

ANALYSIS AND MODIFICATION OF VERBAL COACHING BEHAVIOUR: THE UTILITY
OF A DATA DRIVEN INTERVENTION STRATEGY

by

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ABSTRACT

Systematic observation instruments have been developed to provide valid and reliable information on key elements of effective instruction in the physical education and sport environment. The instruments used in research on verbal behaviour, however, (Lacy & Darst, 1985; Segrave & Ciancio, 1990) do not fully describe instructional style and, therefore, any behaviour modification based on such assessment is limited to the scope of the instrument. The Coach Analysis Instrument II (CAI (II), [More et al, 1992]), was designed to provide a more complete description of the verbal skills required for discriminative behaviour, such that this explicit information could be used as a means of analyzing and modifying aspects of ineffective behaviour.

The proposed study tested the utility of the CAI (II) as part of an intervention strategy designed to modify behaviour. Four coaches were observed and analyzed across twelve practice sessions. Coaches A, B and C received intervention feedback through CAI (II) data, where selected behaviours were highlighted for discussion, and video-tape evidence was used to illustrate discussion points. Coach D was provided with video-tapes of his own performance, and told to formulate and implement any of his own recommendations. The CAI (II) data is primarily quantitative, so target values were created for the different dimensions of verbal behaviour. This benefitted the coaches in interpreting their effectiveness and provided a reference to evaluate the magnitude of change. Written journals and audio-tape recordings were also utilized to promote insight into the complexity of verbal behaviour and the "human factors" (e.g., relationship with players, attitude to researcher) that affect behaviour modification.

Change was quantified according to the "organizational" and "instructional" components of the CAI (II). Interpretation of cumulative values for organizational effectiveness

revealed marked improvements in Coach A and B's behaviour following intervention, and marginal improvement in the clarity and conciseness of Coach C. Marginal change was also reported in the organizational behaviour of Coach D, although this was not maintained. Instructional effectiveness was assessed by time-series analysis, according to recognized criteria (Grant, Ballard & Glynn, 1990; Kadzin, 1978). There is evidence from each behaviour dimension that change can occur and be maintained as a result of exposure to the CAI (II) intervention strategy. However, this is clearly contingent upon the coach understanding what is asked of him, and remaining focussed and committed to changing these particular behaviours. The analysis of Coach D 's behavioural change suggests there are limitations to the sensitivity of discretionary viewing, as only two dimensions of behaviour were identified for, and resulted in, positive change. The results of this study provide support for Locke's (1984) contention that behaviour modification can occur by using data as direct feedback, as reinforcement, and as information in the form of recommendations. However, the study also illuminates several factors that can negate the modification and maintenance of verbal coaching behaviour.

TABLE OF CONTENTS

Abstract.....	ii
Table of Contents.....	iv
List of Tables.....	vi
List of Figures.....	vii
Acknowledgements.....	viii
Dedication.....	ix
1 INTRODUCTION.....	1
1.1 Statement of Problem and Research Purpose.....	2
1.2 Assumptions of Study.....	3
1.3 Limitations of Study.....	4
1.4 Delimitations of Study.....	4
1.5 Definition of Terms.....	5
2 REVIEW OF LITERATURE.....	7
2.1 Overview.....	7
2.2 Introduction to Teaching and Coaching Effectiveness.....	8
2.3 Systematic Observation.....	9
2.4 Systematic Observation and the Modification of Behaviour.....	12
2.5 Identification of Effective Verbal Coaching Strategies.....	16
2.6 Summary.....	24
3 COACH ANALYSIS INSTRUMENT (II).....	26
3.1 Overview.....	26
3.2 The Transcript.....	26
3.3 Data Collection.....	27
3.4 Software.....	31
4 METHODOLOGY.....	33
4.1 Subjects.....	33
4.2 Experimental Task and Apparatus.....	33
4.3 Experimental Design and Procedure.....	34
4.4 Organization of Data for Intervention.....	36
4.5 Validity and Reliability of Data.....	38
4.5.1 Validity of Data.....	39
4.5.2 Reliability of Data.....	40

TABLE OF CONTENTS cont.

5	RESULTS AND DISCUSSION.....	42
5.1	Overview.....	42
5.2	Data Analysis: Comparing the Different Coaching Sessions.....	42
5.3	Detailed Descriptive Analyses of Participating Coaches.....	50
5.3.1	Coach A.....	51
5.3.2	Coach B.....	63
5.3.3	Coach C.....	74
5.3.4	Coach D.....	87
5.4	Time-series Analysis: Interpretation of Behavioural Change.....	97
5.5	Trends in Behavioural Change of "Experimental" and "Control" Subjects	106
5.6	Validity and Reliability of Data.....	108
5.6.1	Validity of Data.....	108
5.6.2	Reliability of Data.....	111
6	CONCLUSIONS AND RECOMMENDATIONS.....	113
	REFERENCES.....	117
	APPENDIX A.....	150
	APPENDIX B.....	155
	APPENDIX C.....	160
	APPENDIX D.....	164
	APPENDIX E.....	206
	APPENDIX F.....	208
	APPENDIX G.....	217

LIST OF TABLES

5.1	Individual and group mean values of "instructional" behaviour for Defending (D), Crossing (C), Passing (P) and Shooting (S) session types. Values are reported for 13 categories of the CAI (II).....	122
5.2	Observer responses to "organizational" behaviour of Coach A across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.....	123
5.3	Individual and mean values of "instructional" behaviour for Coach A across the three study phases. Values are reported for 14 categories of the CAI (II)	124
5.4	Individual and mean values for the time Coach A spent in "organizational" and "instructional" behaviour across the three study phases.....	125
5.5	Observer responses to "organizational" behaviour of Coach B across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.....	126
5.6	Individual and mean values of "instructional" behaviour for Coach B across the three study phases. Values are reported for 14 categories of the CAI (II)	127
5.7	Individual and mean values for the time Coach B spent in "organizational" and "instructional" behaviour across the three study phases.....	128
5.8	Observer responses to "organizational" behaviour of Coach C across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.....	129
5.9	Individual and mean values of "instructional" behaviour for Coach C across the three study phases. Values are reported for 14 categories of the CAI (II)	130
5.10	Individual and mean values for the time Coach C spent in "organizational" and "instructional" behaviour across the three study phases.....	131
5.11	Observer responses to "organizational" behaviour of Coach D across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.....	132
5.12	Individual and mean values of "instructional" behaviour for Coach D across the three study phases. Values are reported for 14 categories of the CAI (II)	133
5.13	Individual and mean values for the time Coach D spent in "organizational" and "instructional" behaviour across the three study phases.....	134
5.14	Trends in the behavioural change of "experimental" and "control" subjects, from the baseline phase to intervention and follow-up phases.....	135
5.15	Inter-observer reliability coefficients for the instructional component. Percentage agreements are detailed for each compared session, and mean values are reported for each set of comparisons.....	136

LIST OF FIGURES

3.1	Hierarchical model of the coaching practice representing the activity segments and their drill components.....	137
3.2	Structure of the CAI (II)'s instructional component representing the five levels of data entry mapped onto the QWERTY keyboard.....	138
4.1	Experimental design representing the three study phases and their respective intervention treatments.....	139
5.1	Group mean values for each session type represented for 13 categories of the CAI (II).....	140
5.2	Group mean values representing the focus of coaching comments across session types. Note the "non-skill" focus is represented by its four constituent descriptors.....	141
5.3	Group mean values representing the focus of "skill" related coaching comments across session types.....	142
5.4	Group mean values representing the timing of "skill" related coaching comments across session types.....	143
5.5	Percent of comments that focussed on "skill" related information. Data are presented for Coaches A, B, C and D across the three study phases...	144
5.6	Percent of "skill" related comments that focussed on "instruction", feedback on "correct" performance and feedback on "incorrect" performance. Data are presented for Coaches A, B, C and D across the three study phases.....	145
5.7	Percent of "skill" related comments that were delivered "during", "post" and "stopped". Data are presented for Coaches A, B, C and D across the three study phases.....	146
5.8	Percent of "skill" related comments in which delivery was accompanied by a "demonstration". Data are presented for Coaches A, B, C and D across the three study phases.....	147
5.9	Percent of "skill" related comments in which reference was made to the "key factors" of the session. Data are presented for Coaches A, B, C and D across the three study phases.....	148
5.10	Percent of comments that were considered "inappropriate" in nature. Data are presented for Coaches A, B, C and D across the three study phases.....	149

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DEDICATION

This thesis is dedicated to my wife Marie-Claire.

