

Systematic Observation of Coach Feedback in Elite Youth Volleyball

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The purpose of the study was to examine the relationship of coach feedback during time-outs to the performance of 16-18 year old volleyball players in competitive match play. Systematic observation of coach feedback during 89 time-outs was recorded using the Coach Time-Out Observation Instrument (CTOOI). For the 879 feedback statements that were made during the time-outs, the CTOOI categorized coach feedback as to technical, tactical, or psychological. Data from the Game Performance Assessment Instrument were collected for the setter. Multiple regression did not show any feedback strategy to be significant for the entire group of setters in terms of performance improvement. However, for higher skilled setters, significant improvement in setter performance occurred when feedback was tactically oriented towards the tactical opponent in combination with technical internal feedback. For lower skilled setters, improvement in setter decision-making was significantly related to time-out feedback characterized by psychologically encouraging over and above discouraging remarks.

Introduction

What is the most effective way to coach the game of volleyball to high school aged girls competing in competitive club volleyball? This study advocates a balanced approach to coaching the game of volleyball that will be reflected in the kind of feedback coaches give to their players. The traditional model, which values teaching techniques over tactics, has over-prioritized the amount of time spent on technique development apart from its contextual relevance in a game situation. Rovegno (1995) and Maxwell (2003) have argued that the coaching of technique and the coaching of tactics should be inseparable. A finely tuned motor response as an adaptation to a decision made on the court in real time is what the coach seeks and what athletes and spectators would define as a great play. Rovegno (1995) brilliantly frames the essential need for more focus upon tactical decision-making skills by stating “rather than controlling the complexity of performing in a motor activity by controlling the complexity of the coordination and control demands of efficiency, coaches should control complexity by controlling the environmental demands themselves” (p. 301). This study examined the extent to which coach feedback strategies affect player performance in the game of volleyball.

A most concise way to accomplish this was to look at the effect of coach feedback during the time-outs in the match on the performance of the “quarterback” of the volleyball team: the setter. The time-out was an excellent and concise period of time in which to evaluate coach feedback. American sports that incorporate time-outs include volleyball, basketball, ice hockey, and football. In volleyball and basketball, instructions during time-outs are sent to the team as a whole, with the brunt of the responsibility to

execute the requests of the coach falling first upon the setter in volleyball or, to give an example from another sport, the point guard in basketball. In volleyball, the setter is the target for every first ball that the team passes, and it is up to the setter to make the tactical decisions and deliver the ball to the hitters with technical form and accuracy (ball positioning) in order to give the team the best opportunity to score points. The collective nature of the time-out is also a valuable characteristic of the time-out as the coach is given the opportunity to tell everyone on the team his or her thoughts about the game as it is unfolding. Together, as a collective body, the players interpret what the coach is requesting.

More than at any other time of the competition, the time-out encapsulates the philosophy of the coach. Mesquita, Sobrinho, Rosado, Pereira, and Milisted (2008) point out that the nature of information given by coaches during the time-out reflects the type of approach that frames their instructional process in general. As a consequence of the type of feedback given by the coach during the time-out, the athletes' attention is directed towards certain aspects of the competition and away from others. More than at any other time during the match, the athlete is focused on the coach's words.

In order to achieve the goal of improving coach feedback in game situations during time-outs, coaches should become more self aware of their feedback strategies. Rowing coaches, for example, were observed giving coaching instructions, and it was found that they could not accurately identify the type, nature, or timing of the feedback that they were giving (Millar, Oldham, & Donovan, 2011). During training, coach communication was coded, and afterwards, by means of questionnaires, the coaches

demonstrated that their recall of what was stated during training was quite inaccurate. When the coaches thought they had provided a great deal of tactical information, they in fact had primarily offered information of a technical nature. Pereira, Mesquita, & Graca (2010) conducted a study in volleyball that demonstrated the same phenomenon. In this study, the coaches perceived that their time-out coaching feedback was more tactically oriented than it actually was during game competition. Instead, their feedback was predominantly technically oriented.

