seven total participants who were matched on level of shooting and passing competence prior to implementing training.

The current investigation took into consideration key moderators and the different components that could have an impact on the results of reaching a goal, but focused on feedback and commitment. During baseline, the participants did not receive any type of feedback from the coach. The coach told the participant when to start shooting or passing and then delivered the ball back to the individual. Once baseline was established and participants were matched on level of competence, the participants were assigned randomly to one of four conditions: (1) Coach Defined Goals, (2) Coach Defined Goal Control Condition, (3) Participant Defined Goals, or (4) Participant Defined Goal Control Condition. The coach set the goal for the participants based on the percentage of baskets made and accurate passing during assessment. The coach set a goal for the participant to raise their percentage by 10 percent from their baseline score. For example, if the participant averaged a percentage of 30 percent during baseline, the coach would set a goal for them to shoot and pass at 40 percent. This allowed the participant to be challenged in their goal. The participants who received goals from the coach were able to ask any questions or state their concerns about the goal prior to starting training. After each training session, the coach placed each participant's results on the wall of the gym, so that the participants were able to have a visual of how they performed. Once the participant left the gym, their results were taken down from the wall and the next participant's results were placed on the wall. This kept the participant from trying to compare themselves to the other participants.

After the training was completed each participant was asked to answer two goal commitment questionnaires regarding their respective commitment to reaching the passing and shooting goals prior to and after the training (See appendix A and B). The

commitment questionnaires were adapted from Hollenbeck, Williams, and Klein (1989); referred to as the HWK Scale. Both questionnaires were identical; however, on the first questionnaire the participant was instructed to think about how they felt about the goals that were set before starting training. Immediately after completing the first questionnaire the participant was given the second and instructed to consider how they felt about the goals set after completing the training. This Retrospective Pre-Post questionnaire approach was hypothesized to provide secondary data regarding changes in the participants' shooting and passing behavior.

Design of Study

The design of this study employed two complimentary multiple baselines with a 3-day maintenance follow-up. The multiple baseline designs consisted of a Baseline Phase (A), a Training Phase (B) and a 3-Day Maintenance Follow-up Phase for all participants and conditions. Each of the four conditions are discussed in turn below.

Coach Goal Setting Conditions. In the Coach Defined Goal condition, the coach defined the shooting goal and the passing goals (expected percent correct) for the participant. The goal was discussed with the participant and posted on the wall at a designated location in the gym. As stated previously, feedback, in combination with goal setting results in optimum performance outcomes. Hence, for every successful shot and pass, positive verbal reinforcement was given at a fixed ratio of 1 (FR (1)) rate. Similar to Stokes et al., (2010) when the participant successfully used the correct form, they received positive feedback along with an explanation of why they were successful. Some of the feedback statements used included “good job following all the way through,” “your

feet were square to the basket and you have better balance, great job,” and “perfect shooting form.” Correct form, when employed, was reinforced at a FR (1) rate attributing the success to specific form moments. Should the form be lacking, corrective verbal, physical prompting and modeling instructions were provided prior to the next shot or pass. For example, if the participant had their elbow out while shooting, the coach would first verbally tell them they had their elbow was out and to concentrate on trying to keep it in. If the problem continued, the coach would bring the participant in closer and require the participant to shoot with one hand for form shooting. The coach demonstrated exactly how the participant was shooting the ball and then demonstrated how their form should look for them to be more successful. For passing, the coach told the participant to keep their thumbs down after passing the ball. Another suggestion made to the participants was to make sure they stepped towards the target as they were passing the ball and keeping their foot pointed toward the target as well. A third recommendation for correcting passing form, was for the participant to make sure they kept their body squared up to the target. In other words, it is important for the participant to be facing the direction they are wanting to pass throughout the entire sequence of making an accurate pass. One week following the training, a 3 Trial Maintenance Phase was implemented. Here again, the accuracy of shooting and passing were observed and recorded.

During the Coach Defined Goal Control condition the participant experienced a baseline assessment, training, and follow-up as did the participant in the Coach Defined Goal condition, with the following exception; Baseline continued for six trials in contrast to three Trials and Training consisted of only three Trials, hence establishing a control for possible practice effects.

