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An Evaluation of Video Modeling and Video Modeling with Video Feedback to Enhance the Performance of Competitive Soccer Goalkeepers

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Applied Behavior Analysis
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DEDICATION

These past two years have been extremely unpredictable with the Coronavirus shutting down the whole world right as I was about to embark on my research journey. I cannot thank my research assistants and mentors enough for helping me complete this study and successfully defend my thesis. I was very unsure what the future would hold for my study after I proposed it to my committee in the middle of an international lockdown. Now we are on the other end of things and my thesis is complete!

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ABSTRACT

Several studies have evaluated the effects of consequent and antecedent procedures on athletic performance, including video modeling plus video feedback (VM+VF) as a treatment package. Although the effects of the VF consequent component have been well researched, relatively scant literature exists assessing the effectiveness of the VM component as an antecedent strategy. Additionally, these interventions have not been studied to improve goalkeeping skills of soccer players. Therefore, this study used a multiple baseline across behaviors to compare the effects of VM to the VM+VF to train goalkeeper skills to soccer players. Task analyses were established for three goal keeping skills to teach to two 9-year-old boys using VM, followed by VM+VF as necessary. Results show that, although VM had some effect on performance compared to baseline, VM+VF was required for the robust outcomes necessary for proficient performance of goalkeeper skills. Social Validity data further support the use of VM+VF as a preferred intervention by the players. Future research should compare the effects of VM and VF as stand alone interventions and assess their effects across different sport skills.

CHAPTER ONE:

INTRODUCTION

Researchers in applied behavior analysis have evaluated procedures for improving sports performance of athletes. These include behavior analytic procedures to help athletes improve their technique for specific skills (BenitezSantiago & Miltenbereger, 2015; Boyer et al., 2009; Dyal & Miltenberger, 2016; Kelley & Miltenberger, 2016), self-manage athletic goals (Hall & Erffmeyer, 1983, Rogerson & Hrycaiko, 2002, Thelwell & Greenlees, 2003) and improve coaching strategies (Depaolo et al., 2018; Koop & Martin, 1983). These procedures have been implemented across a variety of sports, including soccer (Brobst & Ward, 2002; Luyben et al., 1986), football (Smith & Ward, 2013), tennis (Allison & Ayllon, 1980), gymnastics (Boyer et al., 2009), dance (Quinn et al., 2019), martial arts (BenitezSantiago & Miltenberger, 2016), and horseback riding (Kelley & Miltenberger, 2016). Behavioral approaches have also been used to improve athletic performance across a wide range of ages (Koop & Martin, 1983) and experience levels (Scott et al., 1997). The diversity of the athletes throughout this literature suggest that these procedures may be generalizable to any given sport or athlete.

Feedback is a common behavior analytic procedure that has been shown to be effective in increasing skill level in athletes. Two forms of feedback typically utilized in sports are verbal feedback and video feedback. Verbal feedback involves experimenter, coach, or peer statements about performance provided to the athlete after he or she engages in the target behaviors (Schenk & Miltenberger 2019). These statements include praise for correct performance and further

instructions for improvement. Video feedback (VF) involves the use of a visual-electronic device (i.e., video) to provide feedback to an athlete while viewing the video following his or her engagement in the target behaviors (Schenk & Miltenberger 2019). Praise for correct performance and further instructions for improvement (corrective feedback) are also a part of VF. For example, Guadagnoli et al. (2002) used verbal feedback to improve a golf swing, and Kelley and Miltenberger (2016) employed video feedback to improve skills for horseback riding. The feedback interventions used for these two studies resulted in improvements in the targeted sports skills for each participant.

Researchers have also evaluated the use of antecedent procedures to improve athletic performance. Video modeling (VM) is one such antecedent procedure that uses an electronic device (e.g., TV or computer screen) to provide dynamic images of an expert correctly engaging in the target behavior (Schenk & Miltenberger 2019). The "expert" could be a coach, a professional athlete, or any other individual capable of executing the correct target behavior for the purpose of demonstrating the skill (Schenk & Miltenberger 2019). Although VM has been used to improve performance levels in a variety of sports, it is typically not used alone and is often paired with some form of feedback (e.g., Boyer et al., 2009; Maryam et al., 2009).