Besides misperceptions by coaches regarding what is being said to athletes during time-outs, another factor may be that coaches tend to underestimate the comprehension abilities of their players. A study by Leslie-Toogood and Martin (2003) demonstrated that even when volleyball coaches showed a high degree of confidence in their ability to evaluate the mental skill strengths and weaknesses of their athletes, there was virtually no agreement between the coaches' perception of the athletes' mental capacities and the actual mental skill capacities of the athletes they coached. Each of the above studies demonstrated that when the traditional approach to motor skill teaching in sport was "technique dominated," where "structured lessons that sequentially teach a list of movement skills to a group of learners" occurred (Werner, Thorpe, & Bunker, 1996, p. 31), it was not surprising that the mental skills of athletes were underestimated and underdeveloped.

Blomqvist, Vanttinen, and Luhtanen (2005), in research on soccer play, statistically supported the argument that tactical knowledge of the sport translated to game performance. They found that players who responded better in problem representation situations performed more efficiently in game play situations, thus relating game under-

standing to game performance. Blomqvist et al. also found through systematic observation that in competitive game situations players' decision-making events occurred more often than skill executions at a ratio of 7:1. From a practical teaching perspective, this means that training in off-the-ball movements in game play should be prioritized in teaching if game performance improvement is the goal.

The most practical way but maybe least effective way to evaluate the impact of coach feedback upon the setter is to merely look at the score of the game before and after the time-out as was done in previous studies. Boutman and Swillen (1991), investigated the influence of time-out on the score of the team that called it and determined that the time-out had a positive influence based upon an improvement in game score. Instead, this study collected data more specifically to measure the change in performance by the setter on technical and tactical skills from four rallies before the time-out to four rallies after the time-out. Therefore, the purpose of this study was to determine whether an appropriate combination of psychological, tactical, and technical coach feedback improves setter performance in the game of volleyball. Furthermore, setter ball placement skill score means for each setter were calculated and setters were placed into two groups, the higher skilled and lower skilled setters, in order to determine if there was a significant difference in effective coach feedback strategies for each of the groups.

Method

PARTICIPANTS

Participants in this study consisted of a convenience sample of ten coaches selected from youth volleyball

coaches from 10 United States Volleyball (USAV) club teams of girls 16-18 years old. Coaches' age ($M=39.5$, $SD=10.6$) and experience ($M=11.4$, $SD=6.9$) showed a strong amount of experience and maturity. There were five male and five female coaches in the sample. The two-day tournament where the data were collected was located in the Midwestern United States of America where volleyball has been competitive for 25 years. Teams from the top to the bottom of the two six-team pools were equally matched. During the first day and a half of the tournament, match play was conducted in a round robin tournament format, where each team played the other team a total of two games. In 20 of the 30 matches observed, the results were split, with one win and one loss for both teams. The tournament was classified as a regional ranking tournament. All the tournament coaches had received IMPACT (The Increased Mastery and Professional Application of Coaching Theory) certification awarded by USA Volleyball. IMPACT certification is completed after attendance and participation in a five-hour course that each coach must complete before being allowed to coach.

Informed consent was obtained from each coach participating in the research study. The study was approved by the University of Arkansas' Institutional Review Board. The mechanics of the study were systematically laid out so that the coaches would know that the study would not interfere with their coaching of the game or be a distraction to their players. Coaches were informed that all references to team and individual names in the transcriptions of the audio recordings would be generic and unidentifiable and that all digital audio recordings of the time-outs would be destroyed once the time-outs were transcribed. At the tournament where the research was conducted, 12 coaches

were asked to participate. Two of the coaches declined to participate in the study; the other 10 coaches were willing participants and signed off on the consent form.

Other participants in the study included the setters from each of the 10 teams from which coach time-out feedback data were collected. It was determined that consent was not needed from the setters in the study because they did not knowingly participate in the study, and did not, in this sense, participate. Neither was there any videotaping nor other recording of actual volleyball setter performance during the data collection process. All coders entered their game performance observation data on paper in real time during the competition itself.

