Application of mentoring through reflection in female setters of the Spanish national volleyball team. A case study

M. PERLA MORENO*, ALBERTO MORENO*, AURELIO UREÑA**, DAMIAN IGLESIAS***, FERNANDO DEL VILLAR*

*Sports Sciences Faculty, Extremadura University, Spain
**Sports Sciences Faculty, Granada University, Spain
***Teacher Training Faculty, Extremadura University, Spain

The purpose of this study was to apply a programme of mentoring through reflection to elite setters of the Spanish National Volleyball team in an effort to analyse its influence on procedural knowledge, decision making and performance during competitive game play. The study sample was made up of two female setters from the national team. The programme was developed over eight reflective sessions, led by the team coach, in each of which four set actions of the games were analysed. The intervention focused on procedural knowledge and decision making of the setters, the coach establishing what aspects to focus on in the analysis. The results showed the feasibility of using this programme with elite players, and the complementarity of this activity with routine on-court training, an improvement being seen in all three variables considered in the study.

KEY WORDS: Knowledge base, decision-making, performance, expertise, volleyball.

Four fundamental components affect game performance: cognitive, technical, physiological and emotional (Janelle & Hillman, 2003). The importance granted to the different performance components varies according to the demands of each sport.

In low-strategy sports, skill execution is the main performance determinant (Thomas, 1994). In team sports, the open and changing nature of the actions that take place and the constant need to make decisions during game development affect the importance given to cognitive components (Thomas,

For correspondence: M. Perla Moreno Arroyo, Facultad de Ciencias del Deporte, Universidad de Extremadura, Av/Universidad, s/n, 10071 Cáceres (Spain), (E-mail: pmoreno@unex.es).
Knowledge base and decision-making, as well as skill execution, are relevant factors in the development of expertise in this type of sport (Del Villar, Iglesias, Moreno, Cervelló, & Ramos, 2003; Thomas & Thomas, 1994). It is believed that decision-making is adversely affected by knowledge base structures stored in memory (French & Thomas, 1987; McPherson, 1993; McPherson & French, 1991; McPherson & Thomas, 1989).

The study of knowledge base in sport enables us to differentiate three main typologies (Thomas & Thomas, 1994): declarative knowledge (“what to do”), procedural knowledge (“how to do”) and strategic knowledge (“general rules”).

The research developed under the expert-novice paradigm has shown that the knowledge base of expert players is: extremely high, elaborate, structured, organized and sophisticated. Experts know how and when to use this knowledge base, identifying, remembering or manipulating the relevant information efficiently at any given time, making decision-making quicker and more appropriate (Dodds, Griffin, & Placek, 2001; McPherson, 1999a; Moran, 2004; Rink, French, & Tjeerdsma, 1996; Singer & Janelle, 1999).

Several studies carried out on actions or specific game situations in different sports show the existence of a significant and positive correlation between players’ knowledge base and decision-making (McPherson & Thomas, 1989, in tennis, serve, back court play, net play; McPherson, 1991, batting in baseball; McPherson Dovenmuehler, & Murray, 1992, blocking in volleyball). In addition to the previous findings, the research of French and Thomas (1987), and Iglesias, Moreno, Santos-Rosa, Cervelló, and Del Villar (2005) in basketball, and McPherson and Thomas (1989) in tennis, show the existence of a significant and positive correlation between players’ knowledge base and game performance.

Psychometric analysis of the representation framework of serve action in tennis players of different levels of experience and performance revealed the existence of differences in terms of these variables in the basic action concepts stored in long term memory. In elite players, these representational frameworks were organized in a distinctive hierarchical tree-like structure. In comparison, action representations in low-level players and nonplayers were organized less hierarchically. Movement-related long-term memory seems to be much better structured and adapted to functional and biomechanical demands in experts compared with novices (Schack & Mechsner, 2006).

The theoretical framework of cognitive psychology, and the differences between expert and novice players in their knowledge base features and their use of them (“what they know and how they use this knowledge”, Abernethy, Thomas, & Thomas, 1993), justifies the use of training programmes designed
to improve knowledge base features and the response selection ability of sportsmen/women.