Researchers have used VF or VM plus VF as a treatment package to increase individual athletic skills (BenitezSantiago & Miltenberger, 2015, Boyer et al., 2009; Kelley & Miltenberger, 2016; Mulqueen et al., in press,), but scant research has evaluated VM alone (Emmen et al., 1985; Maryam et al., 2009). Although research has demonstrated both VF and the combination of VM+VF to be effective in increasing performance level in athletic skills, more research is needed to establish the effectiveness of VM alone. Furthermore, few studies have made a comparative evaluation of these techniques. Such a comparison may be valuable for

practice settings, where coaches can make informed decisions to select the most successful and efficient strategies to use with their athletes.

Emmen et al. (1985) and Quinn et al. (2019) have both compared VM and VF for athletic performance. Emmen et al. evaluated three video interventions, VM, VF, and VM+VF, as compared to standard coaching for teaching tennis serves. They found no difference in performance between the video groups and the standard coaching groups. Quinn et al. used a multiple-baseline design across four participants to compare the effects of VM to VM+VF to increase performance in competitive dancers. Following baseline, in which the dancers executed their skill without modeling or feedback, VM was implemented. During VM alone, the participant watched an expert model and then tried to imitate the model as they executed the behavior. The results showed that VM produced small increases in performance. Next, they were exposed to VM + VF. After the dancer watched the model and then executed the skill, the dancer viewed her performance on video as the researcher provided feedback. The results showed that VM+VF produced more substantial improvements for all participants. Interestingly, one participant showed the most improvement when the orientation of the model was reversed in the VM+VF procedure. The results of this study showed that VM alone was a weak coaching procedure, but the addition of VF to VM improved performance substantially across participants. These results also suggest that researchers should attempt to account for the way athletes typically learn their athletic skills, such as considering their visual perspective when viewing a model of the skill.

Because VM is an efficient procedure that can be implemented by coaches in any sport with relative ease, it has the potential to be widely used. However, Emmen et al. (1985) showed VM did not improve performance and Quinn et al. (2019) showed that it produced only small

increases in performance, thus more research is needed to determine whether it is an effective intervention. Furthermore, only two studies to date have evaluated VM with and without VF (Emmen et al., 1985; Quinn et al., 2019), suggesting that additional research should compare the utility of these interventions across other sporting domains. Therefore, the purpose of this study was to evaluate VM and further evaluate the use of VM+VF applied to a novel athletic skill, soccer goalkeeper performance.

CHAPTER TWO:

METHOD

Participants and Setting

Two male competitive goalkeepers participated in this study. Both participants were multi-sport athletes, participating in flag football, baseball, and basketball in addition to soccer. David was 9 years old upon entering the study, and had been playing soccer for 4 years, three of those years as a goalkeeper with no formal training. Jonah was also 9 years old and had been playing soccer for 4 years. He started playing as a goalkeeper with no formal training at 6 years old. Sessions took place at a local public park with large grass fields chosen by the participants' parents. Participants were recruited via word of mouth and recruitment flyers.

Materials

During each session, the researcher used an iPad™ to show the participant the expert video model in the VM phase or to playback the participant's performance when they were receiving feedback for the VF phase. The researcher recorded video of the participant's goalkeeping performance using an iPhone camera and a tripod. The participants were asked to dress as they would for their usual soccer practice, which included wearing their own goalkeeper gloves. The researcher provided the soccer balls for each session.

Target Behavior and Data Collection

The dependent variables were the performance of three goalkeeper saves: a high jump save, a smother save, and side dive save. The high jump save was when the goalkeeper caught a ball thrown high in the air by jumping with one knee lifted and raising their arms above their

head. The forward smother save was when the goalkeeper used their arms to scoop up a fast-rolling ball from the ground, then dived forward to secure the ball. The side dive save was when the goalkeeper lunged to the side to catch a fast-paced ball aimed towards the side of the net. The specific movements for each save were defined by a detailed task analysis (see Appendices A, B, C). To perform each save, the researcher stood 6 to 9 m away from the goalkeeper and threw the ball in a specific way that required the targeted save to be executed. For example, for the high jump save, the researcher threw the ball high in the air toward the goal requiring the keeper to jump in the air to catch it. If the researcher were to throw a ball out of range they would yell out "bad ball" to end the trial and discard the video.

Data were collected from the video footage. Each session took approximately one hour to run for the two participants in attendance. For each step in the task analysis, the observer scored a step using "Y" or "N," representing yes or no, respectively, corresponding to correct or incorrect engagement in each step. The dependent variable was scored as the percentage of correct steps in each task analysis, calculated by dividing the number of correct steps by the number of steps in each task analysis, then multiplying by 100%.