INSTRUMENTS

Coach Time-Out Observation Instrument (CTOOI). The CTOOI, developed by Hastie in 1999 has been shown to have discriminate and predictive validity (Hastie, 1999). For the purposes of the present study, the categories of the CTOOI were modified to simplify coding and to reflect the specific purpose of the present study. The original 15 categories were reduced to six categories. The categories that were kept dealt with tactical and technical feedback (four categories) as well as encouraging and discouraging remarks (two categories). The modified categories were technical feedback external focus, technical feedback internal focus, tactical feedback own team, tactical feedback opponent, encouraging remarks, and discouraging remarks.

Categorizing the coach feedback statements using the CTOOI was done based upon the category definitions, examples, and rules. By design, the categories of technical, tactical, and psychological feedback cover the gamut of most any type of feedback that could be given by a coach

Table 1
Modified Coach Time-Out Observation Instrument Categories

Coach time-out feedback statements are classified into one of the following categories:

Variable Categories	Definition	Example	Rules
technical feedback with internal focus of attention.	coach gives the player corrective information about skill performance and makes reference to bodily movement as the focus of the corrective information	"instead of going up with one hand, pivot, turn, and go off one foot." Or, "Lets try to get our hips a little bit lower on our passing."	the statement must include information about skill corrections or improvement, and be stated in a non-threatening
technical feedback with external focus of attention.	the coach gives the player corrective information about skill performance and makes reference to the external object (the ball) as the focus of the feedback information the player should attend to.	"keep the ball in front of you so you can see and hit around the block." Or, "See the ball over there from their servers	the statement must include information about skill corrections in reference to the ball, and be stated in a non-threatening manner.
tactical feedback—referring to opponent.	the coach gives direction about future strategic options or the coach makes a comment about some decision the players have just made. The reference is to the opponent. This category includes consequence statements which are based upon aspects the players can attend to in the present.	"Number 21 is probably their only option for them on the front row right now." Or, "If the first ball is off the net, lets release to free ball quickly if we know it is going to be free."	Statements are made about tactics or strategies and places a value on certain actions that will cause opponent to make their own tactical adjustments or else perform at a lower level.

Table 1 (continued)

Variable Categories	Definition	Example	Rules
tactical feedback-referring to our team, us.	the coach gives direction about future strategic options or the Coach makes a comment about some decision the players have just made. The reference is to our own team (us).	"Jane, whenever we hit a five, cover the five all the way over to the right side so you're going to have to hustle to get that." Or, "On the pin hitters, lets block inside-wings, about 3 ft. from the antenna."	Statements are made about tactics or strategies, rather than skill performance. There needs to be a reference to player decisions.
encouraging remarks	Coach makes positive reference to players with the purposes of rewarding, increasing confidence, or self esteem.	"We worked on that all day yesterday. Today, we are doing a good job of that as well." Or, "We coaches believe in you guys."	Statements are general in nature. Do not refer to skill execution
discouraging remarks	Coach makes negative reference to players that might reduce confidence.	"We are absolutely giving it to them. This is ridiculous!" or, "I don't expect us to win, but lets play out the game."	Statements are general and do not include specific reference to specific skill performance.

during a time-out. Of the 879 coach feedback statements made in this study, there were less than .06% of coach comments that did not fit Hastie's general categories for types of coach feedback (5 of 879). Table 1 defines the six categories, gives examples of feedback statements, and provides rules for the coders to follow.

For example, technical internal coach feedback was coded when the following conditions were met. First, there was a fit from the statement made by the coach with the definition of a particular kind of feedback that told the coder what key aspects of the coach feedback comment to address. In the case of technical feedback internal, the definition states that the coach gives the player corrective information about skill performance and makes reference to bodily movement as the focus of the corrective information. Second, the coder was given specific examples that assisted in the process of coding the coach feedback statement. For example, in technical feedback internal, one of the examples was: "you need to try to bend your knees" (Hastie, 1999, p. 474). Third, each type of coach feedback was given rules that helped the coder with the process of coding statements that was more difficult to categorize. For example, the rules for technical feedback internal are that, "the statement must include information about skill corrections or improvement, and be stated in a nonthreatening manner" (p. 474). Beyond the technical and tactical coach time-out feedback comments, the CTOOI also helped the coder of coach time-outs categorize comments that were more psychological in nature (encouraging or discouraging).