Participant Goal Setting Conditions. The Participant defined Goal condition and the Participant Defined Goal Control condition were identical to the Coach Defined condition. The Participant Defined Goal conditions differed from the Coach Defined Goal conditions because the participants established their own personal shooting and passing goals. During the Participant Defined Goal Control condition the participant experienced six Trials of Baseline, and then the training began with the participant defined shooting and passing goals.

Debriefing

Once the participants completed the 3-Day Follow-up phase, each of the participants were debriefed and they were able to ask any questions they had. If the participants wanted to view their results, the primary investigator provided the results for them.

RESULTS

Each participant's shooting and passing data were reduced to twelve 10-Trial Block Averages. Two levels of analyses were conducted; (1) visual inspection and (2) 2-Standard Deviation (SD) Bandwidth, for each DV (Shooting and Passing); Participant by Condition. The 2-Standard Deviation Bandwidth analysis allows for statistical analysis similar to the traditional Null Hypothesis testing for Single-Subject designs. By comparing each participant's baseline to their subsequent intervention and follow-up trial behavior the participant serves as their respective control. In this study, it was predicted that behavior would improve, hence the participants' shooting and passing behavior would be greater than their baseline shooting and passing behavior. Each participant's baseline summary statistics (Means and Standard Deviations) was calculated. The 2-SD Bandwidth was calculated for each participant's baseline shooting and passing behavior in the following form:

$$(Mean\ Baseline + (2 * Baseline\ Standard\ Deviation))$$

Therefore, any subsequent behavior change that was greater than the participant's 2-SD Bandwidth would be interpreted as a significant behavior change ($p < .05$). Each of the analyses is presented in the following sections. The overall Means, Standard Deviations, Number of Trails at or above a 2-SD Bandwidth (Participants by Condition) for the shooting and passing behavior are displayed in Table I and will be referenced when appropriate in the discussion of the results.

HWK Scale summary scores were created for each participant's Pre-and Post-commitment questionnaire data. Although the questionnaire has nine items, only five

items (1, 4, 5, 6, and 7) were employed in creating a summary score. Items one, four, and six were reverse scored. The additional items are argued to be consistent with an assessment of goal commitment, however, Hollenbeck, Klein, and Wright (1989) recommended the 5-item scale.

Shooting Behavior Results

The shooting data for Participant 1 (Coach Defined Goal Condition) and Participant 2 (Coach Defined Goal Control Condition) are displayed in Figure 1. In the Coach Defined Goal Condition, Participants 1 and 2 had a coach set goal of making five out of 10 shots (50%) during each of the six intervention trials. During Baseline Participant 1 averaged 36.50% shooting accuracy; 52.50% shooting accuracy during the Intervention phase and 63.67% during the Follow-up phase. As can be observed, Participant 1 succeeded in reaching the coach set shooting goal.

Participant 2 served as the Coach Defined Goal control. Participant 2 had 40.33% shooting accuracy during baseline; 49.00% accuracy during the intervention phase and 47.33% accuracy during the follow-up phase. Although Participant 2 improved, the participant did not reach the coach set shooting goal. Based upon visual inspection, and the coach set goals, both participants demonstrated improvement above baseline and maintained improvement on the 3-day follow-up. However, the magnitude of change was greater for the Coach Defined Goal Participant vs the control Participant. To better test for statistical significance, the 2-SD Bandwidth analysis was applied. For Participant 1, the last three Intervention Trials and all three Follow-up Trials were significantly above

the 2-SD bandwidth. For Participant 2, the last two Intervention Trials and the last two Follow-up Trials were significantly above the 2-SD Bandwidth.

In Figure 2, the shooting behavior results for Participant 3 (Participant Defined Goal Condition) and 4 (Participant Defined Goal Control Condition) are displayed. Participant 3 self-set goal was to have a shooting percentage of at least 60 percent. Participant 3 had an average a shooting percentage of 36.33% during Baseline, 47.50% during the Intervention phase, and 53.33% during the Follow-up phase; therefore, failing to meet their personal shooting goal.

Participant 4, the Participant Defined Goal Control, had a self-goal of 45%. Participant 4 had averaged 38.83% during Baseline, 49.00% during the Intervention phase, and 49.00% during the Follow-up phase; hence succeeding in achieving their personal shooting goal.