To my best friend:

Thank you for the support and confidence you give me.

1. INTRODUCTION

Effective instruction is crucial to the pursuit of optimal sporting performance as the more effective the instruction, the more fully the instructor's role will benefit athlete performance. Such instruction requires the application of skills that range from the planning and organization of learning experiences, to the presentation of instructional and feedback information. Quantitative analysis of the instructional process promotes the objective assessment of instructional behaviour and provides information on variables deemed important in determining effectiveness. Systematic observation is an analytic process that can provide valid and reliable information on the key elements of effective instruction, and "Systematic Observation Instruments" can accurately describe instruction within the unique physical education and sport setting. Computer technology has enhanced the observation and analysis process as it allows for immediate summary and display of data which offers the potential for the timely return of meaningful feedback on the observed teaching/coaching performance. The utility of systematic observation instruments as an intervention strategy has application to those in supervisory positions within education and sport organizations.

While it is not yet possible to assess completely the full range of skills needed for effective instruction, we should endeavour to assess specific skills where and when we can (Siedentop, 1991). To this end, research into the verbal behaviour of teachers and coaches in the act of instruction is widespread and has used student achievement as the criterion variable and a variety of teaching activities as the predictor variable. Studies using event recording have identified the percent of contact time effective coaches give different verbal information (Tharp & Gallimore, 1976; Miller, 1992), and have assessed certain rates and ratios of verbal behaviours emitted by effective coaches (Lacy & Darst, 1985; Claxton, 1988; Segrave & Ciancio, 1990). As a result there is

much pedagogic and motor learning literature available to direct the skills of effective verbal behaviour (e.g., Siedentop, 1991; Schmidt, 1988; Magill, 1989).

1.1 Statement of Problem and Research Purpose

Although previous studies have identified the nature of verbal coaching behaviours, the observation instruments employed did not fully describe the instructional style that was used. Any strategy to modify coaching behaviour, based on selected and independent findings from such studies, fails to recognize the complexity of effective instruction. Effective instruction involves selecting and orchestrating appropriate behaviour, rather than mastering and applying a few 'generic' teaching skills (Schempp, 1992). Thus it can be argued that research on the effectiveness of behavioural intervention strategies to develop specific verbal behaviours is incomplete, as modification to verbal behaviour based on such assessment is limited to the scope of the observation instrument.

Acknowledging a need to expand upon the simple focus of a verbal behaviour (i.e., instruction, feedback, effort), a modified version of the Coach Analysis Instrument, (CAI (II)), was designed (More et al, 1992). The CAI (II) uses a hierarchical form of event recording that enables the observer to sequentially identify the nature of every comment delivered in the observation period at up to five levels (e.g., direction, focus, timing, delivery, emphasis). There is also a capacity to address the content of the practice session and the performance needs of the athletes. The quantitative data generated by the CAI (II) provides a more complete description of the verbal skills to be blended for effective behaviour, and thus equips the researcher or supervisor with explicit information on coaching behaviours to examine and possibly modify.

The purpose of the proposed study was to test the utility of the CAI (II) as a means of analyzing and modifying aspects of ineffective verbal coaching behaviour. It was hypothesized that the CAI (II) is a useful instrument for the objective analysis of a complete range of verbal coaching behaviours. Further, that this objective analysis of performance is a useful tool for changing verbal coaching behaviour in the desired direction.

CAI (II) data, as well as video-taped examples of the participant's coaching performance, were used to 'drive' intervention sessions designed to modify behaviour. Conclusions drawn from this study will provide important information on the utility of the CAI (II) for changing behaviour and its merit as a supervisory and/or self-assessment tool. Moreover, the qualitative aspects of this research will promote insight into the complexity of verbal behaviour, and the "human factors" affecting the modification of that behaviour.

1.2 Assumptions of Study

1. In light of the aspect of instruction being analyzed (verbal behaviour within an instructional segment of practice), it was assumed that contextual differences between teaching and coaching, for example, program goals, student interest and development, administrative support and accountability (Rupert & Buschner, 1989), could be ignored. As such the instructional skills of physical education teachers and sport coaches were viewed as synonymous, and both teaching and coaching literature was drawn upon in producing the rationale for this study.

2. Intervention sessions used CAI (II) data and video-taped evidence to promote the

modification of behaviour. It was assumed that this "snapshot" of past verbal behaviour has application to a subsequent setting. That is, that the analysis of behaviour promotes a prescriptive application for remedying observed behaviour.

3. As a major source of CAI (II) data is quantitative in nature, quantitative targets were detailed with which to evaluate behaviour and change. It was, therefore, assumed that a "target" criterion does exist to which coaches can be expected to strive.

1.3 Limitations of Study

1. Practical and temporal limitations meant that four coaches were observed across 12 sessions. Thus, only four baseline, intervention and follow-up measures were taken for each coach. Consequently, insufficient data was generated for analysis by statistical criteria. An extended longitudinal study would be preferable.

2. The context of the 12 sessions was designed to be as comparable as possible. However, regardless of design, coaching behaviour will remain somewhat contextual. Nevertheless, general "targets" with respect to this behaviour were given and coaches were encouraged to approximate these regardless of session content.

1.4 Delimitations of the Study

Effective verbal coaching strategies have been shown to vary according to contextual factors such as activity, age and skill level (Lacy & Darst, 1985; Claxton, 1988). To enable target strategies to be defined this study was delimited to the coaching medium of soccer, where all learners were of the same age, gender, and playing proficiency.

1.5 Definition of Terms

Presage Variables: any characteristic the teacher may bring to the learning environment: physical condition, ability to demonstrate, motives, attitudes (Dunkin & Biddle, 1974).

Context Variables: the conditions to which a teacher must adjust: students skill level, attitudes toward physical education, equipment available, class size (Dunkin & Biddle, 1974).

Process Variables: the actual activities of classroom teaching: teacher behaviour, pupil behaviour and the interaction between the two. For example, amount of activity time, teacher instructions and feedback, group and individual teaching (Dunkin & Biddle, 1974).

Product Variables: the intended or unanticipated outcomes of teaching: changes in physical abilities, cognitive and emotional development, attitudinal changes. These can be short or long term (Dunkin & Biddle, 1974).

Systematic Observation and Analysis: the process of collecting objective information on the instructional process, and analyzing that information in a meaningful way (Siedentop, 1991).

Event Recording: a technique of systematic observation which records the frequency of discrete coaching behaviours during an observed session. For example, the number of times a coach gives verbal feedback on a skill that has been performed correctly and the number of demonstrations a coach gives within a session. The data can be gathered continuously or intermittently during the session, and be expressed as a total count,

percentage, or rate per minute (Rink, 1993).

Duration Recording: a technique of systematic observation which records the amount of time a coach spends in particular functions of the coaching process. For example, management versus instructional time or the amount of time students are actively engaged in on-task behaviour. The data can be gathered continuously or intermittently and are expressed as a percentage of the total observed time (Rink, 1993).

Relative Frequency: the percentage of trials on which feedback is provided (Schmidt, 1988).

Augmented Feedback: the information provided, by an external source, to an individual after the completion of a response that is related to either the outcome of the response or the performance characteristics that produced that outcome (Magill, 1989).

Guidance Hypothesis: motor learning principle whereby a subject comes to rely too heavily on feedback, thus not attending to information processing activities critical for performance when feedback is not available (Schmidt, 1988).

2. REVIEW OF LITERATURE

2.1 Overview

Research into coaching effectiveness has increased over the last decade, and now analysis of planning, management, instruction and monitoring skills is occurring (Segrave & Ciancio, 1990). To direct this research, coaching effectiveness has drawn its theoretical framework from the teacher effectiveness domain where, in recent years, evaluation and analysis of teaching skills in the sport environment has steadily gained favour. Indeed, it is now suggested that teaching skills are a science and, therefore, amenable to systematic evaluation (Siedentop, 1991). The basis for this review, therefore, is provided by research into teacher effectiveness.

To establish the relation of the proposed study to knowledge already available, four distinct areas are addressed in this review. The first two sections establish the background to modern research on teaching and, in particular, the development of systematic observation techniques as a means of generating valid and reliable information on teacher process variables. Intervention studies are then cited in the third section to detail the necessary contingencies for the effective use of systematic observation in the analysis and modification of instructional behaviour. Finally, but of central importance to this study, the fourth section cites literature that present a rationale for those verbal coaching behaviours that are considered most effective for the athletes in this study. These behaviours were promoted in the intervention sessions designed to modify verbal coaching behaviour.