Interobserver Agreement

The author of this study served as the primary observer and two graduate students in the university's behavior analysis program were trained as secondary observers. The primary and secondary observations were compared to calculate interobserver agreement (IOA). If IOA fell below 90% the secondary observers were retrained via zoom. We calculated IOA by dividing the number of steps with agreement (both observers recorded either a "Y" or "N" for the same step) by the number of steps in the task analysis, and multiplying this result by 100% (Cooper et al., 2007). Interobserver agreement was calculated for 34% and 33% of opportunities across all three

skills for David and Jonah, respectively. For David IOA scores were 93% (range, 90-96%), 97.6% (range, 93-100%), and 95% (range, 90-97.5%) for the high jump, forward smother, and side dive, respectively. For Jonah, IOA was scored as 97.5% (range, 95-100%), 97% (range, 95-100%), and 96.3% (range, 94-100%) for the high jump, forward smother, and side dive, respectively.

Treatment Integrity

Prior to the study, a task analysis was developed listing the critical steps for implementing the baseline and each treatment phase for each skill (see Appendix E). A secondary observer independently collected data on the correct and incorrect steps implemented by the primary researcher for 38% and 40% of opportunities with David and Jonah, respectively. Treatment fidelity scores were calculated by dividing the number of steps implemented correctly by the relevant steps for a given intervention, then multiplying the quotient by 100%. For both David and Jonah, the primary researcher implemented the intervention with 100% integrity across all three skills.

Social Validity Assessment

Social validity of the feasibility and acceptability of the intervention was measured by administering a questionnaire with each participant. The participants were provided with a five-item questionnaire using a 5-point Likert scale to rate each statement from strongly disagree to strongly agree (see Appendix D). An open-ended question was included as the final item to assess the intervention preferences of each participant, and the reasons for those preferences.

Experimental Design and Procedure

A multiple-baseline design across behaviors (i.e., high jump, forward smoother, side dive) with two intervention phases was used for each participant to evaluate the effects of the VM and VM+VF interventions.

Baseline

During baseline, the participant was asked to perform the targeted goalkeeper save three times. Each save attempt was plotted as the percentage of correct steps in the task analysis. Feedback was not be provided following the demonstration of the goalkeeper save. If the participant asked any questions, the researcher responded with a neutral phrase such as, "Just try your best."

Video Modeling (VM)

This phase assessed the effects VM on successful demonstrations of goalkeeper saves. Training consisted of the participant watching a short video model of a goalkeeper performing the relevant save, from a forward-facing view. The model was a collegiate level goalkeeper that demonstrated every step in each task analysis. The researcher told the participant to watch the video and try to do everything the goalkeeper in the video did. After watching the video, the participant attempted to perform the same goalkeeper save. This process was repeated three times. After watching the model and executing the skill three times, the participant was asked to perform the same goalkeeper save three additional times without modeling or feedback. Data were collected for these three demonstrations of the skill. The participant then performed each of the other two saves three times. Once there was an increase in the percentage correct for the first targeted save, VM was implemented for the second save. This process was repeated a third time for the third save. Across participants, VM was implemented for the saves in a different order.

Video Modeling plus Video Feedback (VM+VF)

Once performance stabilized in the VM phase for a particular skill, we assessed the effects of VM+VF on that skill. The researcher showed the participant the video model and had the participant execute the save while video recording the save. The researcher then showed the participant the recording of their save immediately following their performance. The researcher provided descriptive praise for correct steps executed by the participant and corrective feedback for any incorrect steps. Corrective feedback consisted of further instruction for executing the steps correctly. The VM+VF process was repeated for each step in the task analysis of the target save two more times. Subsequently, the participant was instructed to execute the target save three times without modeling or feedback, at which time the primary researcher scored the percentage of correct steps.

Follow-up

Two weeks following the end of the intervention phase we did follow-up assessments in which each participant executed the three skills three times with no modeling or feedback.

CHAPTER THREE:

RESULTS

Figure 1 shows David's results for all three saves across the baseline, VM, VM+VF, and follow-up phases. Mean percentage correct for each skill was calculated for each phase, using the last six data points in that phase, except for follow up which only had three data points for each skill. For the high jump, David scored a mean of 20%, 43%, 92%, and 93% in the baseline, VM, VM+VF, and follow up phases, respectively. The side dive means were 28%, 46%, 96%, and 96% for the baseline, VM, VM+VF, and follow up phases, respectively. David's mean scores for the forward smother were 25%, 75%, 98%, and 100% in baseline, VM, VM+VF, and follow up, respectively.