The following paragraph depicts an actual time-out and how it was coded:

RECORDING#46: They are hitting line over there so in defense, Jane3, you and Jane4 both, lets go more towards the line (tactical opponent feedback). If they set a four, you just go all the way to the line (tactical opponent feedback). Stay about the same depth you are. Don't go too deep (tactical feedback own team). Lets get our right foot closer to the center line (technical internal) and let's be facing the target when we are there (technical internal). Ok. Ok. Otherwise, offensively, lets stay aggressive! Lets stay aggressive (tactical feedback own team), keep believing in each other, and let's keep working like we were (encouraging remarks). Ok. Let's do it right now! You are doing good. Let's just work (encouraging remarks).

Game Performance Assessment Instrument (GPAI). The Game Performance Assessment Instrument (GPAI) was designed to be a flexible observation instrument that could be used either with video or in real time to observe the performance of any invasion, net/wall, field/run/score, or target game (Memmert, 2008). Outside of the GPAI, there have been more detailed volleyball setter decision-making rubrics (Mesquita et al., 2008); however, for the purpose of this study, capturing the basic quality of the decisions made and the skills performed by the setter was accomplished by means of the GPAI volleyball coder guide. Once all data from a game was collected, the GPAI tally sheet was designed for simplicity in adding up the technical and tactical volleyball setter performance at the end of each match, and recording them on the tally sheet. The GPAI allowed the research coders to classify volleyball setter performance in real time at the court where the observations occurred. Both tactical and technical data

were collected using a two-person team of coders on each side of the net. The first person would call out the score for the type of action to be evaluated, and the other person would record the result. This occurred on both sides of the net, meaning that four coders were working together at once during a volleyball match.

The two primary categories of the GPAI have been field tested in volleyball for validity (the extent to which the instrument measures what it is designed to measure) and reliability (the consistency of results). Rater training on the GPAI was used for the four primary coders for this study. The raters went through two sessions where selected rallies from previously video taped volleyball matches were played back in real time, and in slow motion. The raters coded setter technical skill and tactical decision making performance on the GPAI tally sheets, and scored over 95% inter-observer agreement by the end of the training sessions. In addition the GPAI has been shown to have sufficient discriminate validity (Oslin, Mitchell, & Griffin, 1998) and test-retest reliability (Memmert, 2008).

PROCEDURE

To collect the data for the CTOOI, two Sony® digital voice recorders with dynamic audio capabilities were used. One recommended feature of these recording devices was that they reduce ambient sound and background noise. This feature was important for the gym setting where the recordings were done. Other important features were the 750 hours of recording time on each device and digital stamping of each coach time-out that was recorded, which could later be associated with time-outs as they were listed on the GPAI. During the time-out that was called by either coach, the coders, who were also collecting

data for the GPAI, would go into the huddle of both teams to make the audio recording of the time-out that would be transcribed and coded from the CTOOI. The coaches put their players at ease about the coders recording the time-out events, and the recording coders stood on the fringe of the huddle with their arms extended to where the microphone of the recorder could pick up the coaches feedback. Two previous digital audio trial recording sessions were used at a previous tournament to verify sound quality of the coach talking in the team huddle with the microphone placed in this particular position. After recording of time-outs was completed, all 89 time-out recordings were manually transcribed into Microsoft® Word, where the coding of the CTOOI took place. Two of the four raters were given copies of the CTOOI transcribed data, and they were asked to code the CTOOI time-out data into the six categories of the CTOOI. CTOOI inter-rater reliability was 96% accurate for the study and there were only 36 statements out of the 869 coaching time-out statements where the CTOOI coders had some disagreement regarding the coding of a particular statement. In each case, the coders discussed the matter and made a uniform coding decision regarding the classification of the particular statement in question.