The forerunner in the use of mentoring through reflection programmes can be found in teaching training (Perron & Downey, 1997; Wendt & Bain, 1989), and sports coaching (Mancini, Clark, & Wuest, 1987; More & Franks, 1996), where the effectiveness in the use of these programmes is evident. These programmes are set up with the main aim of improving the reflective ability of teachers and coaches (Kirk, 1986; Schon, 1987), focusing on the requirement that they reflect on their methods. Linked to this, various studies carried out in coach training show that expert coaches consider mentoring as the main formative activity in their training (Bloom, Bush, Schinke, & Salmela, 1998; Salmela, Draper, & Laplante, 1993). Recent studies in coach training highlight the suitability of using mentoring through reflection programmes (Mentoring Through Reflection, Cushion, Armour, & Jones, 2003). What is intended through this type of programme is that coaches are more reflective and think in a critical way, avoiding copying other coaches in a mimetic way without any reflection (Cushion et al., 2003); that they understand why they do what they do. In this type of programme, the reflection must be initiated by the subject himself/herself (Davies, 1994).

These programmes have proved to be effective for the improvement of explicit learning, understood as intentional acquisition which results in verbalizable knowledge (O’Brian-Malone & Maybery, 1998). However, in learning we can differentiate between explicit and implicit processes (“nonintentional, automatic acquisition of knowledge about structural relations between objects or events” Freisch, 1998, p. 76). The current debate on both types of learning focuses on the suitability of using one or the other, that is, if it is necessary to give the player information on what he/she should be looking at and focusing on, or if one can learn in the same way, or better, without this information being given (Farrow & Abernethy, 2002).

The investigation on the importance of explicit and implicit learning based on the complexity of the situation shows contradictory results (Beek, 2000; Master, 2000; Master & Maxwell, 2004). Explicit learning is shown as being superior to implicit learning in high-complexity situations, and implicit learning superior to explicit learning in low-complexity situations in the studies of Gomez (1997) and Raab (2003), these results not being backed up in other studies (Dienes, Broaddent & Berry, 1991; Reber, Kassin, Lewis & Cantor, 1980). Raab (2003) recommends the use of intentional methods (explicit learning) in high-complexity situations, as could be the case in vol-
leyball setting, a specific situation looked at in one of the experiments of his study. With this perspective in mind, it would be desirable for the setter to be able to verbalize contextualized and appropriate details or characteristics of the situation which take place in the setting action. As for the knowledge of expert players, in accordance with that indicated in preceding paragraphs, they are able to identify and select the relevant information at each moment. The two previous ideas may justify how the specification of a fundamental characteristic of the conditions in which the action takes place predominates in expert sportspeople (McPherson, 1999a). Expert players are able to verbalize conditions of the situation, explaining it and highlighting the detail they regard as most relevant to the situation.

The purpose of this current study was to apply mentoring through reflection to elite female setters of the Spanish national volleyball team, aiming to analyse the affect that this programme had on procedural knowledge, decision-making and game performance of the setters.

Method

Participants

The study sample was composed of two setters from the Spanish national volleyball team.

The age and experience in regulated competition of the players was: 25 years old and 10 years of experience; 29 years old and 12 years of experience.

The data collection for the study was carried out in preliminary tournaments of the European League and European League matches.

Intervention

The mentoring through reflection programme included the carrying out of planned reflective meetings (coach-setter), viewing the setter’s action during game play.

For each mentoring session four set actions for each of the setters were selected from a video recording of the match. Of the four set actions selected, two were for appropriate decisions of the setter, and another two for inappropriate decisions. Action selection was carried out by a previously trained observer (intracoder reliability scores of .92 and .93). The coach ratified, on all occasions and prior to the mentoring session, the best selection of the actions carried out by the observer.