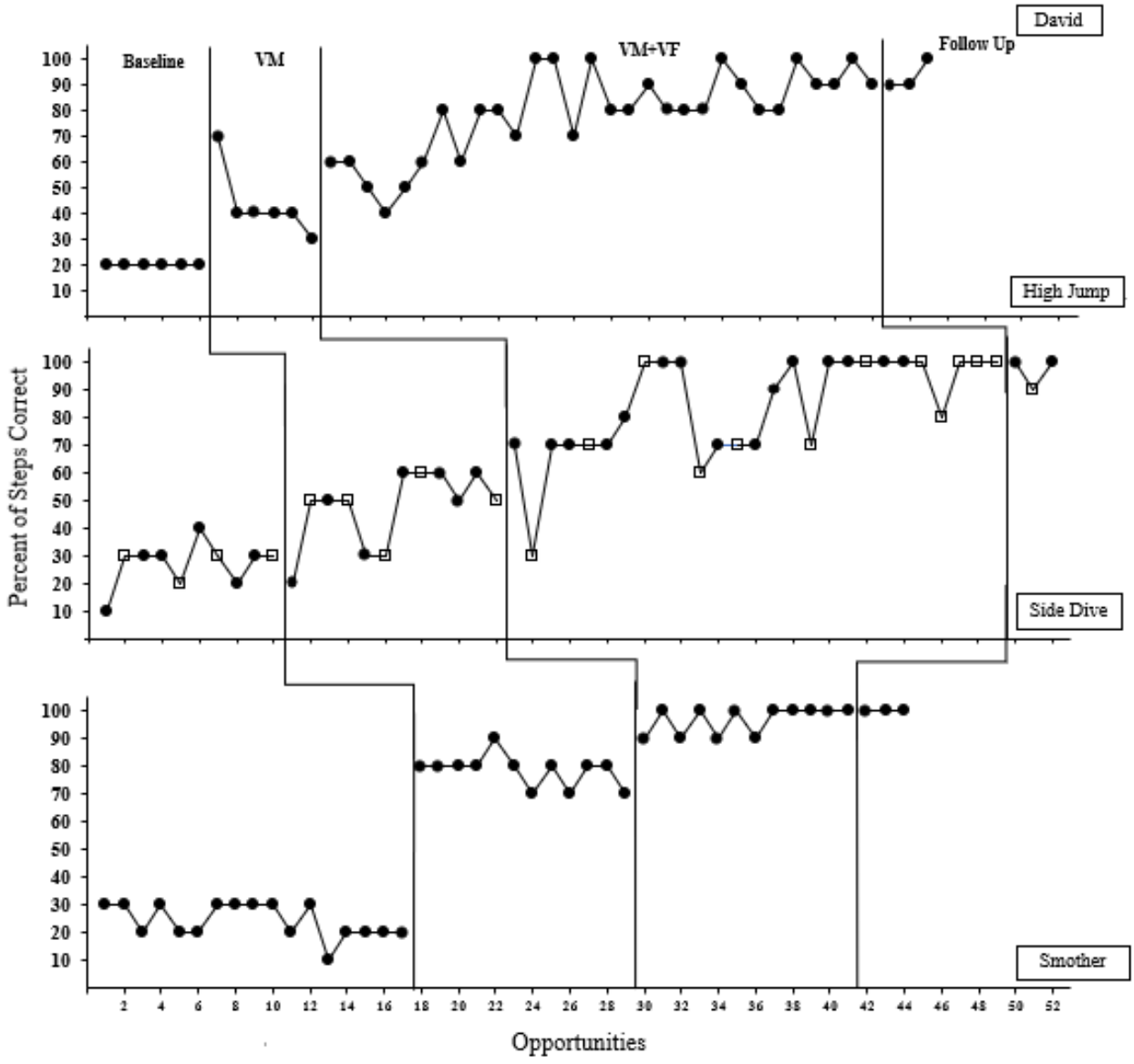
Figure 2 shows results for Jonah's three goalkeeper saves across all phases. Mean scores for his forward smother save were 30%, 57%, 98%, and 90% in baseline, VM, VM+VF, and follow up, respectively. For the high jump, Jonah's mean scores were 20%, 60%, 93%, and 100% for the baseline, VM, VM+VF, and follow up phases, respectively. We did not implement a VM phase for Jonah's side dive (see Discussion). His mean scores for the side dive were 36%, 93%, and 100% for the baseline, VM+VF, and follow up phases, respectively.