2.2 Introduction to Teaching and Coaching Effectiveness

In the 1950's the American Educational Research Association stated that after forty years of research into teacher effectiveness, during which a vast number of studies were carried out, few outcomes could be acknowledged that would advance teacher assessments or that could be employed in planning or improving teacher education programs (Dunkin & Biddle, 1974). The collection of teacher effectiveness data was described by Dunkin and Biddle (1974) as "*dust-bowl empiricism*" as there appeared to be no rationale for what aspects of teacher behaviour were to be examined. Rink (1993), declared it "*a blind search for the universal qualities of good teaching*".

After years of fruitless search for effective teaching methodologies (Medley, 1979), the late 1950's saw a major shift in teacher effectiveness research and the study of teaching was then organized to investigate the relationships between presage, context, process and product variables. By the 1960's and early 1970's, the process of teaching (those variables concerned with the actual activities of classroom teaching) became the focus of attention, and actual instances of instruction were observed. Researchers began to study what teachers did in the act of teaching, because teacher process variables (e.g., the skills of giving instruction, strategies for organization and provision of feedback) were shown to directly relate to teacher performance (Siedentop, 1991). For these skills to improve, Siedentop (1991) stated that, teachers should have their teaching observed, receive regular feedback based on these observations, have goals to reach, and be provided with the opportunity to improve.

The quality and accuracy of feedback given to the teacher is central to efforts to modify their instructional behaviour. A substantial body of evidence suggests that this feedback should be based on information gathered by systematic observation because

intuitive observation is unlikely to be a powerful enough tool to account for improvement (Siedentop, 1991). Therefore systematic observation, which is the foundation on which modern research on teaching has been built, should also be the foundation upon which teaching skills are developed.

2.3 Systematic Observation

Observation is a key element in efforts to improve teaching skills, and the turning point for teaching research was the development of strategies for observing teachers as they taught. However, the observation and data collection process had to be sufficiently objective to give a reliable account of teacher behavior, and not be susceptible to the distortion of suggestion and perception (Siedentop, 1991). This process was labelled the systematic observation of classroom behaviour, and it provided researchers with a method of obtaining objective, reliable and valid measures of instructional behaviour (Rink, 1993). Only through systematic observation will sufficiently reliable, accurate and consistent information be obtained to assess teacher effectiveness (Siedentop, 1991; Metzler, 1979).

Systematic observation permits a trained observer to use a set of guidelines and procedures to observe, record and analyze observable events and behaviours, with the assumption that other observers, using the same observation instrument, and viewing the same sequence of events, would agree with the recorded data. This process results in higher degrees of observer objectivity, and is not susceptible to the shortcomings of "eyeballing", anecdotal recordings and rating scales (Metzler, 1981). While originally developed for use in traditional educational settings, these instruments have, in recent years, been adapted to study instructional behaviour in the sport environment (Tharp &

Gallimore, 1976; Lacy & Darst, 1985; Markland & Martinek, 1988; Claxton, 1988; Segrave & Ciancio, 1990; Miller, 1992). To ease the process of data collection and analysis researchers have recently used micro-computers as the data collection tool (Carlson & McKenzie, 1984; Hawkins & Wiegand, 1989; Briggs, 1991; Johnson & Franks, 1991).

The data obtained from systematic observation and recording can serve as information by which teaching skills can be improved. For example, classroom management and discipline are teaching skills deemed important and they have become a main focus for research (Luke, 1989). Through systematic observation, successful management techniques have been identified and these are now changing how physical education lessons are taught (Siedentop, 1991). Systematic observation has also produced valuable information on the concept of academic learning time-physical education (ALT-PE, Metzler [1979]). ALT-PE is a unit of time in which a student is engaged in physical education content suitable to their stage of development. Studies have denounced many teacher's use of class time; particularly the lack of time they afford to productive student participation (Metzler, 1989).

Observation systems are designed to produce information on specific teacher and student variables, and the specific system chosen should be tailored to the goals of the particular observation (Siedentop, 1991). For example event recording, which gathers information relating to the frequency of event occurrence, may, in certain instances, be more informative than assessment by duration recording. Once the technique(s) best suited to achieve the observational goals is identified, a means and format for data collection must be chosen. Depending on the teacher behaviour being observed and the resources available to assist data collection, collection can occur in real time or post event (providing the session has been recorded on either audio-tape or video-tape), and

can be achieved through hand notation or computer-assisted coding.

One of the first instruments used to observe instructional behaviour was the Flanders Interaction Analysis System (FIAS) (Flanders, 1960). It was designed to analyze verbal teaching behavior under three major headings: teacher talk, student talk and silence/confusion. Following this lead within educational research, interactions in the physical education environment were analyzed using similar methods. Such were the strengths of FIAS that several of the instruments developed for use in physical education were modifications of FIAS (Dougherty, 1970; Cheffers, 1972). Since the inception of systematic observation in physical education, numerous instruments have been designed to record information on different aspects of teacher behaviour. Darst, Zakrajsek and Mancini (1989), provide a compilation of observer systems specific to the physical education and sport environment.

Tharp and Gallimore (1976), were amongst the first to report observational data on coaching behaviour. They devised a 10-category system to observe U.C.L.A. basketball coach, John Wooden. This pioneer study sparked a host of similar studies designed to challenge and compare their findings (Lacy & Darst, 1985; Claxton, 1988; Segrave & Ciancio, 1990). Other instruments were developed to report information on varying areas of coaching effectiveness (Rushall, 1977; Sinclair, 1983; Franks et al, 1986; Markland & Martinek, 1988).

Franks et al (1988) developed the Computerized Coaching Analysis System (CCAS) in an attempt to improve existing techniques for systematic observation in sport. One part of the three component CCAS was the Coach Analysis Instrument (CAI): a computer-aided coaching system designed to analyze the verbal behaviour of the coach when organizing and instructing within a defined segment of practice. As well as producing a thorough

quantitative analysis profile, reflective of every comment made during the observed practice, the system also reflected the content of the practice session and the performance needs of the athletes. Efficiency of the data collection method and the perceived utility of the instrument were also considered (see Johnson & Franks, 1991). The CAI was subsequently updated (CAI (II), More et al [1992]) to address the recommendations of Partridge and Franks (1991).

A systematic observation instrument must be sufficiently reliable that it can be assumed that changes in behavior are in fact due to the teacher/coach, and not due to the observer. Pilot work (More et al, 1992) to test the reliability of the CAI (II) provided encouraging results in this regard. Intra-observer reliability coefficients far exceeded the 80% acceptable threshold (Rushall, 1977) in all dimensions of the instrument, indicating that once the instruments operational definitions have been learned, observers attain a consistent level of coding using the CAI (II).

2.4 Systematic Observation and the Modification of Behavior

"Having the opportunity to practice relevant skills with the provision for systematic feedback is the quickest way to develop skills in teaching. For a long time we have known this to be true for sport skills. It also appears to be true for teaching skills."

Siedentop (1991)

Can instructional behaviour be modified? A review of the pertinent literature would suggest yes, given the appropriate contingencies. For example, Rink (1993) states that change can be expedited if attention is on one process variable, and only a few teaching behaviors are selected for change at any one time. Siedentop (1984) states that

enhancement in teaching performance can occur if the attention of the supervisor/educator is reinforcing to the trainee/coach. Counsel is given by Rink (1993), however, that changing behaviour is not easy, even when teachers are aware of both their behaviour and the changes they want to make.

Pedagogic literature of specific intervention studies provides evidence that behavior can be modified/changed through systematic analysis (Borg, 1972; Werner & Rink, 1989; Grant, Ballard & Glynn, 1990). Initial study into pre-service training indicated that traditional supervisory methods could effect change on students' stress levels, ethics, appearance and confidence, but hardly any in the development of pedagogical skills (Paese, 1984). However, subsequent work carried out at Ohio State University (cited by Paese, 1984) showed that when their supervisors utilized systematic observation and goal-setting, those students could not only attain modification goals set by their supervisors, but they were able to maintain them at approximately 75% of the level achieved during intervention. Mancini et al (1985), also reported that, based on observations of 201 preservice teachers, teaching behavior could be altered if supervisory feedback included the systematic analysis of their behavior.

As those participating in this study had coached for several years, it was important to ascertain the success of intervention strategies designed to change the behaviour of experienced teachers/coaches. A review of intervention studies dealing with those experienced in instruction was undertaken but failed to find any studies relating specifically to the coaching environment, or to physical education teachers, after 1990. Nevertheless the studies to be reported generally support the contention that behaviour can be modified.