The mentoring through reflection was applied by the team coach, previously trained by the researchers to carry this out. During the training process the coach was taught how to apply the programme. This training process was developed in three sessions spread over two weeks. The process consisted of three phases:
1. An explanation of the protocol of action and the phases of the supervision meeting, providing related documentation (one session).

2. Reminder of the protocol of action and phases, and exemplification of a supervision meeting conducted by the researcher in the presence of the coach (one session).

3. Simulation of a coach-player supervision meeting in the presence of the researcher. Specifying of the calendar for the holding of the supervision meetings. (One session).

During the explanation of the action protocol to the coach, the importance that the setter always took the initiative for analysis was pointed out (Davies, 1994), the coach indicating the main subject to broach, and later completing the analysis and response contribution carried out by the setter.

Once the action protocol and the phases to develop during the mentoring session were known, the coach undertook a simulation of this in the presence of the researcher. In order to guarantee the greatest degree of coherence and complementarity of routine on-court training and the application of mentoring through reflection, the coach was asked to prioritise the aspects of analysis mentioned by the setters. The following aspects were voiced:

- Involvement of the lateral blocker in the block.
- Involvement of the central blocker in the block.
- Physical-technical characteristics and limitations of the blockers.
- Position of the ball in relation to the setter's body, in terms of the decision taken.

The mentoring through reflection applied in the study consisted of three phases:

**Phase 1. Viewing of the selected images.**

During this phase, the setter viewed the set situation selected for analysis 3 times, with the aim of remembering the game situation development.

**Phase 2. Auto-analysis and reflection by the setter.**

Following the viewing, the setter assigned a score to her action, verbalizing her justification for the assessment given.

**Phase 3. Joint Analysis player-coach.**

During this phase, the coach directed the analysis and reflection of the setter towards the decisions made during the game action selected, the following elements that make up the setter's decision-making process being considered:

- Analysis of the decision context.
- Assessment of the possible solutions.
- Analysis of the response selected.
- Analysis of the execution of the decision.
- Analysis of the outcome of the decision.
- Global analysis of the technical-tactical action executed.

**Measures and Instruments**

Procedural Knowledge on the decision-making process in the set. The measure of this variable was carried out by means of the analysis of the responses of the setters in interviews designed and used by McPherson (1999a), and McPherson and Thomas (1989), in previous research in tennis.
INTERVIEW

The interview consisted of only one question “What were you thinking about while playing that point?”

The setters had to respond verbally to this question immediately following the execution of a set action with particular features (arising from good reception, with score four; and executed in a precise way, with set score between three and five) in a 6X6 situation in training. The setters’ responses were recorded on audiotape using a tape recorder, later being transcribed and coded.

Each setter was interviewed on six occasions between game points, in each of the two sessions in which data collection was carried out. A total of 24 interviews were coded.

CODING OF VERBAL RESPONSES

The verbal reports of each player were literally transcribed. These verbal reports were later quantitatively analyzed by means of a protocol model structured for tennis (McPherson, 1999a, 1999b, 2000) and adapted to the requirements of volleyball. Following McPherson (1999a) the units of information were classified according to five main conceptual categories: goal concepts, condition concepts, action concepts, regulatory concepts, do concepts.

- Goal concepts reflected the way a game was won or the purpose of a selected action, or they specified a condition referring to the game’s goal structure.
- Condition concepts specified when or under what conditions one applied an action or action patterns to achieve a goal.
- Action concepts referred to the selected action or action patterns which produced goal-related changes in a sport situation.
- Regulatory concepts specified whether an action was carried out.
- Do concepts specified how to perform an action.

Identified concepts in each major category were also differentiated into subconcept categories or themes. In our study we adapted the categories of subconcepts used in tennis by McPherson (1999a, 1999b, 2000) to the requirements of volleyball.