The social validity results showed that David and Jonah reported a preference for the VM+VF intervention over VM alone, and both described learning from the feedback as the primary reason for this preference. David and Jonah rated the statement, "I liked participating in this study," as neutral and strongly agree, respectively. David and Jonah rated the statement, "Video modeling made my technique better for each save," strongly agree and agree,

respectively. In rating the same statement for the VM+VF phase, David and Jonah rated it as strongly agree and strongly agree, respectively. The statement "I want to continue practicing my saves using these techniques," was rated as neutral and agree, respectively.

Figure 1.

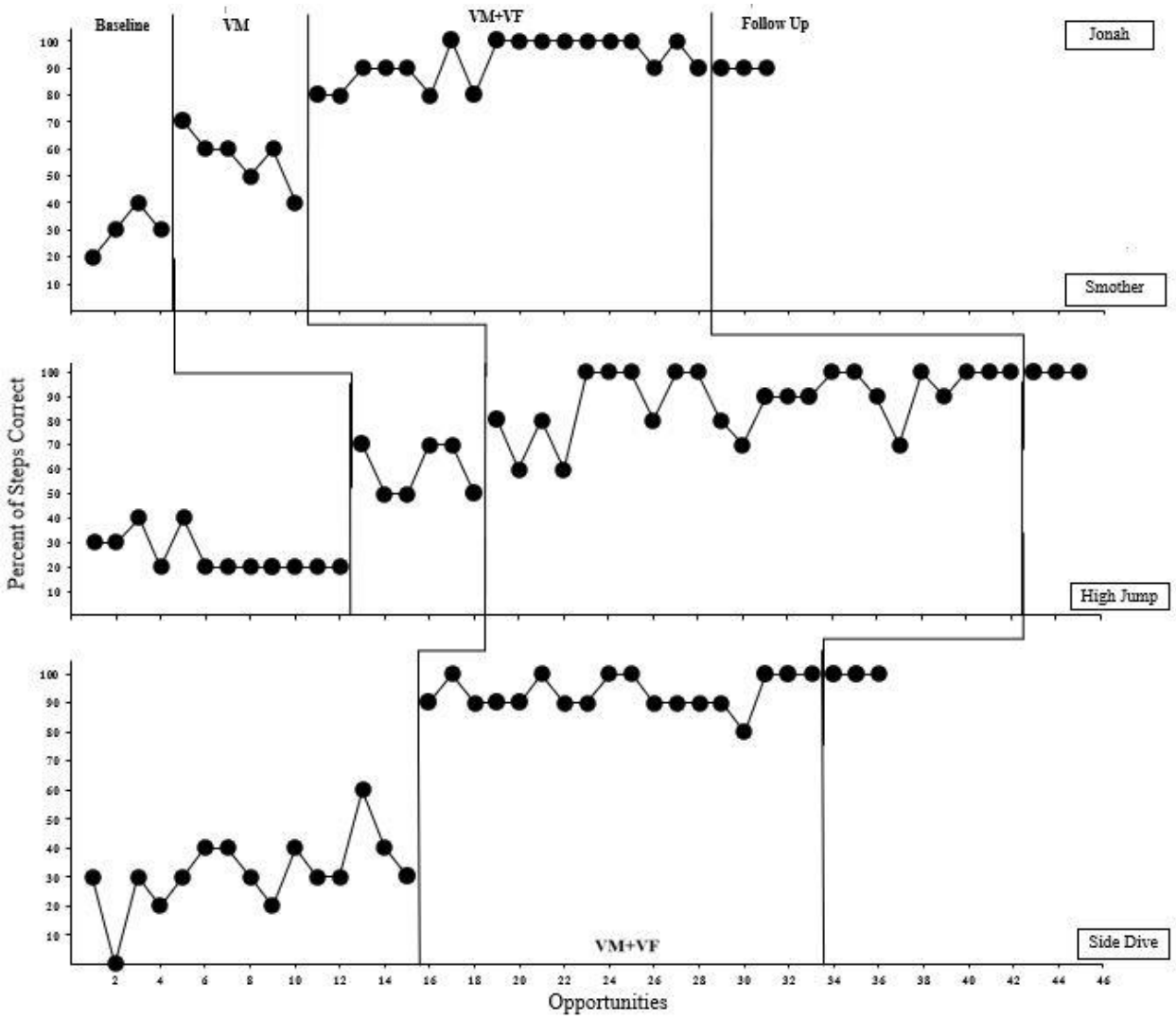
Percentage of Steps Correct for David's High Jump, Side Dive, and Forward Smother Goalkeeper Saves Across Opportunities in the Baseline, VM, VM+VF, and Follow Up Phases.