Whaley (1980) reported feedback on teaching performance to be successful in improving

a variety of behaviours, and proposed that it may be an unobtrusive method of increasing ALT-PE. Graphic feedback on ALT-PE categories was given to four high school physical education teachers with the expectation of improving their behaviour. Whaley (1980) concluded that, within the limitations of the study, no effect was found on the amount of content time, engaged time of students, or motor responses of students. The changes reported in ALT-PE were associated with changes in activity rather than with intervention. It would appear that an intervention strategy that is solely graphic in nature is insufficient to create an increase in ALT-PE.

Event and duration recording was used by Ewens (1981) to assess the verbal behaviour of 8 matched pairs of experienced elementary teachers. Following a baseline phase, where no significant differences between control and experimental groups were reported, planned intervention packages of self-assessment and goal setting strategies were designed to increase positive specific feedback, corrective specific feedback, and the acceptance of student ideas in the experimental group. Results showed partial success as a significant difference was found between groups in all but the acceptance of student ideas. Similarly, only partial success was reported by O'Sullivan (1984), when assessing the effects of an in-service model of supervision on activity time, positive learning environment, and student involvement. Feedback to teachers was provided in a series of conferences where strengths and weaknesses were discussed and strategies for improvement examined. O'Sullivan (1984) concluded that improvement in teacher performance could only occur when the environmental context within which teachers teach becomes supportive of their efforts towards instructional improvement. She implied that the intervention model would remain somewhat ineffective until teachers, in service, had incentive to improve and those at managerial level were held accountable for student learning. Clearly, this has inference for the context in which any intervention package or strategy is given, and the importance the participating

teachers/coaches attach to the results of their behaviour.

Grant, Ballard and Glynn (1990) conducted a study on the amount of motor-on-task behaviour exhibited by the students of three experienced physical education teachers. Feedback was given to two of these teachers in the form of data generated by the Ohio State ALT-PE observation system. Their findings were that the intervention teachers were able to respond to feedback and modify their lessons so that the amount of student participation was increased. The results showed that these teachers increased the motor-on-task behaviour of their students by 15%, while the third teacher, not receiving feedback, showed no substantive differences in behaviour. An interesting feature of their methodology was the inclusion of interviews with the teachers to gain an insight into their perceptions of trying to modify behaviour. These interviews clearly revealed the teachers were unaware of their initial levels of behaviour, and therefore insensitive to a need for change.

In conducting a single-subject analysis on the verbal behaviour of an experienced physical education teacher, McKenzie (1981) analyzed three distinct and independent verbal behaviours: the use of "OK", the use of first names, and the use of positive specific feedback. Direct information feedback and goal-setting were the intervention components designed to modify and maintain improvement in these behaviours. Substantial positive change in the rates of all three behaviours was shown during intervention: OK's were reduced by 93%, the use of first names increased by 478% and the use of positive specific feedback increased by 1144%. Moreover, in a 12 month follow-up test, the use of OK's reduced further and, while decreasing slightly, the use of first names and positive specific feedback remained above that of baseline. While the behaviours targeted for change may appear rather cosmetic, and be somewhat independent of one another, the results suggest behavior modification is possible.

The modification of instructional behaviour requires the systematic collection of valid and reliable information (Siedentop, 1991), and systematic observation instruments have been presented as the means by which sufficiently reliable data can be gathered to assess behaviour. The modification (or learning) of behaviour can then occur by using the data as direct feedback on teaching performance, as reinforcement of appropriate performance and as information in the form of directions and/or recommendations (Locke, 1984). This feedback process can oversee the "fine-tuning" of existing instructional skills, as well as the understanding and acquisition of new skills.

Ocansey (1988), proposed a five component guide to effectively oversee the modification of behaviour. The components were as follows:

- a) Establish a baseline of teaching performance. Three observations are sufficient to establish a baseline, unless the data fail to show stability.
- b) Select behaviours that need remediation or maintenance based on the baseline data.
- c) Specify strategies to facilitate the remediation or maintenance of targeted behaviour(s).
- d) Establish a criteria for evaluating performance of each targeted behaviour.
- e) Indicate commencement and completion dates for the specified targeted behaviour(s).

These components provide an excellent framework to monitor the modification of behaviour; a framework that is to be adopted in this study.

2.5 Identification of Effective Verbal Coaching Strategies

McKenzie, Clark and McKenzie (1984), stated that *"an instructional strategy can be viewed as a particular arrangement of antecedents and consequences designed and implemented by a teacher to develop and control the behavior of learners"*. However,

there are no stereotypical coaching strategies that will lead to success in all coaching environments, but rather that effective coaching behaviour is flexible and dependent on many aspects of the coaching environment (Cratty, 1983). The following section reviews literature on behaviours that can be analyzed through the CAI (II), citing literature on effective verbal strategies from a range of learning contexts and identifying those coaching behaviours acknowledged as most effective for the age and ability of the athletes involved in this study.

Performance related feedback are interactions directed at the athletic performance of the learners while behavioural feedback are interactions directed at the organization and social behaviour of the learners. "More effective" physical education teachers spend more time instructing the proposed content of the lesson and providing performance related feedback than do "less effective" teachers (Phillips & Carlisle, 1983). Intuitively, this suggests that more effective teachers spend less time organizing the class and providing behavioural feedback. In respect to these findings, Mustain (1990), suggests that a necessity for increased amounts of behavioural feedback may reflect a lack of effective planning or result from poor organization and instruction. The implication for coaches is that they must seek solution to the origin of the problem, rather than increase behavioural feedback to maintain the learning environment. Doing so will allow them to spend a greater proportion of time giving performance related instruction and feedback.

Schmidt (1988) stated that most researchers agree that feedback about the proficiency of an individual's response is the most important variable (except for practice itself) for motor learning. As coaches, by nature of their roles, are responsible for much of the augmented feedback received by athletes as they perform, it is crucial that the feedback they give reflect effective strategies identified in the literature. Current motor learning

literature states that augmented feedback produces learning, not by the reward or punishment of responses, but by the provision of information about actions from a previous trial, and by suggestion of how to change subsequent trials (see Schmidt, 1988). Augmented feedback should, therefore, have informational content to direct the learner's attention to specific aspects of performance, as the allocation of attentional capacity is an important feature of skill acquisition (Magill, 1989).

Coaches, therefore, should ensure that their instructional feedback goes beyond simple reward or punishment (e.g., "Nice job" or "Not that way") and include some informational content (e.g., "Nice job, but get more pace on the ball"). The information should reinforce the specific aspect(s) of performance that are "correct", or should identify discrepancies between actual and desired response, so that "incorrect" aspect(s) of performance can be modified. Thus, regardless of the quality of athlete performance, feedback should be enhanced by the inclusion of informational content, and comments that have no informational content that is, general and non-specific, should be limited.

While widely accepted that inclusion of information will provide for effective feedback comments, studies concerning the nature of this information are inconclusive. Markland and Martinek (1988), analyzed the behaviour of high school varsity coaches and noted that the majority of feedback given by more successful coaches was "corrective" in nature, given in reference to some error in performance. Tharp and Gallimore (1976), studied U.C.L.A.'s highly successful basketball coach, John Wooden, and found that "corrective" feedback, in the form of "scold/reinstructions" outweighed "praise" in the ratio of 2:1. Claxton (1988), compiled data on nine more or less successful high school tennis coaches and found that the more successful coaches indulged in less praise than less successful coaches. These studies would indicate, therefore, that effective coaches (as measured by their winning records) direct a large

proportion of their feedback information towards aspects of performance that are performed incorrectly or inadequately.

Conversely, Miller (1992), analyzed the behaviors of youth soccer coaches and noted that the "praise" to "scold" ratio was 6.7:1.5, indicating that these coaches spent a much higher proportion of time reinforcing correct behaviour than scolding incorrect behaviour. Lacy and Darst (1984), when analyzing winning high school football coaches, observed that, across the entire season, praise was used over twice as much as scold. Segrave and Ciancio (1990), compared the profile of successful Pop Warner football coach with that of John Wooden (discussed earlier) and found that the former, Beau Kilmer, used twice as much praise as did Wooden.