Goal, condition, and action concepts were also examined for concept sophistication. In the research by McPherson (1999a, 1999b, 2000) in tennis, three level goal hierarchies were differentiated. In our study of volleyball, taking the existence of team members into account, we included a fourth hierarchical level referring to the subconcept goals about their team members. The four hierarchical levels taken into account in our study were the following:

- Players’ subconcept goals about themselves (Hierarchical Level 0).
- Players’ subconcept goals about their team members (Hierarchical Level 1).
- Players’ subconcept goals about their opponent (Hierarchical Level 2).
- Subconcept goals such as winning the point, game, or match (Hierarchical Level 3).

Each identified condition or action concept was classified according to one of the following levels of sophistication:

- Inappropriate or weak (Quality Level 0).
- Appropriate without any details or features (Quality Level 1).
- Appropriate with one detail or features (Quality Level 2).
- Appropriate with two or more features (Quality Level 3).
Below we present an example of the coding response of one of the setters during an interview (Participant 1).

I was aware of how the reception was coming [Condition, Reception, Quality Level 2] to see which of the three set options I would use [Condition, Set Generalisability, Quality Level 2]. I knew that setting the sentiment [Action, Semitense to 4, Quality Level 2] 2 was not going to help [Condition, Lateral Block Action, Quality Level 2], and the centre could remain simply in the centre [Condition, Centre Blocking Action, Quality Level 2], and that one was going to have an advantage because the centre was still in the centre and one is going to be left with only one block [Outcome, Numerical Superiority, Hierarchical Level 2]. However, the action was not successful [Outcome, win the point, Hierarchical Level 3], and perhaps part of the reason why it wasn't successful was that the set was not as good as it should have been [Outcome, skill execution, Hierarchical Level 0].

**Coding Reliability**

In order to guarantee the reliability of the coding, two experts in coding, and knowledgeable in volleyball, coded samples chosen randomly of four out of the 24 interviews. The carrying out of the same coding on two occasions, with a temporal difference of 10 days, gave an intercoder reliability score of .91 and .93 respectively, and intracoder reliability of .97 and .96.

- **Decision-making** in game play situations. For the measure of this variable the FIVB statistic system was adapted. Only the following actions were taken into account:
  a) The sets carried out that arose from a good reception (four points). The quantitative attacker/blockers relation, produced by the set, depends to a large extent on the quality of the serve reception (Moutinho, Marques, & Maia, 2003). In this way, by considering only the receptions with four points we cancel out the effect that the reception could have in the setter’s decision-making.
  b) Sets executed with precision (three, four or five points).

  The scoring of the decision-making variable was carried out taking into account appropriate decisions (four or five points) and inappropriate decisions (three points). The value of this variable corresponded to the mean score of the set action in each one of the matches used for this study.

- **Performance of the set.** The measure of this variable was carried out using an adaptation of the FIVB statistics system, taking into account all sets carried out by the setter during the match. The value of this variable corresponded to the mean score of the said action, in each one of the matches analyzed in this study.

**Systematic Observation of the Set**

This deals with the instrument used for the measure of setters’ decision-making and of the performance of the set.

The systematic observation of the set was carried out using an adaptation of the FIVB system. This system was designed by the International Volleyball Federation, approved and used in volleyball and applied in various studies (Baacke, 1988; Sawula, 1981), in which the distinct game actions are scored from zero to three or from zero to four.

In general terms these adaptations maintain the structure of the FIVB system used for the set analysis, with the proviso of measuring the precision of the set and the decision-mak-
ing of the setter in a differentiated way, a necessary feature for our study. The set scores three, four and five was adapted in the following way:

Three: the set is precise, allowing the hitter to carry out an attack in good conditions, although allowing a double block of the attack.

Four: the set is precise and a block and a half is carried out (a blocker in good position with time and another blocker who manages to block but from an inappropriate position, out of time, or only using one hand in the attack).

Five: the set is precise and the attack is carried out with only one block or without block.

The adaptation of the statistic system FITV for observation of the reception consisted of the inclusion of a fourth category to those already present in the system (zero, one, two, three). The definition and naming of the added category was the following:

Four: the reception allows the carrying out of a jump set pass, without involving a displacement of the setter, permitting play of the three attack hits in the best conditions.