Note. In panel 2, the open squares (middle panel) indicate side dives performed towards David's left side. and closed squares are right side.

Figure 2

Percentage of Steps Correct for Jonah's High Jump, Side Dive, and Forward Smother Goalkeeper Saves Across Opportunities in the Baseline, VM, VM+VF, and Follow Up Phases.



CHAPTER FOUR:

DISCUSSION

The results of this study showed that VM alone produced only moderate improvements in the goalkeeper skills for the two participants (with percentages ranging from 40% to 75% correct). By contrast, the VM+VF intervention increased performance to high levels for both participants across all goal keeping skills (with percentages ranging from 92% to 98% correct). More specifically, David's high jump and side dive had some improvement in the VM phase, while the smother had a more substantial increase in this same phase. In the subsequent VM+VF phase, he showed a marked improvement for all three skills. Part way through the VM phase, David expressed a dislike for the side dives that required him to dive towards his left, thus we decided to systematically track his left versus right side dives and extend the phase to determine if the left side dives were weaker. Regardless of the aversive nature of the left dives for David, data indicate that he executed the skill for either side with equal consistency. Indeed, the final three side dives in the VM phase were all left-sided and performed at 100% of steps correct.

Jonah showed moderate improvements in the VM phase for the smother and high jump, with a decreasing trend for the former skill. As with David, Jonah improved his performance for all goal keeping skills when the VM+VF phase was introduced and maintained levels of 90% or above for at least the final eight consecutive opportunities across the VM+VF and Follow Up phases. Because the VM +VF phase was most effective for Jonah's smother and side dive compared to VM alone, and Quinn et al. (2019) also previously demonstrated this same effect, we implemented VM+VF without a prior VM-alone phase to assess if the earlier VM phase was

necessary to achieve these results. Jonah's data indicate that VM+VF produced a large increase in the side dive even without experiencing the VM phase first. That is, upon introduction of VM+VF, Jonah's performance immediately jumped to 90% of correct steps, a substantial increase from the 30% performance shown in last opportunity during baseline. This outcome suggests the large effects of VM+VF were not due to earlier exposure to VM alone.

These results are consistent with those of Quinn et al. (2019) and show the modest effects of VM and the relative superiority of adding VF to VM. Although these results show that the combined intervention was more effective, the results do not directly answer the question of whether VF is more effective than VM because VF was always implemented with VM and we did not evaluate the effects of VF alone. Therefore, future research should directly compare VM to VF to demonstrate which procedure produces superior effects. Although substantial research shows the effectiveness of VF as a stand-alone procedure, a direct comparison of the two procedures is warranted.

Notwithstanding the consistent positive effects for both participants across both techniques, this study involved some limitations. First, for Jonah's side dive, we did not introduce a VM-alone phase, so we had one fewer evaluation of this intervention. This can be seen as a limitation because an important purpose of this study was to evaluate the effects of VM alone as an efficient and user friendly procedure for coaches. Nonetheless, we found VM only moderately effective in replications of this procedure across five skills and we found value in implementing VM+VF following baseline for this one save to help rule out sequence effects.

A second limitation that should be noted is the participants involvement in ongoing soccer practices and games. Both boys played soccer multiple times a week where they were required to catch balls with similar or the same techniques that we evaluated in this study.

However, results consistently demonstrated functional control across each goalkeeper save, with observed improvements for each skill only after the introduction of a given intervention for that skill. Further, these improvements were specific to each participant, even though both participants played on the same team, broadly learning the same skills at the same time. Therefore, we believe it is unlikely that improvement may have been attributed to practicing skills outside of our sessions.

Third, the 10-step task analysis used for all three saves each included the same initial four steps because the beginning positions for any goalkeeper save are identical. These first four steps were important to include in each task analysis considering the participants were beginner soccer players with no previous formal goalkeeper training. Because each save was introduced in a staggered fashion, the participants may have generalized the initial four steps from one technique to another without explicit teaching for these steps for the latter skills. This may explain the improvements in the VM-alone phase for the second and third saves. However, this was an unlikely outcome because baseline levels remained stable for skills for both players, even when one or both interventions had been introduced for the other skill(s) for any individual player. Regardless, it may be valuable for future research to investigate advanced goalkeeper skills requiring unique configurations for each task analysis. Doing so may illuminate the feasibility of these interventions for more complex skills, as well as the potential generalization of skill components across differing goalkeeper saves. Furthermore, if studies show that some components may easily generalize across multiple task analyses, additional research may be able to determine more efficient methods using fewer steps.