The data from these selected studies suggest a differential use of feedback strategies commensurate with the age and ability of the athletes involved. In explaining Wooden's sparing use of praise Tharp and Gallimore (1976), state that *"with players who are highly motivated towards specific goals, John Wooden did not need to hand out quick rewards on the practice court"*. With athletes at the elite collegiate level praise on the floor becomes virtually unnecessary. However, those that will form the athlete population in this study are neither at that age or ability level. Interestingly, Tharp and Gallimore (1976), note *"for students less motivated than Wooden's players social reward may be necessary as incentive to keep them in reach of instruction, modelling, feedback, and other activities that do produce learning"*. Thus, for those involved in this study an effective feedback strategy would be to concentrate on feedback that will reinforce correct performance, rather than use negative behaviors to stimulate the athletes. This is not to suggest that coaches eliminate feedback on incorrect performance, but rather develop a feedback strategy that favours providing information to reinforce correct actions (Sinclair, 1989).

The need for coaching comments to include informational content seems conclusive. Further, it would seem appropriate that the information given should pertain specifically to the skills and concepts that the drill is designed to improve. Information should specifically relate to the focus of the movement tasks being attempted (Mustain, 1990). For example, in a soccer drill designed to improve the skill of crossing, the coaching information should concentrate on the player's ability to gain the required pace, direction and flight of ball. The information should concentrate on the skill's mechanical and decision making requirements and not dwell on information regarding ball reception or dribbling technique prior to cross delivery. While other aspects of performance will, instinctively, be commented upon, it is clearly desirable that the majority of skill related comments concentrate on the key factors of the drill. To this end the decision to concentrate on specific "key factors" should occur prior to the practice, to help ensure the coach's, and consequently the learner's, attention is focussed on them.

In addition to being informational, skill related feedback must also be accurate, yet not all teachers possess the ability to discriminate between actual and desired performance (Siedentop, 1991). Inaccurate evaluation of performance would clearly be inappropriate, and damaging to skill acquisition, so coaches must develop sufficient knowledge to accurately diagnose athletic performance.

If the movement task being attempted has low attentional demands that can be handled within capacity limits, then the information processing system can effectively attend to other tasks and stimuli at the same time. This, however, is not true if the task requires full allocation of our attention (see Magill [1989], for Attention Capacity Theories). This feature of attentional capacity has clear implications for the coach. Firstly,

consideration must be given to different approaches of coaching high and low complexity skills that is, should the skill be practiced in its entirety or should parts of it be practiced? Secondly, consideration must be given to the timing of any verbal instruction or feedback. Because learners can only effectively process a limited amount of information at once, little benefit can be derived from coaching information if the task demand itself consumes most or all of the learner's attentional capacity. Markland and Martinek (1988), noted that successful high school volleyball coaches gave more immediate, terminal feedback than did less successful coaches, the inference being that successful coaches provide the majority of their feedback once the learner is free from the immediate attentional demands of performance. "Immediate terminal" feedback was defined as *"feedback provided after the completed motor skill attempt and before participation in one or more intervening motor skill attempts"*. This temporal location of feedback is supported in the motor learning literature. Schmidt (1988), states that during the delay between the learner's response and the provision of feedback, the active learner is engaged in processing information about the response. The learner's perception of the movement is thus retained so that when augmented feedback is received the two can be associated.

The frequency with which the athletes receive feedback is also an important feature in determining the effectiveness of verbal behaviour. Practice with the athletes receiving feedback after every performance (a schedule referred to as 100% relative frequency) has been shown to aid performance during acquisition, but to degrade learning relative to other feedback schedules (Swinnen et al, 1990; Winstein & Schmidt, 1990). These findings provide empirical support for the Guidance Hypothesis which suggests that immediate performance is facilitated because the subject is guided toward the target performance by the feedback, but that long term retention (i.e., learning) is degraded because the athlete will rely on these guidance properties to perform correctly. The

findings also provide support for Schmidt's (1988) contention that relative frequency should be large in initial practice to guide the athlete to enhanced performance, but systematically smaller as practice continues, and so force the learner to engage in other processes to aid retention (e.g., detect ones own errors, attend to sensory feedback).

In the unique and dynamic setting of a team-sport practice, it is unrealistic to expect coaches to monitor the frequency with which they give feedback to individual athletes. A manageable schedule, therefore, would see the coach give many instances of individual feedback early in the practice drill but, thereafter, reduce the number of individual feedback comments and provide feedback judiciously to the whole group.

In teaching skills, particularly new skills, often the best way of communicating information is through a demonstration. Demonstrations (commonly referred to as modeling) can aid the learning of skills by accurately and skilfully portraying the critical features of the skill being taught (Magill, 1989). These demonstrations can occur before practice, to give the learners "the idea of the movement" (Gentile, 1972), or during practice, to confirm and extend the learner's understanding of the task. McCullagh (1987), noted that provided the person is skilled in the act of demonstration the athletes will learn from their coach or from one of their peers.

Demonstrations benefit learning by creating a representation of performance that can be copied. Cognitive mediation theory (Carroll & Bandura, 1987), suggests that the information conveyed in the demonstration is extracted via selective attention to the critical features of performance. This information is then transformed into symbolic codes that are stored in memory as internal models for action. This internal model is then, after rehearsal and organization, turned into a physical action providing the required motivation and physical abilities are present. The cognitive representation not

only guides the learner's response production, it also provides the standard against which feedback is compared.

By creating a representation of physical relationships (e.g., body parts, forces, speeds) demonstrations enhance the learner's understanding of the skill to be learned. Both slow motion and real time demonstrations are useful, although real time demonstrations are more important in later stages to help the learner acquire the speed and flow characteristics of the movement (Scully, 1988). The demonstration should be accompanied by succinct verbal instructions, aimed at ensuring the learner's attention is directed to aspects of performance that will yield benefit (Mawer, 1990).

The theoretical literature stresses the importance of demonstrations being skilfully performed, but does not indicate the extent to which demonstrations should focus on "correct" or "incorrect" performance. Studies of coaching behaviour, however, have shown that successful coaches tend to give more demonstrations of correct performance than of incorrect performance (Lacy & Darst, 1985; Claxton, 1988; Segrave & Ciancio, 1990). Results suggest that demonstrations account for between 3.4% and 6.1% of all coaching behaviours, and that demonstrations of correct performance outnumber those of incorrect performance by approximately 3:1. The studies by Lacy and Darst (1985), and Segrave and Ciancio (1990), also showed that the use of demonstration decreased as the season progressed (3.3% to 1.8%, and 7.4% to 2.7% of all behaviors respectively), while Miller (1992), working with youth soccer coaches found no such drop off. This latter study could perhaps indicate, that with younger athletes, there is a greater need for demonstrations to enhance the coaching process.

This review of literature has centered on the effectiveness of comments considered to be skill related (i.e., according to the CAI (II)). However, those comments considered non-

skill related, that is organizational, behavioral, effort or non-specific, also contribute to the quality of the learning environment. With the exception of organizational comments, all non-skill comments should carry a measure of intent to motivate the learner towards the coach's demands. For example, the coach may use an enthusiastic tone to generate more effort, or a forceful tone to deal with an incident of misbehaviour. Both of these strategies increase the likelihood of the learner becoming more productive.

The coach is the individual responsible for establishing the climate of the learning environment. While there is no empirical support that a positive climate (i.e., friendly, reinforcing) enhances student learning, it is clear that a negative climate is detrimental to learning (Soar & Soar, 1979). It is, therefore, apparent that when maintaining productive behavior, demanding effort or providing motivation, the majority of comments should be positive in nature (i.e., constructive, reinforcing) to increase the effectiveness of the learning environment.

2.6 Summary

Research into coaching has been able to draw on the physical education pedagogy literature in much the same way as research in teaching physical education has drawn upon the findings of mainstream educational research (Hastie, 1992). As a result, all instructors within the sport environment have available to them an extensive and growing knowledge base from which to make decisions about their practice. However, despite research identifying practices of effective instruction that are clearly linked to indices of student achievement, and studies producing an optimistic data base for the modification of behaviour, little effort has been made to make behaviour modification

the central issue in most teacher and coach education programs. Siedentop (1984) contends that this is because "*the old argument between education and training is currently being decided in favour of education*", despite there being little evidence to support the cognitivist position that education provides a deeper, broader and more lasting teaching ability.

If teacher and coach programs are to consider intervention methods as part of "training" oriented education and/or certification, continued study into the utility of systematic observation and the modification of behaviour is required. Therefore, the reason for undertaking this study was to test the utility of the CAI (II) as a means of providing feedback on verbal coaching behaviour, and as a means of quantifying behavioural change and maintenance. The findings of this intervention study would then enhance coaching effectiveness data, and serve as practical recommendations to coaching and/or sport organizations for the training and maintenance of coaching excellence. The CAI (II) was chosen as it is an enhanced system, sensitive to the balance and orchestration of different of verbal behaviours.