Applying the 2-SD Bandwidth analysis, Participant 3 did succeed in having three Trials (the last 3 Trials) during the Intervention phase and three Follow-up trials above the 2 SD bandwidth. Participant 4 had one Intervention trial (the last Trial) and the last 2 Follow-up trials above the 2-SD Bandwidth. Again, participants improved, however the magnitude of change and/or the number of trials above the 2-SD Bandwidth was not as great as those of the Coach Defined Goal Conditions. The overall means, standard deviations and the number of trials above the 2-SD Bandwidth comparisons can be seen in Table 1.

Passing Behavior Results

The passing behavior data for Participant 1 (Coach Defined Goal Condition) and Participant 2 (Coach Defined Goal Control Condition) are displayed in Figure 3. The coach defined passing behavioral goal for Participant 1 and Participant 2 was set at 50%. Participant 1's passing Baseline average was 47.78%, with a passing average of 49.44% during the Intervention phase and 50.00% during the Follow-up phase. Hence, borderline improvement. This was also evident since no trials reached the 2-SD Bandwidth.

For Participant 2, the Baseline passing average was 39.44%, with a passing average of 48.89% during the Intervention phase and 51.11% during the Follow-up phase. And moreover, the last two Intervention trials and all the Follow-up trials were above the 2-SD Bandwidth. Like Participant 1, Participant 2's passing behavior had minimal improvement overall.

The passing data for Participant 3 (Participant Defined Goal Condition) and Participant 4 (Participant Defined Goal Condition Control) are displayed in Figure 4. As with the shooting self-set goals, Participant 3 had a passing behavior goal of 60% and Participant 4 had a passing behavior goal of 45%.

Participant 3 had an average passing behavior Baseline of 35.56%, with an average 48.89% during the Intervention phase, and a 48.89% during the Follow-up phase. Therefore, failing to reach the self-set goal.

Participant 4 had a Baseline passing average of 38.89%, with an average Intervention phase passing accuracy of 47.78%, and a 48.78% average during the Follow-up phase; therefore, succeeding in reaching their personal passing goal.

Both Participant 3 and 4 had trials above the 2-SD Bandwidth during the Intervention and Follow-up phases. Participant 3 had six Trials during the Intervention phase and three Trials during the Follow-up that were above the 2-SD Bandwidth; whereas Participant 4 had one trial (the last trial) during the Intervention phase, and two trials (the last two) during the Follow-up phase above the 2-SD Bandwidth.

HWK Scale Results

The HWK Scale results provide secondary data for the level of commitment by the participant regarding the goals either the coach imposed or those imposed upon themselves. The scores are based on a scale ranging from zero to five. The scores on the five items from the HWK Scale (items 1,4,5,6, and 7) were calculated to find a score for the pre-test and post-test. The HWK Scale Scores are as follows:

	<i>Pretest</i>	<i>Post-Test</i>
Participant 1	25	25
Participant 2	19	25
Participant 3	16	16
Participant 4	19	23

As can be seen in the HWK scale scores above, Participant 1 had very high commitment scores and was consistent from Pre-to Post-Test. Participant 3 had a relatively low commitment scores compared to the other participants and she was also consistent from Pre-to Post-Test. Participants 2 and 4 showed a change in their level of commitment from Pre-to Post-Test, suggesting that after practicing their goal commitment increased.

Results Summary

Overall, each of the participants showed improvement. In the Coach Defined Goal Condition participants demonstrated greater overall shooting behavior improvement than those participants in the Participant Defined Goal Condition. Although both participants improved in shooting, comparing Participant 1 and 2's trials 4, 5, and 6 the difference is minimal, suggesting practice is most likely a factor in the improvement. For the passing behavior, there was also improvement by all participants, however no substantial differences between Coach Defined Goal Condition versus the Participant Defined Goal Condition were observed. Practice effects cannot be ruled out, but the magnitude of improvement as a function of goal setting appears evident, at least for Participant 4.

DISCUSSION

There were two primary hypotheses for the current investigation. It was hypothesized that (1) the Coach goal setting would result in better behavioral performance and maintenance when combined with feedback versus participant athlete goal setting and (2) goal setting, whether set by the coach or the individual participant, would result in better behavioral performance. The results of this study lend support to both hypotheses, especially for the shooting behavior. For the shooting behavior, both participants under the Coach Defined Goal Condition improved and met the coach-set goal. However, Participant 1 succeeded in more trials above the 2-SD Bandwidth than Participant 2 which could have been a function of practice in combination with constructive feedback; Participant 1 received feedback on six trials versus three trials for Participant 2. Participant 1 also had substantially greater Pre-and Post HKW commitment scale scores than Participant 2. Although, the magnitude of goal commitment cannot be determined from these data, there does appear to be a correlation; in that, the higher the goal commitment the better the performance outcome.