Fourth, video modeling for all five skills assessed had limited trials potentially not allowing for enough time to see an effect. Although this was not the case for all skills because

some had decreasing trends during this phase which would warrant the start of the VM+VF intervention. Future research should allow for more trails in the VM alone phase to see what effect this intervention would have with more exposure to it. It would also be valuable to add a narrative component to the VM alone phase to see if narrating the video model would have a stronger effect then VM with no narration.

When David and Jonah were each asked which intervention they preferred in a social validity questionnaire administered following the study, both reported a preference for VM+VF when compared to VM alone. In the single open-ended question on the questionnaire, both players stated they liked the aspect of corrective feedback which facilitated learning from their mistakes and omissions of steps. However, the conclusions we can make about preference are limited because we did not inquire further about the specific properties related to their preference. For instance, follow up questions may have asked about (a) the praise aspect of VM+VF, (b) if they noticed immediate improvements in VM+VF, or (c) if VM alone was aversive in some way. Future research should include additional open-ended social validity questions that are flexible for the researcher to investigate the specific reasons for player preferences. This may provide additional information about the reinforcing (or aversive) properties of an intervention that may impact its effectiveness or participants' willingness to participate in it. Nevertheless, the reported preference for VM+VF from the social validity results indicate that VM+VF was not only most effective for both players, but also the most preferred, providing additional support for its use by coaches. Relatedly, asking about a player's preference, or lack of preference, for components within a skill may be worthy for consideration in future research. Such information may lead to improvement for how a skill is taught for a particular player. For example, Jonah described his aversion of diving toward his left earlier in

the teaching process. As a result, we systematically tracked his left dives, and determined that a side bias did not impede his acquisition of the side dive. However, if we found consistent poor performance for only his left side, we would have been able to take corrective action.

In summary, this study evaluated VM compared to VM+VF as interventions for improving youth soccer goalkeeper performance. These results are consistent with Quinn et al. (2019), demonstrating that VM+VF is a more effective intervention than VM alone. Additionally, this study extended the literature by demonstrating the generality of VM+VF for improving a unique sports performance, soccer goalkeeping skills. Additional replications and variations of VM and VF should be evaluated across multiple sport modalities to evaluate the viability of these interventions for enhancing athletic performance.

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APPENDIX A: TASK ANALYSIS FOR HIGH JUMP

Task Analysis for High Jump		
Step Number	**Step Label**	**Step Description**
1.	Ready Position	Feet shoulder width apart, knees slightly bent, shoulders forward, body balanced, light bounce on feet.
2.	Head Positioning	Head steady and eyes on the ball.
3.	Keeper Call	Before save is made the goalie yells at a projective volume one of the following: “KEEPER” or “AWAY.”
4.	Small Steps	Goalie quickly moves towards the ball before the jump.
5.	Jump	Jump into the air bringing one knee up in front of their body at a 90-degree angle.
6.	Eyes on ball	Mid-jump eyes still focused on the ball.
7.	Catch	Goalie contacts the ball at the highest point in their jump.
8.	Ball Handling	Catch the ball with both hands in the air, both hands behind the ball.
9.	Landing	Land on feet and maintain stability.
10.	Possession	Secure the ball and maintain possession.

APPENDIX B: TASK ANALYSIS FOR FORWARD SMOTHER

Task Analysis for Forward Smother		
Step Number	**Step Label**	**Step Description**
1.	Ready Position	Feet shoulder width apart, knees slightly bent, shoulders forward, body balanced, bouncing on toes.
2.	Head positioning	Head steady and eyes on the ball.
3.	Keeper Call	Before save is made the goalie yells at a projective volume one of the following: “KEEPER” or “AWAY.”
4.	Leg Movements	Legs spread apart slightly and bend knees.
5.	Upper Body Movements	Chest moves over the lower body and gets low to the ground.
6.	Arm Movements	Arms move outward, palms facing up, pinkies together, elbows close together.
7.	Moving Forward	Dive forward.
8.	Ball Handling	Secure the ball under the chest on the ground.
9.	Landing	Legs behind body.
10.	Possession	Maintain stability, hold possession of ball.