3. COACH ANALYSIS INSTRUMENT (II)

3.1 Overview

A coaching practice can be represented as a hierarchical model with a continuous time-line of activity segments (see Figure 3.1). Each segment is composed of a number of drills that are devoted to coaching the skills and concepts of that particular segment. The CAI (II) was designed to collect and analyze data on the organizational and instructional components of these drills. Data is collected from a video-taped record and transcript of the coaching performance, and a copy of the coach's written practice plan. This plan is a one-page outline of the drill setting, listing the "key factors" to be addressed in each drill of the chosen practice segment.

INSERT FIGURE 3.1 HERE

3.2 The Transcript

The transcript of each drill is split into two components: organizational and instructional. The organizational component consists of information gathered on the coach's verbal behavior while explaining the organizational goal(s) of the drill. As such, all preliminary comments relating to the organization of the drills are grouped and separated from the instructional comments.

The instructional component consists of all coaching information other than that which organizes the drill (e.g., skill and behavioral instructions, feedback). To facilitate data

collection the transcript must be further separated within the instructional component to definable comments, as they are considered to be the fundamental units of measurement. A separate comment is defined as

"any statement made by the coach, that is of single focus, with a particular target audience, that can stand on its own (i.e., it can be a single word or several sentences). A change in either the target audience, the focus, or the timing of delivery signals the end of one comment and the beginning of the next. However, instructions given by the coach in order to begin and end an intervention (e.g., "Stop and relax", "OK, now off you go"), or instructions relating to the repositioning of players during the demonstration of a coaching point (e.g., "Dougie, go to your starting position", "Kevin, go to where you were"), should not be viewed as separate comments but as incidental to, and therefore part of, the main comment".

More et al (1993)

3.3 Data Collection

Data collection proceeds following the division of the transcript into organizational and instructional components.

Information on the organizational component of the drills is generated by a series of questions that determine the clarity and effectiveness of the coach's verbal communication while explaining the organizational goal(s) of the drill. The observer responds "Yes" or "No" to these questions after the organizational comments of the drill have been viewed.

1. Did the athletes understand the organization of the drill?
2. Were the goals of the drill clearly stated?
3. Was the organization of the drill delivered in a concise and efficient manner?

Once all instructional comments made during the drill have been viewed and coded, four questions determine the realism of the chosen drill,

1. Was the drill design representative of "game" situations?
2. Did the coach use an adequate area?
3. Did the coach use an adequate number of athletes?
4. Did the drill match the goals set?

and three questions are presented that relate to the athlete's performance.

1. Did the athletes work enthusiastically throughout the drill?
2. Did the drill challenge the athletes?
3. Did the athlete's performance appear to improve because of the information given by the coach?

The structure of the instructional component is shown in Figure 3.2.

INSERT FIGURE 3.2 HERE

Level (0)

Each separate comment is acknowledged the instant it is made by pressing the space bar key.

Level (1)

The observer records the direction of the comment. This refers to whether the comment is directed toward a particular "individual(s)" or toward a "group" of athletes within a drill.

Level (2)

The observer determines the focus of the comment which is either "skill" or "non-skill" related. If the comment is skill related, it is described as: (a) "correct", if it makes reference to a skill that has been performed correctly by the athlete; (b) "incorrect", if it refers to a skill that has been performed incorrectly by the athlete; or (c) "instruct", if it refers to information relating to how a skill should be performed. This information is not influenced by the quality of athletic performance.

If the comment is "non-skill" related it is described as: (a) "non-specific", if the comment has no specific focus, and does not direct the athlete to attend to particular components of their performance; (b) "effort", if it refers to the intensity of athlete(s) performance during the drill; (c) "behavior", if it refers to the athlete's conduct during the drill; or (d) "organization", if it details how the drill should function.

Level (3)

The data recorded at this level is dependent on the focus of the comment previously described. If the comment's focus is "skill" related then the observer determines the timing of comment presentation. This is: (a) "during", if the comment is made while the athlete(s) are performing a drill or a particular skill within a drill; (b) "post", if the comment is made after the athlete(s) performance has been completed; or (c) "stopped", if the comment is made once the coach has deliberately stopped the performance ("frozen the action") during the drill.

If the comment's focus is considered to be "non-skill" related the intent of the comment is addressed. The intent of "non-specific", "effort" and "behavior" comments are (a) "affective", if the comment has a motivational effect on the athlete(s) or (b) "non-affective", if the comment has no motivational effect on the athlete(s). Information on intent is not gathered if the comment's focus is "organization".

The comment data collection process now continues only if the comment was coded as being "skill" related.

Level (4)

The observer describes the comment presentation by recording the delivery of the comment. The observer codes "demonstration" if the delivery included a real time or slow motion display of performance, or an illustration of changes in the drill requirements. If a demonstration is not included the observer will code "no-demonstration".

Level (5)

After recording the delivery, the observer records the emphasis of the coach's comment. The observer codes "key factors" if the comment includes reference to the key factors identified by the coach in the practice plan outline (reference to these need not entail use of the specific terms outlined). If no reference to key factors exists the observer codes "non-key factors".

In addition to these levels of data collection the appropriateness of each comment is recorded. If the comment includes erroneous technical or tactical information, contains an incorrect expectation or evaluation of the athletes performance, or is unfair and/or

irrelevant, then an "inappropriate" descriptor is tagged to that comment data entry. Unless this is done, each comment entry is considered appropriate by default. Determining the "appropriateness" of a comment may appear contentious and dependant on individual coaching philosophy. However, collaboration between the respective individuals (e.g., supervisor and coach) will allow for discussion and remediation.

The CAI (II) collects observational data according to the hierarchical structure described and analyses the respective data. As well as raw data files, (a) Observer responses to the Question/Answer matrix, (b) Summary comment data, and (c) Tag file of comments considered "inappropriate" can also be presented (Refer to Appendix A for samples of these outputs). Its utility as a supervisory and/or self-assessment tool is central to its design and development and, like most observation instruments, it is a non-evaluative tool. It simply collects data to describe the instructional behavior that has occurred. Evaluative judgements can only be made through knowledgeable interpretation of the research literature (detailed in Section 2.3) pertaining to similar learning contexts. To this end, the data collected can indicate the degree to which a coach is working within a desirable framework for that instructional setting.

3.4 Software

The CAI (II) software is written in the application language Turbo Pascal using an IBM compatible microcomputer, is portable across IBM compatible machines, and may be operated from either the hard or floppy disc drives. The software is menu driven and enables an observer to code verbal comments made by the coach using the QWERTY keyboard. Attention was paid to the human-computer interface so that coding, which

occurs at five levels, is suitably mapped onto the QWERTY keyboard.

Data Collection Software

The data collection software permits user data entry through the QWERTY keyboard according to the outlined structure. Initially, file header information (e.g., coach, setting, number and type of drills) is recorded for data identification purposes. Following selection of the appropriate drill, the observer answers the initial explanation questions based on his/her viewing of the practice organization. The respective comment data are then entered serially before data collection is concluded by the observer answering the realism and athlete performance questions. This collection process is repeated until all selected drill types have been appropriately recorded.

Comment data are automatically written to file as they are collected. This is achieved by maintaining an active window of entered comments (five comments are actively retained in the window, the first comment being written to file once the sixth comment has been entered and so on). Entries within the active window can be edited on-line using the "Back-up" key, and comments committed to file can be subsequently amended through any text editing facility.

Data Analysis Software

The data analysis software processes the data collection file and checks for syntactic and logical errors. If errors are found, the observer is presented with an informed error message(s), including its location within the file. Summary comment data, which is further broken down to "skill" and "non-skill" components on a drill by drill basis, are provided by the analysis software and can be directed to the screen and/or to file for subsequent print out.

4. METHODOLOGY

4.1 Subjects

Four male soccer coaches (A, B, C and D) volunteered for the study. All possessed Level 3 (Theory) certificates from the National Coaching Certification Program, and were working with Under 15 and Under 16 Girls "Metro" teams (the highest calibre) in Greater Vancouver. This research was carried out according to the ethical guidelines laid down by the University of British Columbia (U.B.C.).