In the Participant Defined Goal Condition, only Participant 4 met their personal set goal. This could be due to the difference between goal setting magnitudes. Participant 3 set a shooting goal of 60% and Participant 4 set a goal of 45%, hence the 45% goal was much easier met. Both participants succeeded in having trials above the 2-SD Bandwidth during the shooting Intervention and Follow-up trials, with Participant 3 having more trials above the 2-SD Bandwidth than Participant 4. This result is somewhat perplexing given that Participant 3 had much lower HKW goal commitment scale scores with a

much higher goal setting. Failing to meet one's goals and being less goal committed would result in poorer performance. It may be that the magnitude of goal setting is a more important factor in motivation than commitment.

The passing behavior results were mixed. In the Coach Defined Goal Conditions, only Participant 2 had Intervention and Follow-up trials above the 2-SD Bandwidth, and on average, only met the coach defined goal of 50% on the Follow-up trials. Based upon behavioral observations, Participant 1 had great difficulty in passing success. During the Intervention phase, Participant 1 required extensive feedback (adjustments) regarding passing behavior. For example, her passing follow-through was functionally very poor. Even after modeling the correct form, she had difficulty in adapting the correct behavior form. Hence, having to consistently adjust to the correct passing behavior form resulted in poor passing performance. It is the author's opinion that Participant 1 had developed poor passing form and would need much more form training to improve passing behavior.

Participants 3 and 4 both improved their respective passing behavior. Like their shooting results, Participant 3 failed in reaching their personal goal but did succeed in having all Intervention and Follow-up trials above the 2-SD Bandwidth. And Participant 4 met their personal goal of 45% and had one Intervention trial and two follow-up trials above the 2-SD Bandwidth. Similarly, like the shooting behavior, Participant 3 had much lower HKW goal commitment scale scores with a much higher goal setting. Here too, failing to meet one's goals and being less goal committed would result in poorer performance. This replication across behaviors lends more support to the argument that the magnitude of goal setting is a more important factor in motivation than commitment.

Ward and Carnes (2002) found that self-set goals with feedback were more effective in improving athletes' performance. The findings in this study are similar to Ward and Carnes (2002) and further support the Locke and Latham (2002; 2006) theory of goal setting. However, the role of feedback, in combination with type of feedback with goal setting has not yet been tested. In addition, the interaction of feedback and goal setting cannot be teased out of from the data presented from this study. The relationship of goal commitment and players shooting and passing performance cannot be determined either. However, there is evidence from these data that the magnitude of goal setting could play a significant role in performance. It is the contention of this author that future research should be conducted to assess the interaction of feedback and feedback type with goal setting. Given that Participant 3 had very high personal shooting and passing goals, with low commitment and failing to meet her personal goals, but succeeded statistically above chance is a compelling result that warrants further investigation. Therefore, the effects of the magnitude of goal setting, particularly on basketball shooting and passing may be an important intervention factor for coaches to consider. This finding is in contrast to the Locke and Latham (2006) findings that the more committed an individual is to their goal the more likely they are to achieve that goal.

One can gather from these findings that goal setting is effective; the goals set by the coach resulted in a greater magnitude of positive change in shooting and passing performance (particularly shooting behavior) than the goals set by the participant. Regardless of the type of goal setting (Coach or Participant), the behavior changes were maintained after the intervention.

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Table 1. Means, Standard Deviations, and Number of Trials Above the 2-SD Bandwidth For Shooting and Passing Behavior; Participants by Condition