The data collected from the CTOOI gave the proportions of the types of feedback given during the timeout and its correlation to athlete performance as measured by the GPAI. The design of this study has been stated as the measurement of the change in performance by the setter on technical and tactical skills from four rallies before the time-out to four rallies after the time-out on the same technical and tactical skills. The setters' performance as it relates to the types of coach feedback given during a time-out (N=89) was measured during all of the time-outs, and

also, after dividing the time-outs (N=42) with setters that demonstrated higher technical ball placement skills, and time-outs (N=47) with those setters who have lower technical ball placement skills. This particular division of the setters into two groups was done in order to determine if coach feedback strategies were, or should be, different for higher or lower skilled setters.

The higher skilled and lower skilled setters were divided into two groups using the following procedure. The variable used to distinguish one group from the other was the ball placement variable from the GPAI instrument. Ball placement was scored on a scale of 0-3 on the GPAI with three being the highest score and zero being the lowest score. The overall number of setting attempts recorded in this study (N=506) was used to determine the mean ball placement score for all setters (M=2.3). If the ball placement mean was above 2.3, it was determined that the coach was working with a higher skilled setter. If the ball placement score variable was 2.3 or below, it was determined that the coach was working with a lower skilled setter. Based upon this procedure, there were 5 setters at the tournament who were classified as higher skilled setters and 5 setters who were classified as lower skilled setters. In the study, each coach only had one setter for whom data was collected. If someone other than the setter set the ball, that particular line of data was not included in this study. Because each coach called a different number of time-outs throughout the course of the two day tournament, the number of time-outs where coach feedback was given to the higher skilled setters (N=42) and the number of time-outs where coach feedback was given to the lower skilled setters (N=47) was not equal.

The design of setter performance evaluation using the GPAI took into account the flow of setter movement during a rally in a match. Because coding began in the volleyball GPAI at the base defensive position, data collection began either when the setter's team served the ball or when the setter's team first established base position after hitting the ball over the net after receiving the serve. The collection of a complete row of data during a rally could also be interrupted by a teammate blocking a ball to the floor for a point, or when the setter dug the ball on the first contact while in her defensive position. Whenever either of these events occurred, the coder began a new line of data entry, and that particular rally was not counted in the GPAI as it was incomplete. The setter could earn up to 12 points for each rally, six for tactical decision-making (e.g., setting decision, arriving on time to target area) and six for technical skill (i.e., form and ball placement).

TREATMENT OF THE DATA

Using multiple regression analysis (alpha set at .05), six separate analyses were run using three each for high and low skilled setters' data on skill difference scores, decision-making scores, and total difference scores (that combined skill and decision-making). The categories of coach feedback tactical (tactical feedback our team or tactical feedback opponent), technical (internal or external focus), and psychological (encouraging minus discouraging remarks) were the predictor variables. Data from the CTOOI was converted into a proportion by dividing the number of the particular type of coded feedback statements by the volume of feedback statements made during the time-out.

Results

For both high and low skilled setter groups, the proportion of each coach feedback type was calculated. Separate regression analyses were run on the effects of the coach time-out feedback for high and low skilled setters. Each multiple regression was a backward selection where SPSS entered all of the independent (predictor) variables into the model and the weakest predictor model was then removed and the regression recalculated. The procedure was repeated until only the useful and statistically significant predictor variables remained in the model.

HIGHER SKILLED SETTERS

For the higher skilled setters, the overall proportion of tactical feedback (tactical opponent feedback + tactical feedback for our team) was 45%. The total proportion of technical feedback (external focus + technical feedback internal) was 16%. The overall proportion of encouraging remarks was 32%, and the overall proportion of discouraging remarks was 7%. Among coaches of higher skilled setters, the primary type of coach feedback during time-outs was tactical feedback for our team. Regarding tactical feedback, the proportion of tactical feedback regarding the tactical opponent feedback was 11% and the proportion of technical feedback regarding technical feedback internal was 9%. Tactical opponent feedback and technical feedback internal combined for 20% of total coach feedback during the time-outs to higher skilled setters.