4.2 Experimental Task and Apparatus

In the course of 12 typical practice sessions (e.g., warm-up, skill activity, conditioning, game and other activities) the verbal coaching behaviours of the four coaches were observed and analyzed. Observation occurred while they conducted a "skill activity" segment of each practice session. During this time the coach was engaged in a range of skill and behavioural interactions, demonstration, feedback and closure episodes. Skill and behavioural interactions are those directed at the athletic performance and the social behaviour of the learners respectively. Therefore, in the week preceding the start of the study the coaches were given specific details for the 20 minute (approximately) segment they were to coach. Each coach was given the same content: four sessional themes that were to be repeated three times. The session themes were Defending, Crossing, Passing and Shooting, and included two drills that were designed to develop specific technical/tactical concepts of team play. The drills were selected from U.B.C. coaching staff materials. The details each coach received consisted of a written practice plan that outlined the drill setting and the "key factors" that should be addressed in

each drill of the session. These details are presented in Appendix B. It was left to the individual coach to familiarize himself with the content of this plan, and to be responsible for the organization, instruction and monitoring of the two drills.

The practice was video-taped using a Panasonic AG-170 VHS Camcorder, with the coach wearing a Samson Stage II VHF Wireless microphone. The researcher was positioned discreetly at the side of the practice area, and ensured that the camera angle captured all athlete behaviour. The verbal coaching comments were recorded and later analyzed using the CAI (II) Software. It should be noted that all observation took place within the coach's prevailing coaching schedule. That is, observation occurred in the "natural setting" and was not the product of the experimental design.

4.3 Experimental Design and Procedure

The experimental design, a multiple baseline interrupted time series with equivalent no-treatment control time series (Cook & Campbell, 1979), is illustrated in Figure 4.1.

INSERT FIGURE 4.1 HERE

As illustrated, there were three phases to the study.

Phase 1 - Baseline: The four coaches were observed and analyzed as they coached the specific content in four consecutive practices. These data created a baseline measure of

each coach's verbal behaviour.

Phase 2 - Intervention: Following the fourth session, the researcher arranged a meeting with each coach. This (and subsequent intervention meetings) occurred in the researchers laboratory at the University of British Columbia or in the coach's home; whichever was convenient. It was audio-taped using the inbuilt microphone of a standard Sony audio-cassette player, and the researcher and coach viewed the data and video-taped examples together.

Coaches A, B and C received feedback on their verbal coaching behaviour through quantitative CAI (II) data and through video-taped examples of their performance. Selected features of their behaviour were highlighted for discussion, and video-tape evidence was used to illustrate discussion points. Therefore prior to meeting with coaches A, B and C, the researcher analyzed their respective baseline data and organized it so that it could be presented to the coach (The organization of the data is detailed in Section 4.4). During this first intervention session collaboration with each coach occurred in order to produce recommendations for the modification of selected behaviours. These recommendations included strategies to facilitate remediation of target behaviours. Coach D was shown the video-tapes of his own performance, but not the data derived from the CAI (II) analysis. He was told to focus on his verbal coaching behaviour when organizing and instructing the content of the drills, and asked to formulate and implement any modifications to his behaviour that he felt necessary. Also at this time, each coach received a full description of how the study would proceed.

Coaches A, B and C then conducted another four practice sessions (i.e., Sessions 5, 6, 7 and 8). These sessions were an opportunity to institute the recommended modifications to their behaviour. Following Sessions 5, 6 and 7, each coach received an intervention

similar to that which they received after Session 4. Discussion during these interventions acknowledged the preceding session's data, dealt with the consolidation and/or modification of behaviour according to progress toward the target behaviours, and reinforced the discussion points made during the first intervention. The nature of these intervention sessions was specific to each coach and the progress they had made, and each is fully described in Section 5.3. Coach D conducted his next four practice sessions and, following Sessions 5, 6 and 7, viewed the video-tape of that respective coaching performance.

Phase 3 - Follow-Up: All coaches then conducted their last four practice sessions (i.e., Sessions 9, 10, 11, and 12), to allow follow up data to be collected. Discussion between researcher and coach, regarding the coach's behavior in this phase was avoided, and the data was not made available to the coaches until after the study was finished.

4.4 Organization of Data for Intervention

Three main sources of information were available to the researcher from the data: (a) Responses on Question/Answer matrix, (b) Summary comment data, and (c) Tag files of comments considered "inappropriate", and each source assisted in providing feedback to the coaches. As the major source of information (i.e., the summary comment data) was quantitative in nature, it was decided to create quantitative targets for the different dimensions of verbal behaviour. Based on a sound understanding of the pertinent literature (detailed in Section 2.5), these targets were the researcher's estimates of effective behaviour. It was anticipated that this would benefit the coaches in interpreting their existing effectiveness, generate motivation when change was recommended, and provide a reference to evaluate the magnitude of resulting change.

The following outlines the protocol used in the interpretation of the data prior to each intervention. Refer to Figure 3.2 for CAI (II) dimensions.

1) Focus Dimension ("Skill", "Non-skill" ratio).

(a) If "skill" comments exceeded 70% of all comments it was felt that "non-skill" comments were sufficiently low hence the intervention focussed on the analysis of "skill" comments.

(i) "Skill Focus" ratio.

Target = 40% "Instruction", 40% "Correct", 20% "Incorrect".

(ii) "Skill Timing" ratio.

Target = 30% "During", 60% "Post", 10% "Stopped".

(iii) "Skill Emphasis" ratio.

Target = 80% "Key Factors", 20% "Non-Key Factors".

Within these three dimensions, discrepancies between actual and target ratios were assessed and video-taped examples retrieved to assist consolidation and/or modification of behaviors.

(b) If "skill" comments constituted less than 70% of comments then analysis focussed on the dimensions of "non-skill" comments.

(i) "Non-skill Focus" ratio.

If an unduly high proportion of "non-skill" comments were "non-specific" in nature, video-taped examples were retrieved to promote the provision of "skill" related information. If an unduly high proportion of "non-skill" comments were "organization" (or to a lesser degree "behavior" or "effort" related) then the

organizational component and Question/Answer matrix were analyzed to seek solution to the origin of the problem. Thereafter, analysis would focus on the breakdown of "skill" comments.

Note: The objective assessment of the Intent dimension proved to be problematic and was therefore excluded from the intervention. The researcher encountered numerous instances where a coach's comment had been coded "affective", only for subsequent athlete behaviour or reaction to suggest otherwise. The researcher, therefore, did not feel he could present this data to the coach with any assurance.

2) The dimensions of Direction ("individual", "group" ratio) and Delivery ("demonstration", "no-demonstration" ratio), and the nature of "inappropriate" comments were analyzed and, where appropriate, video-taped examples retrieved to assist consolidation and/or modification of behaviour.

4.5 Validity and Reliability of Data

The rationale for the use of systematic observation instruments is the provision of valid, objective and reliable data to describe the observed behaviour. The use of these instruments for the collection of data in the sport environment raises psychometric issues, particularly those of validity and reliability. Data validity addresses whether the data is an accurate representation of the dependent variable(s) the instrument is being used to measure, and data reliability considers whether the data is objective and reproducible. It is crucial to the purpose of this study that the data collected, and used to modify behaviour, were both valid and reliable. Invalid and unreliable data would

seriously undermine any conclusions drawn from the results.

4.5.1 Validity of Data

The CAI (II) was used in this study to structure and focus the collection of data on the verbal behaviour of the participating coaches. To establish the validity of this data (i.e., that it measured what it purports to measure), data from selected sessions were compared to information gathered on the same coaching performances by an independent observer. This observer was considered a "master" coach as a result of extensive knowledge and experience in the field of coaching and instruction. Parity between the research data and this independent evaluation would signify the CAI (II) data to be valid.

The video-tapes and CAI (II) data for each of the study's 48 sessions were available for this validity check. All video-tapes were viewed for audio and visual quality, and sessional data was inspected for identifiable characteristics of coaching behaviour. Eight video-tapes were duly selected and arranged as follows:

- Two pairs of video-tapes were selected in which coaching behaviour was, according to the CAI(II) data, considered similar within each pair. These were Coach A's Sessions 3 and 7, and Coach D's Sessions 2 and 6.
- Two pairs of video-tapes were selected in which coaching performance was considered dissimilar within each pair. These were Coach A's Sessions 1 and 9, and Coach B's Sessions 1 and 9.

The eight video-tapes were randomly compiled onto one video-tape and sent, with practice plans, to the independent observer. The order in which they were presented was Coach B, Session 9; Coach A, Session 7; Coach A, Session 9; Coach D, Session 2;

Coach D, Session 6; Coach A, Session 1; Coach A, Session 3; and Coach B, Session 1. The independent observer was asked to evaluate each session and return his evaluations, including his criteria for evaluation, to the researcher. The comparison of this information with the CAI (II) data would allow the researcher to draw conclusions as to the validity of the CAI (II) data.