	Baseline	Intervention	Follow-up
<i>Shooting Behavior - Coach versus Participant Defined Goals</i>			
Participant 1 (CDG) Trials Above 2-SD	36.50 (6.14)	52.50 (9.44) * 3.00	63.67 (3.21) * 3.00
Participant 3 (PDG) Trials Above 2-SD	36.33 (6.81)	47.50 (7.67)* 3.00	53.33 (3.05)* 3.00
Participant 2 Control (CDG) Trials Above 2-SD	40.33 (2.88)	49.00 (8.00) * 2.00	47.33 (2.52) * 2.00
Participant 4 Control (PDG) Trials Above 2-SD	38.83 (4.71)	49.00 (6.56) * 1.00	49.00 (3.61) * 2.00
<i>Passing Behavior - Coach versus Participant Defined Goals</i>			
Participant 1 (CDG) Trials Above 2-SD	47.78 (5.09)	49.44 (5.74) 0.00	50.00 (3.33) 0.00
Participant 3 (PDG) Trials Above 2-SD	35.56 (3.84)	48.89 (4.55) * 6.00	48.89 (5.09) * 3.00
Participant 2 Control (CDG) Trials Above 2-SD	39.44 (3.90)	48.89 (1.92) * 2.00	51.11 (1.92) * 3.00
Participant 4 Control (PDG) Trials Above 2-SD	38.89 (5.44)	47.78 (1.93)* 1.00	47.78 (3.85)* 2.00

*At least one trial was above the 2 SD Bandwidth
 Coach Defined Goal (CDG) Condition
 Participant Defined Goal (PDG) Condition