Multiple regression analysis was used to test how strongly the different types of coach time-out feedback predicted higher skilled setters' total performance difference scores from before to after the coach feedback given

during the time-out, skill difference scores, and decision-making difference scores. The results of the regression procedure indicated the refined regression model was an inadequate fit as a whole, describing only 12% (R^2 adj. = .12) of the variance in total performance difference score. However, in terms of efficiency, ANOVA results found a model that could reliably predict high skilled setters total performance difference scores ($F(2,39) = 3.88, p = .03$). The combination of tactical opponent feedback and technical internal feedback contributed to the statistically significant model. Interestingly, although there was significance for the model to predict the dependent variable, neither tactical opponent feedback ($\beta = 0.29, p = .06$) nor technical internal feedback ($\beta = 0.27, p = .07$) individually had any statistically significant effect on higher skilled setter total performance difference from before to after the time-out. Neither of the other two regression analyses to predict skill difference scores and decision-making difference scores showed an adequate fit and the ANOVA did not support any prediction model for those two variables.

LOWER SKILLED SETTERS

For the lower skilled setters, the overall proportion of tactical feedback (tactical opponent feedback + tactical feedback for our team) was 39%. The total proportion of technical feedback (external focus + technical feedback internal) was 18%. The overall proportion of encouraging remarks (PER) was 30%, and the overall proportion of discouraging remarks (PDR) was 10%. PER minus PDR represents the overall positive influence of non-tactical or non-technical remarks made by the coach. Among the coaches of lower skilled setters, the primary type of coach feedback

during time-outs was tactical feedback for our team, and encouraging remarks.

Multiple regression analysis was used to test how the different types of coach time-out feedback predicted lower skilled setters' decision-making difference (DMD) scores from before to after the coach feedback was given during the time-out. Similar to the regression analysis for high skilled setters, the regression model was not a good fit as a whole, describing 6% of the variance in the decision-making difference score. However, in terms of efficiency, ANOVA results yielded a model that could reliably predict lower skilled setters' decision-making difference scores ($F(1,45) = 3.92, p = .05$). The proportion of ER minus the proportion of discouraging remarks (PER minus PDR) was the only predictor in the statistically significant model. Neither of the other two regression analyses to predict total difference or skill difference showed an adequate fit and the ANOVA did not support any prediction model for those two variables.

Discussion

This study demonstrated that modifications of coach feedback strategies should be made when working with lower skilled setters in a competitive environment. At the same time, this study also demonstrated that the more in-tune the setter is to tactical cues when she is performing at a higher level, the greater her overall performance is going to be during competition. For the higher skilled setters, Hopper's (2002) summation that "skill progression implies a back and forth marriage with tactical awareness, where skill performance is realized" (p. 46), is clearly evident in the tactical opponent feedback/technical feedback internal

model. In the only significant ANOVA model, tactical opponent feedback and technical feedback internal were significant together ($p = .03$), but not significant apart ($p = .06$, $p = .07$). Teaching Games For Understanding theory (Bunker & Thorpe, 1982) that emphasizes the interweaving of tactical and technical instruction are supported by these findings. Chow et al. (2007), in their description of a non-linear pedagogy that “allows game players to become better at detecting key information variables that specify certain movements from a myriad of noncritical variables” (p. 260), suggested a theoretical link between the tactical focus on the tactical opponent feedback and the freedom it gives the athlete to internally anticipate her own movements and the information-movement couplings as elaborated upon by Newell (1991). The studies pertaining to the effect of eye movement on volleyball skill (Piras, Labitti, & Squatrito, 2010) and focus on relevant cues through selective attention processes (Castaneda & Gray, 2007) also contribute to the interactive contribution that a tactical focus on tactical opponent feedback can have with technical motor skills.