APPENDIX C: TASK ANALYSIS FOR SIDE DIVE

Task Analysis for Side Dive (Holding Ball)		
Step Number	**Step Label**	**Step Description**
1.	Ready Position	Feet shoulder width apart, knees slightly bent, shoulders forward, body balanced, bouncing on toes.
2.	Head positioning	Head steady and eyes on the ball.
3.	Keeper Call	Before save is made the goalie yells at a projective volume one of the following: “KEEPER” or “AWAY.”
4.	Pre-dive body position	Inside foot pointed at towards ball (body moving in the appropriate direction)
5.	Body positioning (Mid-dive)	Body weight distributed evenly, body is low to the ground, shoulders and arms over knees.
6.	Diving	Dive towards the ball.
7.	Arm Movements	Inner arm slides across or close to the ground. (Palm facing camera)
8.	Catching	Contact the ball and hold onto it.
9.	Holding the ball use “3 Hand” hold	One hand on top of the ball, one hand behind the ball, ball contacting the ground.
10.	Possession	Maintain stability, hold possession of ball.

Task Analysis for Side Dive (deflecting ball)		
Step Number	**Step Label**	**Step Description**
1.	Ready Position	Feet shoulder width apart, knees slightly bent, shoulders forward, body balanced, bouncing on toes.
2.	Head positioning	Head steady and eyes on the ball.
3.	Keeper Call	Before save is made the goalie yells at a projective volume one of the following: “KEEPER” or “AWAY.”

4.	Pre-dive body position	Inside foot pointed at towards ball (body moving in the appropriate direction)
5.	Body positioning (Mid-dive)	Body weight distributed evenly, body is low to the ground, shoulders and arms over knees.
6.	Diving	Dive towards the ball.
7.	Arm Movements	Inner arm slides across or close to the ground. (Palm facing camera)
8.	Deflecting	Deflect ball away.
9.	Deflecting the ball	Deflect the ball 10 or more feet away from body to the right or left sides.
10.	Bounce Back	Quickly get back to ready position or chase after the ball.

APPENDIX D: SOCIAL VALIDITY QUESTIONNAIRE

Social Validity for Participants **1= strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree**						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I liked participating in this study.					
2.	Video modeling made my technique better for each save.					
3.	Video modeling and video feedback together made my technique better for each save.					
4.	I want to continue practicing my saves using these techniques.					
5.	Which way of coaching did you like more? Video modeling alone? Video modeling with video feedback? Why?					

APPENDIX E: TREATMENT INTEGRITY CHECKLIST: BASELINE

Participant:_____	**Researcher:_____**	**Observer:_____**	**Skill:_____**

	Step	**Session #** ____
1.	Researcher instructed the participant to perform the skill.	Y/N
2.	The ball was thrown in an appropriate range for that specific skill.	Y/N
3.	Researcher video recorded the participant preforming that skill.	Y/N
4.	Researcher did not deliver any form of feedback.	Y/N

Treatment Integrity Checklist: Video Modeling

Participant:_____	**Researcher:_____**	**Observer:_____**	**Skill:_____**

	Step	**Session #** ____
1.	Researcher presented the video model to the participant prior to performing the skill.	Y/N
2.	Researcher verbally prompted the participant to practice the skill three times before assessing the skill.	Y/N
3.	Researcher instructed the participant to perform the skill.	Y/N
4.	The ball was thrown in an appropriate range for that specific skill.	Y/N
5.	Researcher video recorded the participant preforming that skill.	Y/N

Treatment Integrity Checklist: Video Modeling and Video Feedback

Participant:_____	**Researcher:_____**	**Observer:_____**	**Skill:_____**

	Step	**Session # ____**
1.	Researcher presented the video model to the participant prior to performing the skill.	Y/N
2.	Researcher allowed the participant to practice the skill three times before assessing the skill.	Y/N
3.	Researcher instructed the participant to perform the skill.	Y/N
4.	The ball was thrown in an appropriate range for that specific skill.	Y/N
5.	Researcher recorded the participant preforming that skill.	Y/N
6.	Researcher showed the participant their recorded performance.	Y/N
7.	Researcher uses pause, fast forward, and rewind features when presenting the video to the participant.	Y/N
8.	Researcher uses descriptive praise for correct steps, or corrective feedback for incorrect steps, for each step in the task analysis.	Y/N

Treatment Integrity Checklist: Follow-Up

Participant:_____	**Researcher:_____**	**Observer:_____**	**Skill:_____**

	Step	**Session # ____**
1.	Researcher instructed the participant to perform the skill.	Y/N
2.	The ball was thrown in an appropriate range for that specific skill.	Y/N
3.	Researcher video recorded the participant preforming that skill.	Y/N

4.	Researcher did not deliver any form of feedback.	Y/N