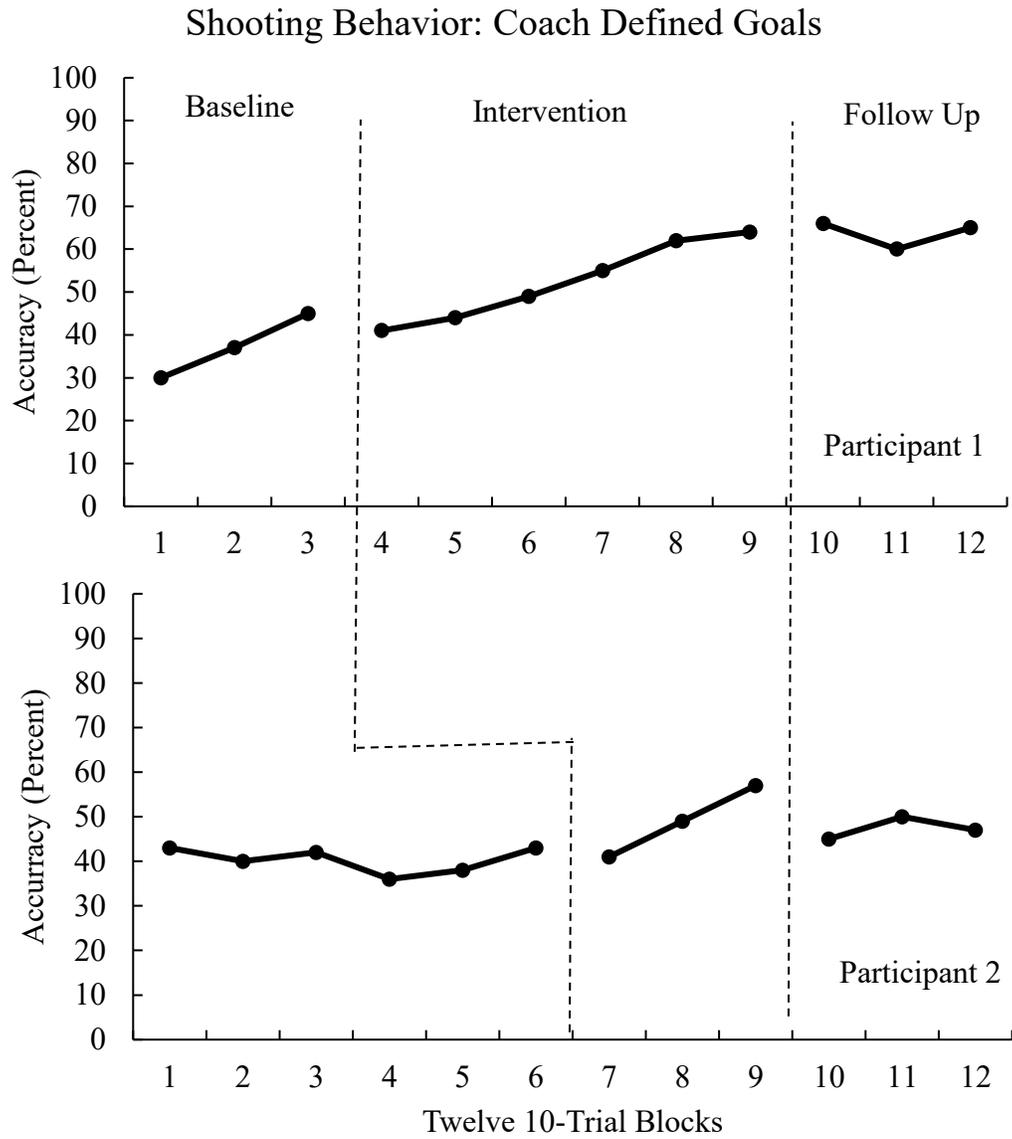


Figure 1. Percent shooting accuracy for the Coach Defined Goal Conditions: For Participant 1 (Coach Defined Goals; upper graph) and Participant 2 (Coach Defined Goal Control Condition) lower graph.

Shooting Behavior: Participant Defined Goals

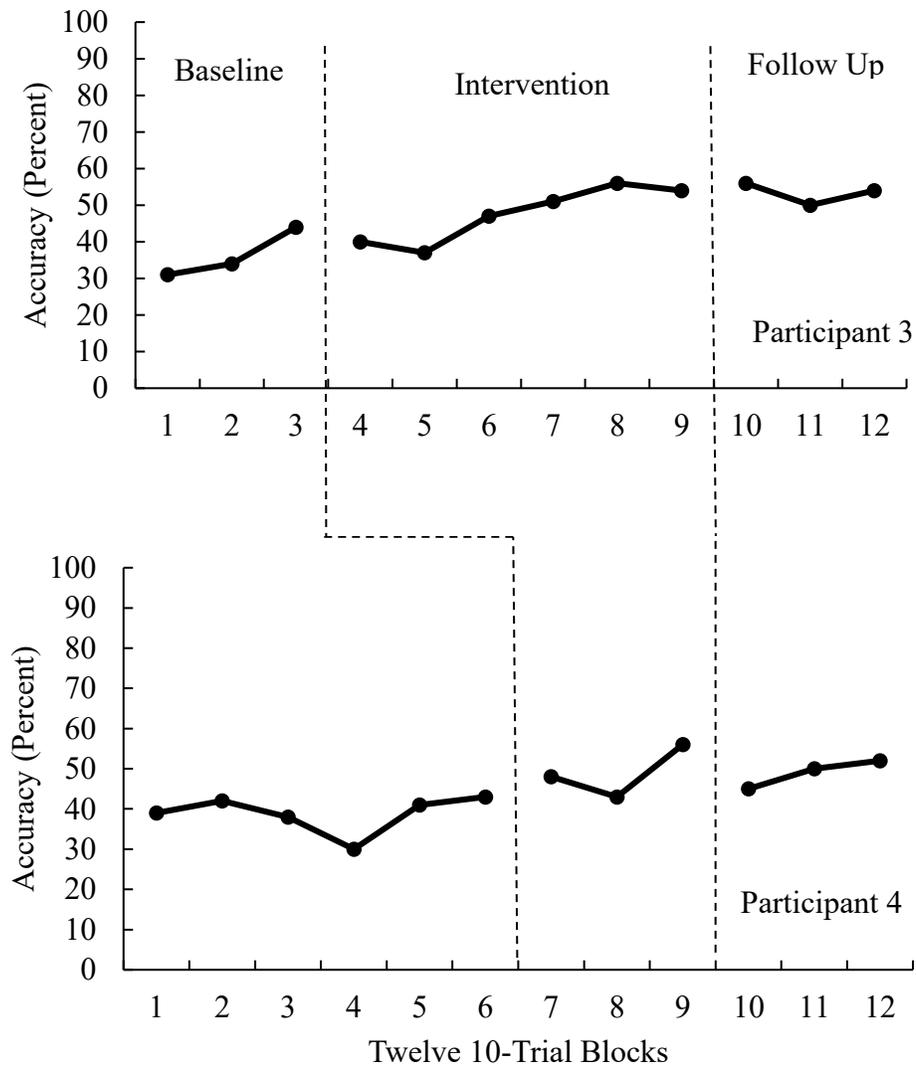


Figure 2. Percentage shooting accuracy for the Participant Defined Goal Conditions: For Participant 3 (Participant Defined Goals; upper graph) and Participant 4 (Participant Defined Goal Control Condition) lower graph.