Reliability of the observation

To ensure the reliability of the observation, an observer with experience in this role and knowledgeable in volleyball observed a random sample of three out of the 29 matches played. The carrying out of the same observation on two occasions, with a temporal difference of nine days gave intracoder reliability scores of .92 and .93 in the various actions.

PROCEDURE

The study was developed in three phases: Phase A or baseline, Phase B or intervention and Phase C or maintenance phase. The characteristics and structure of the fixture list conditioned to a great extent the length of each of the phases. Among the fundamental aspects we must highlight the number of matches played during the season and the short space of time between some matches, which prevented the possibility of having supervision meetings after those matches.

Bearing in mind the previous aspects, with the intention of increasing the application of the intervention programme, the length of the phases was the following:

- Phase A: four matches.
- Phase B: eight matches.
- Phase C: three matches.

During Phase A the setters were interviewed on six occasions, following the carrying out of six set actions in a 6x6 situation in training. Systematic observation of the reception and set of the first four matches played were also carried out during this phase. During Phase B or intervention phase the mentoring through reflection programme was applied, a total of eight setter-coach mentoring sessions taking place. In each one of these sessions four set actions that took place during the previous match were analyzed. During this phase, systematic observation of the reception and set in the eight matches played was continued. At the end of this phase, the setters were interviewed again following six set actions, occurring in a 6x6 situation in training.

During Phase C, or maintenance phase, for two matches, the mentoring through reflection programme was not used, data collection being taken from systematic observation of the reception and set of these matches.
Results

PROCEDURAL KNOWLEDGE

In Table I we present the measures of concept content, sophistication and conceptual structure.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Participant 1</th>
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<th>Participant 2</th>
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<td></td>
<td>Phase A</td>
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<td>- Total goals</td>
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<td>- Variety conditions</td>
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<td>- Total actions</td>
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**Concept Content.** As is shown in Table I, the total frequency of goal concepts displayed different tendencies in both participants at the end of the intervention phase. The variety of the goal concepts did not change in either of the participants by the end of the intervention phase. The total frequency
and the variety conditions decreased in both participants on completing the intervention phase. The total frequency of action concepts and their variety displayed different tendencies in both participants. The total regulatory concepts, despite their limited frequency, increased in both participants on conclusion of the intervention phase.

The condition and action concepts were clearly predominant in both participants in both phases of this study.

*Concept sophistication.* The goal hierarchy levels predominant in each one of the participants were different in Phase A as well as on completion of Phase B of this study.

The condition qualities evolved in a similar way for both participants during the study. The weak or inappropriate conditions, the appropriate no-feature conditions and the appropriate two feature conditions decreased in both participants at the end of the intervention phase. The appropriate one-feature condition and action qualities increased in both participants on completing the intervention phase. At the end of the intervention phase, a clear predominance of appropriate one feature condition qualities could be appreciated for both participants.

*Concept structure.* In both participants there was a common tendency of an increase in double concepts and a decrease in triple concepts on completion of the intervention phase. While single concepts remained invariable in participant 1 during the two phases of the study, participant 2 produced more single and more consistent concepts on completion of Phase B of the study.

**DECISION-MAKING**

Figure 1 represents the mean decision-making score of the two setters in each of the distinct phases of the study. The SD corresponding to each participant in each phase of the research was, respectively, .26, .29, .29 (participant 1) and .19, .29, .61 (participant 2).

An improvement in decision-making of both setters can be observed in the intervention phase of the study. This improvement was not maintained in either of the two participants on completion of the intervention (Phase C). In Phase C, participant 2 obtained values lower than those presented at the beginning of the research (Phase A). The greatest values of SD appeared in Phase C (.61). Specific circumstances of the participation in play of participant 2 during this phase may have an influence on this. This setter took part in the equivalent of one set in each of the first two matches in Phase C.
the total number of setting actions executed by participant 2 being fewer than in other matches. We must add to the above that, in the case of participant 2, she did not play in either of the last two matches prior to Phase C played by her team. Both aspects may have had an influence on the values, lower than the initial ones, obtained in her decision-making in the maintenance phase.