Although tactical opponent feedback/technical internal feedback has significant value with higher skilled setters, the tactical opponent feedback/technical feedback internal model did not successfully predict performance improvement for the lower skilled setters. This is where the literature dealing with the independent variable PERminusPDR (proportion of encouraging remarks minus proportion of discouraging remarks) can help to understand the results regarding the significance of that variable. There are different task constraints that impact on motor performance. Although technical and tactical coaching feedback can minimize task constraints in a competitive

situation, there are other constraints that can negatively influence lower skilled setters. While reviewing Newell's (1986) constraints-led approach to motor skill acquisition, the environmental constraints such as negative coaching coupled with performer constraints such as feelings of inadequacy and perceived lack of competence contribute to the coaches' inability to help their setters with technical or tactical feedback alone. As Jokela and Hanin (1999) demonstrated, coaches need to be aware of athletes' needs for affirmation, particularly if they perceive that the tactical opponent feedback is "better" than they are. This study demonstrated that modifications of coach feedback strategies should be made when working with lower skilled setters in a competitive environment. This study also demonstrated that the more in-tune the setter is to tactical cues when she is performing at a higher level, the greater her overall performance is going to be in competition.

In developing a coaching feedback strategy that is efficient and effective, Newell's (1991) classification of the athlete as being at one of three stages of learning (the coordination stage, the control stage or the skill stage) is important to remember. It is important to be aware of the athlete's learning stage and to understand the type of constraints that are most detrimental or beneficial to the learner at any given point in time. Coach feedback to volleyball setters during time-outs in a competitive match should take into account when a performance is not going well and should be modified as demonstrated by the PERminusPDR model to be more encouraging and less technical or tactical at that point in time when performance is subpar. In the game, a coach becoming frustrated over the disparity in skill between his/her own players and the

tactical opponent feedbacks and expressing that verbally to one's players may have a negative effect.

RECOMMENDATIONS

Based on the results of the study, several recommendations for coaches can be made. For the lower skilled setter, most, if not all, feedback should be directed toward encouragement. Coaches of higher skilled setters should focus time-out feedback more on tactical information about the opponent and less on tactical information about their own team. This feedback would be helpful in setters identifying the other teams weakness and developing strategies to take advantage of those perceived weaknesses. In general, coach feedback during time-outs that focuses tactically on their opponent and technically on internally controlled movements of your own teams setter positively improve overall setter performance from before to after the time-out.

From a practical standpoint as a coaching recommendation, as Blomqvist et al. (2005) reported, the practice environment is the place to work with an athlete who is behind other more advanced players in terms of skill development and tactical awareness. The teaching of tactical skills in the practice setting allows skill execution and self-confidence to improve (Fenoglio, 2003). Thus, it is recommended to fully implement a coach feedback strategy in practice and in games that embraces a tactical opponent /technical internal coach feedback model that deploys game-like tactical concepts into as many technical drills as possible in practice. In games, however, when the setter is under-performing or if the setter is still not proficient in skills, a feedback strategy that maintains encouragement is most important.

From this researcher's standpoint, it is important that there be further studies to add predictor variables to the model that attempts to predict setter performance in volleyball. The R^2 for coach feedback was .12 in the tactical opponent feedback/technical feedback internal model, and that simply does not account for enough of the variance that is seen in overall performance for higher skilled setters in competitive volleyball. Implementing the tactical opponent feedback/technical feedback internal model in time-outs will not alone predict successful performance. Nevertheless, the tactical opponent feedback/technical feedback internal model ($p = .03$) is an encouraging beginning to the creation of such a model. It lends strong support to the Teaching Games For Understanding coaching framework and focuses on the minimizing of task constraints through the prioritization of tactical goals in practice with the beneficial consequence of improving motor performance in the process. Further directions along these lines are needed to explore and test other predictors that could contribute to potential models (in-season resistance training protocols, player attitude assessment, nutrition, rest, muscular endurance, etc.) that could assist in the task of improving coaching practice and predicting the improved performance of players.

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