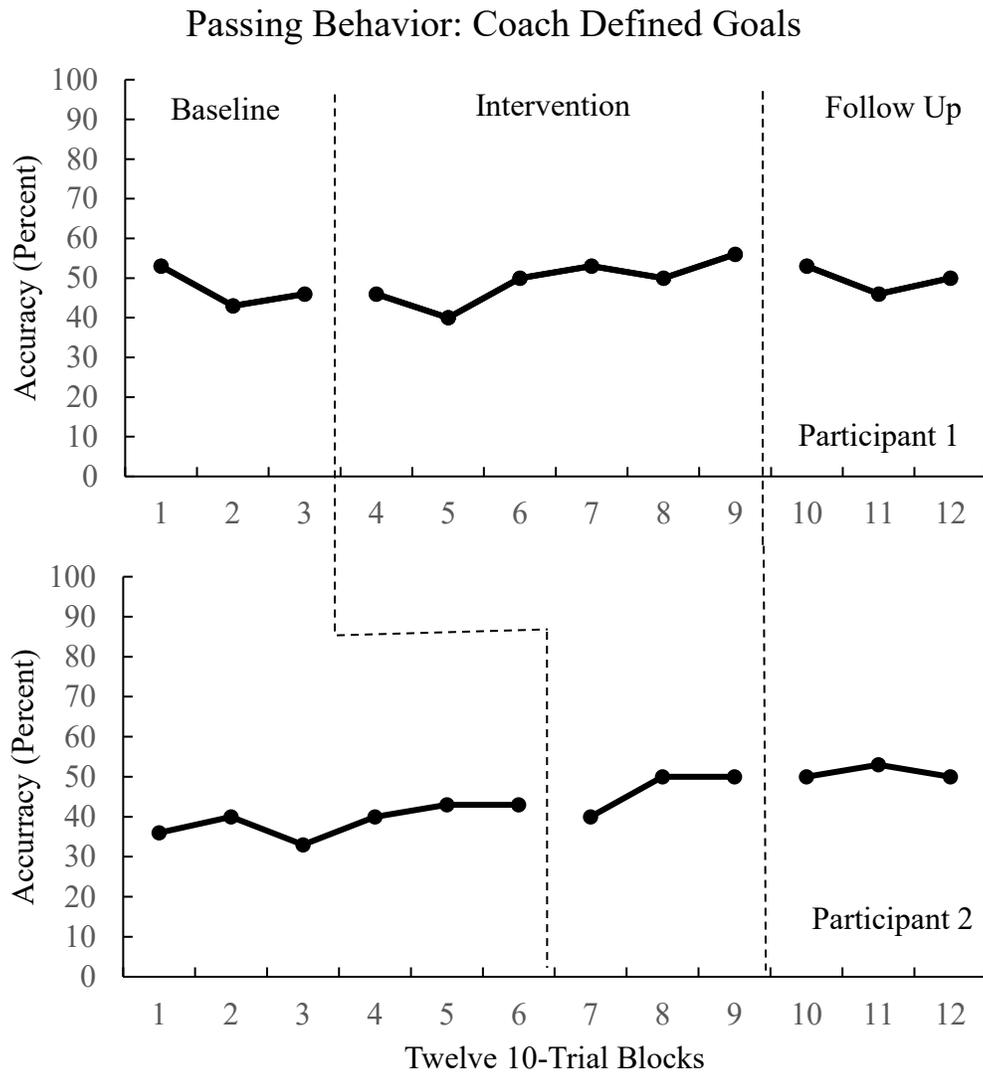


Figure 3. Percent passing accuracy for the Coach Defined Goal Conditions: For Participant 1 (Coach Defined Goals; upper graph) and Participant 2 (Coach Defined Goal Control Condition) lower graph.