PERFORMANCE

Figure 2 represent the mean performance score of the set, of both setters, in the three distinct phases of the study. The SD corresponding to each participant in each phase of the research was, respectively, .29, .22, .23 (participant 1) and .37, .19, .27 (participant 2).

As can be observed in Figure 2, the mean performance score of the set improved for both setters during the intervention phase. In the maintenance phase, participant 1 increased her performance score in relation to previous phases and participant 2 reduced her performance score in relation to the intervention phase, although she obtained values greater than in Phase A.
Fig. 2. - Mean performance score for both participants, by phases.

Discussion

The aim of our study was to apply a mentoring through reflection programme to elite female setters of the Spanish national volleyball team. In our study this intervention has proved to be viable.

The application of this programme on the part of the team coach has given coherence and complementarity to the routine on-court training carried out by the players. In this way, the prioritised aspects selected by the coach in the analysis of the setters during the mentoring sessions were consistent and reinforced the pursued objectives during routine team training.

The high level of specialisation in game functions that exist at elite level and the limited number of players who carry out the specific set function have impeded the application of a test design, made up of two groups (control and test). This fact has forced us to consider the influence that the reflective mentoring programme may have had on the three variables looked at in the study with caution. We therefore understand that the changes seen in these variables are due to the effect of both the routine training of the players and the mentoring programme applied, and not only due to the programme.

A differential analysis of these variables allow us to point out that the procedural knowledge of the two elite setters studied in our research pos-
sessed, from the beginning of the study, the characteristic knowledge base of
experts referenced in various studies (Del Villar, Iglesias, Moreno, Fuentes,
& Cervelló, 2004; Doods et al., 2001; Rink et al., 1996; Moran, 2004;
Williams, Davids, & Williams, 1999). The setters had a high knowledge base,
demonstrated mainly by the high frequency and variety of condition and
action concepts, findings that coincide with those obtained by McPherson
(1999a) with expert tennis players. The setters of our study had structured
and organized knowledge, enabling them to link and relate different con-
cepts, producing a great number of double or triple concepts. The study of
McPherson (1999a) in tennis showed a clear predominance of double con-
cepts in experts in comparison to novices. The setters applied knowledge in
different ways according to the situation (Singer & Janelle, 1999), seen in the
variety of conditions, actions and goals considered at any given time.

I had been trying to play with 9, so I could choose between playing with 9 or with rear
6, given that there was the possibility of fooling them. The problem is that when I trick
them, the central blocker "swallows it" a little, although the route that the ball takes gives her
time to get there, since she only has to move one step, and due to the pass she has time to see,
correct and get there. I don't know if it's also because I don't arch enough, the problem is also
that there the reception route was not appropriate to allow me to arch (Participant 1).

Taking into account the point in the game, I believe that I should have tried playing
with number 5 who is best for the attack. I had already set some balls to number 3 in the
centre, and so I supposed that their centre was going to be ready for 3, with which I tried to
hold the block in order to get out through zone 2 (Participant 2).

The analysis of the verbal protocols showed that the setters constantly
revised and modified the conditions that they considered during each game
action, often referring to complex conditions of which novice players are not
normally able to access (e.g., strength and weakness of opponent, centre
blocking action, lateral blocking action, etc.), issues that have previously
been dealt with by McPherson (1999a). The setters selected and used the
information that they considered relevant in each set action, coinciding with
the action indicated by McPherson (1994) in relation to elite volleyball players,
and with the findings of the study by Mesquita and Graça (2002) with an
elite male volleyball setter. The female players of our study were able to indi-
cate "why they did what they did", in the same way as what was shown in the
study by Mesquita and Graça (2002).