Passing Behavior: Participant Defined Goals

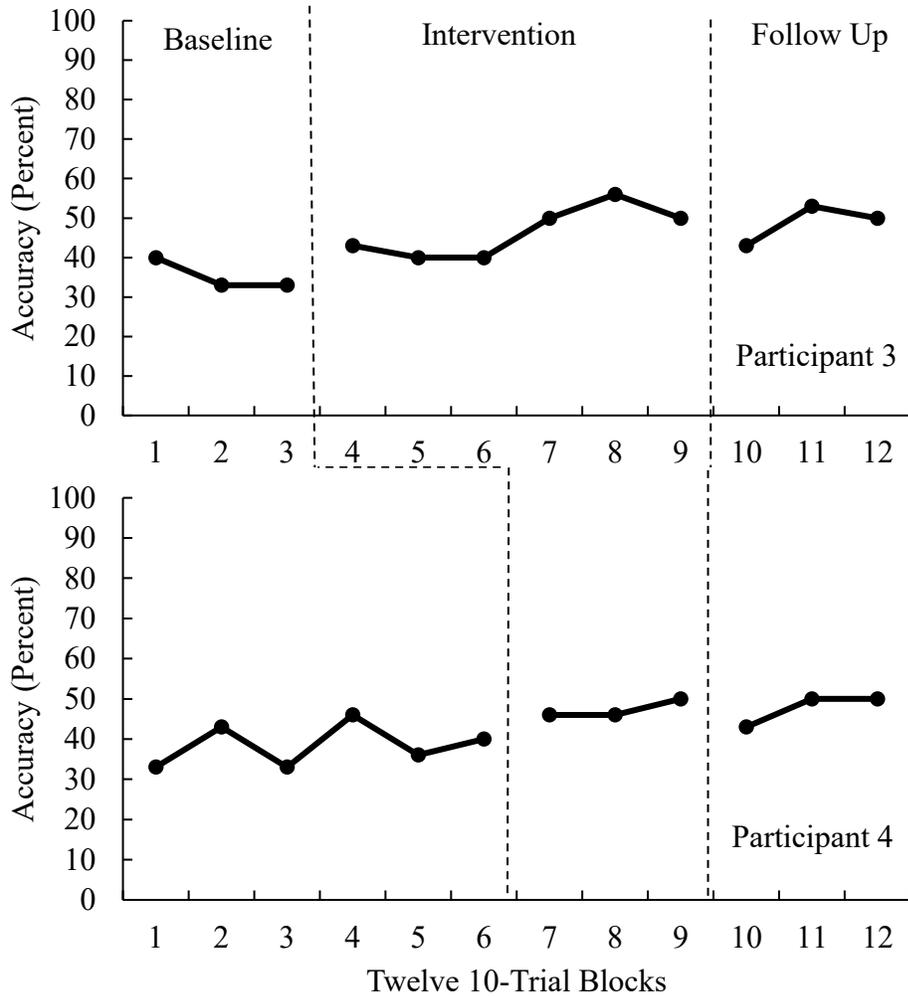


Figure 4. Percent passing accuracy for the Coach Defined Goal Conditions: For Participant 3 (Participant Defined Goals; upper graph) and Participant 4 (Participant Defined Goal Control Condition) lower graph.

APPENDICES

Appendix A. HWK Commitment Scale-Pretest

Commitment to Your Goals BEFORE the Practice Sessions

To what extent does each of the following statements describe your feelings regarding your goal commitment *before* the practice sessions. Please use the following scale to record an answer for each statement listed below. Circle the number that best describes your answer to the question.

1. It is hard to take this goal seriously.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

2. It is unrealistic for me to expect to reach this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

3. It is quite likely that this goal may need to be revised, depending on how things go.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

4. Quite frankly, I don't care if I achieve this goal or not.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

5. I am strongly committed to pursuing this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

6. It wouldn't take much to make me abandon this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

7. I think this is a good goal to shoot for.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

8. I am willing to put forth a great deal of effort beyond what I'd normally do to achieve this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

9. There is not much to be gained by trying to achieve this goal

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

Appendix B. HWK Commitment Scale-Post-test

Commitment to Your Goals AFTER the Practice Sessions

To what extent does each of the following statements describe your feelings regarding your goal commitment *after* the practice sessions. Please use the following scale to record an answer for each statement listed below. Circle the number that best describes your answer to the question.

1. It is hard to take this goal seriously.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

2. It is unrealistic for me to expect to reach this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

3. It is quite likely that this goal may need to be revised, depending on how things go.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

4. Quite frankly, I don't care if I achieve this goal or not.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

5. I am strongly committed to pursuing this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

6. It wouldn't take much to make me abandon this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

7. I think this is a good goal to shoot for.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

8. I am willing to put forth a great deal of effort beyond what I'd normally do to achieve this goal.

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely

9. There is not much to be gained by trying to achieve this goal

0 1 2 3 4 5
Do Not Agree At All Agree Somewhat Agree Completely