In spite of the high level of match knowledge, this became more sophis-
ticated on completion of the investigation. The concepts relative to condi-
tions and actions continued to be predominant in both setters on completion
of the intervention, although a decrease in frequency and variety of the con-

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dition concepts occurred. This decrease was produced together with an increase in the level of sophistication in the condition concepts. The intervention led to the setters being more selective and consistent in the conditions considered in each situation. The setters affected fewer aspects, although they produced more detailed and profound conditions in relation to these (“And also to co-ordinate with the centre, and for her to co-ordinate with me, because she has to try to change towards the outside” Participant 1; “I remembered that the Russians, in position 4 help a lot and leave a lot of space for 4” Participant 2). These coincide with the “Take The First” empirical test carried out by Johnson and Raab (2003), according to which fewer generated options result in better and more consistent decisions. The indication that “less is more”, pointed out by these authors, is also shown in our study. In the same way as that found in the study by McPherson (1999a) with expert tennis players, in our study the appropriate one-feature conditions was the most frequent in the setters on completion of the intervention.

The total regulatory concepts, in spite of their limited appearance, increased in both participants on completion of the intervention phase, demonstrating that the setters tended to express value judgements on their actions.

The conceptual structure shown in the verbal reports of the setters was updated during the intervention, double concepts increasing and being more frequent in both cases, while triple concepts decreased also in both cases. On completion of the investigation the setters considered fewer concepts but in a more consistent way, results that are in accordance with those obtained by Johnson and Raab (2003). In the study of McPherson (1999a) expert tennis players mainly produced highly consistent single concepts.

With respect to the second variable considered in our study, decision-making, the results showed that the setters studied improved their set decision-making during game play. The set was less predictable for blocking, leading to fewer players helping in the block. The predominance of double blocks in elite level volleyball, shown in numerous studies (Fröhner, 1997; Fröhner & Murphy, 1995; Glaive & Laborie, 1996; Moutinho et al., 2003; Zimmermann, 1995) was reduced in our study.

The decision-making of the setters studied was consistent and in accordance with their knowledge base, shown in the interviews. The decisions of the setters were based on sophisticated interpretation of the conditions, planning what actions to use according to the conditions, as shown in the studies of McPherson (1999a, 1999b, 2000) in tennis, and as McPherson and Kernodle (2003) point out, a characteristic feature of expert adult players.

The third variable taken into account in the study, the performance of the setters in game play, has increased on completion of the study. The programme
used was focused solely on the cognitive components of performance, and not on other factors that affect a setter’s performance (execution, physiological and emotional aspects, Janelle & Hillman, 2003). The improvement of procedural knowledge and decision-making seen in our study has also demonstrated an influence on the improvement of the set outcome. The results obtained coincide with the significant and positive correlations between the players’ knowledge and their game performance, observed in various studies (French & Thomas, 1987; Iglesias et al., 2005; McPherson & Thomas, 1989).

The relation that exists between the setter’s decision-making and game performance of the team was shown in the study by Moutinho et al. (2003), in elite masculine volleyball. This study showed that one of the aspects that differentiated winning teams from losing ones was the ability of the former to obtain a greater number of situations of one attacker against zero blockers (1X0) and one attacker against one blocker (1X1), from initial optimum conditions. Due to this, the winning teams, who attain better performance, also possess setters who are better in decision-making, and able to attain a greater number of 1X0 and 1X1 situations. The set, unlike other actions such as serve, attack or block is an intermediate and not finalizing action, through which a point is not pursued directly. However, sending the ball with precision and leaving the attacker in a good position in relation to the block are the main references in order to judge the performance of the set during game play.

The mentoring through reflection programme used in our study has proved to be viable at elite levels. The routine team training together with the application of this programme has proved itself to be effective in improving the analysis and response selection ability of elite female volleyball players, optimizing procedural knowledge, decision-making in game play, and match performance of the setters. With regard to employing these programmes and their use in teacher and coach training (Cushion et al., 2003; Mancini et al., 1987; More & Franks, 1996; Perron & Downey, 1997; Wendt & Bain, 1989), and in players in training levels, we are able to affirm the applicability of these programmes in the training of elite players.

REFERENCES


Manuscript submitted November 2005. Accepted for publication August 2007.