4.5.2 Reliability of Data

Reliability measures attempt to quantify the amount of coherence between two observations, and intra and inter-observer reliability relate the coherence of data within and between observers respectively). A common reliability measure is the total percent agreement (House, House & Campbell, 1981) which computes the ratio of observer agreement to the number of observations from which the agreements arise. This measure was used by More et al (1992) to obtain intra and inter-observer reliability coefficients for the CAI (II). Intra-observer coefficients far exceeded the 80% acceptable threshold (Rushall, 1977), but inter-observer coefficients failed to reach this accepted value in three of the instruments eight dimensions. The results of More et al (1992) report that an observer can attain a consistent level of coding using the CAI (II), thus suggesting the researcher could consistently collect data on the sessions of this study. However, the failure to establish sufficient inter-observer reliability brought into question the objectivity of the instrument and/or observer, and therefore the merit of behaviour recommendations based on this data.

For this reason an inter-observer reliability check was incorporated into the design of this study. The video-tapes of the 48 sessions were viewed for quality and six sessions were randomly selected and coded by an undergraduate student with experience of both the CAI (II) and its operational definitions. The order of their presentation was Coach D, Session 5; Coach C, Session 6; Coach A, Session 12; Coach B, Session 1; Coach D,

Session 3; and Coach C, Session 11. It was envisaged that the reliability coefficients obtained from the comparison of data would provide information on the objectivity of the researcher's data collection.

However, further to this, it was acknowledged that the expectations and biases an observer brings to the observational session can affect how a comment is coded. Behaviours which are inconsistent with the observers expectations may be miscoded or disregarded altogether (Johnson, 1988). This was considered pertinent to this study as the researcher was also conducting the intervention sessions with the participating coaches and subjective biases were considered possible. To test this potential violation of objectivity, three sessions were randomly selected from each study phase and randomly presented to the independent analyst. Their order of presentation was Coach B, Session 3; Coach C, Session 5; Coach B, Session 4; Coach B, Session 9; Coach D, Session 6; Coach A, Session 9; Coach B, Session 8; Coach C, Session 10; and Coach D, Session 1. Inspection of these reliability coefficients between researcher and independent analyst would provide information on the researcher's ability to remain objective across the three phases of the study.

5 RESULTS & DISCUSSION

5.1 Overview

In behavioural research the effectiveness of an intervention strategy can be judged by practical and statistical criteria (Donahue, Gillis & King, 1980). The design of this study, however, did not lend itself to analysis by inferential statistics. Therefore, the utility of the CAI (II) intervention strategy is, in the first instance, analyzed descriptively. Time-series analysis is then used to illustrate change in selected behaviours (see McKenzie et al, 1981; Ratcliffe, 1986 for previous examples) and, as no arbitrary levels of significance are predetermined, the magnitude of change is assessed according to the individual coach and contextual setting.

In generalizing the findings of a single subject analysis, one has to be extremely careful. However, by treating those coaches who received the CAI (II) intervention strategy as one group (i.e., Coaches A, B, and C) it is possible to speculate in a more informed manner about the utility of the CAI (II) data. To this end, trends in the data of this "experimental group" are reported for intervention and follow-up phases and compared to those of Coach D. Conclusions with regard to the utility of the CAI (II) intervention strategy, in terms of effecting desired behavioural change, are reported from comparison of these trends.

5.2 Data Analysis Comparing the Different Coaching Sessions

It was identified at the onset of the study that evaluating the utility of CAI (II) data in effecting behavioural change, would be enhanced by eliminating design features that

could influence coaching behaviour. One such design feature was the content of the 12 observed sessions. If the session content varied markedly in character this, itself, could precipitate change in coaching behaviours. The sessions were perceived to be comparable in both complexity with respect to organization, and difficulty with respect to the athlete demands. Prior to the study the coaches expressed support for the contention that they appeared comparable, and that they were valid and appropriate to their coaching environment.

While individual coaching behaviour will vary from coach to coach because of different instructional styles, and from phase to phase as a result of intervention, it was assumed that common characteristics of a coach's profile will be preserved across different session types. That is, the idiosyncrasies of individual coaches, and the impact of intervention feedback, will not result in a differential exhibition of coaching behaviour from one session type to another. However, it was apparent during the data collection process that the session types were not being coached in a comparable manner. For example, few instructional cues appeared to be given during performance of the Shooting session, yet many instructional cues given during performance in the Passing session.

On completion of data collection the data were analyzed to investigate the researcher's feeling that there had been a differential display of coaching behaviour across session types. Mean values for each session type were calculated for each coach, and for the coaches as a group, by averaging individual coaching data across the three study phases. The mean values, expressed for 13 categories of the CAI (II) are reported in Table 5.1. Group means are also reported in Figure 5.1, where isolated data points indicate differences between session types within that category.

INSERT TABLE 5.1 & FIGURE 5.1 HERE

Focus: The Crossing session, (group mean = 76%), yielded 12-14% more "skill" related comments than other session types. Coach's A, C and D, (means of 81%, 65% and 76% respectively; Table 5.1), provided more skill related comments in this session than any other and Coach B, while not realizing his highest value, had an individual mean (82%) in excess of the group mean. Reference to the "non-skill" related values in Table 5.1 suggests that a low percentage of "organization" comments (23%, 11%, 19% and 23%) and a low percentage of "effort" comments (4%, 1%, 6% and 4%) have afforded the Crossing session its high "skill" related percentage. This is illustrated in Figure 5.2.

INSERT FIGURE 5.2 HERE

More effective coaching occurs when performance related instruction and feedback are maximized (Phillips & Carlisle, 1983; Mustain, 1990). Greater time can be devoted to skill related information when sound organizational strategies, or drills low in complexity, negate the need for behavioural feedback. This would suggest that, provided the drill(s) chosen are of sufficient technical demand, the coach should endeavour to find drills low in organizational complexity, or ensure that complex drills are adequately explained at the onset of the drill.

The characteristics of the Crossing session promoted more "skill" related information to be delivered than in the other session types. The "wave" format of the two drills (i.e.,

group after group of players progressing toward goal) promoted order and flow and, once perceived and understood by the players, required minimum modification and monitoring. In the case of the Crossing session the athletes working in sub-groups, finishing with a strike on goal, appears to have reduced the need for "effort" and "behavior" related comments to maintain a productive learning environment. The coach should thus be cognizant of any drill features that may generate intrinsic motivation in the athletes as this may eliminate the need for coaching comments to generate enthusiasm and adherence to the drill requirements. Once again coaching information can then be directed to the primary promotion of skilled behaviour.

Skill Focus: Group mean values, reported in Table 5.1, indicate comparable percentages of both "instruction" and feedback (i.e., total of feedback on "correct" and "incorrect" performance) across the four session types. However, mean values do reveal a differential use of feedback types. The data indicate that in coaching the Crossing and Shooting sessions the coaches, as a group, provided 7-11% more feedback on "correct" performance, and 6-7% less feedback on "incorrect" performance, than when coaching the Defending and Passing sessions. This differential use of feedback is supported by inspection of the individual data (Table 5.1) which reveal all four coaches provided most feedback on "correct" performance during Crossing and Shooting sessions. The group means, illustrated in Figure 5.3, highlight that the coaches provided more feedback on "correct" performance than "incorrect" performance (30% to 27% and 32% to 27%) during the Crossing and Shooting sessions respectively; and that the reverse was evident in coaching Defending and Passing (21% to 33% and 23% to 34% respectively). There are two potential reasons for this: Firstly, since crossing and shooting skills are key elements in the pursuit of goals, and therefore winning outcomes, it is possible that drills similar to those used in this study regularly feature in the practice sessions of these coaches. As a result the athletes may have previously

acquired a degree of expertise in the required skills. Secondly, enhanced performance in Crossing and Shooting may have occurred because of the largely unopposed nature of these sessions; a feature that may have afforded the athletes the necessary time and space to produce such enhanced performance. This is in contrast to the Defending drills (1 v 1 situation) and the Passing drills (3 v 1 and 3 v 2 situations) where pressure by the opposition may have caused a greater percentage of erroneous performance. As a result it is conceivable that the differential display of feedback across sessions occurred because correct performance was simply more prevalent during the Crossing and Shooting sessions.

INSERT FIGURE 5.3 HERE

When working with young athletes it is desirable to provide more feedback on correct performance than on incorrect performance (Segrave & Ciancio, 1990; Miller, 1992). The nature of the drill(s) should not only have an impact upon the quality of athletic performance but may, as a consequence, influence the nature of the coaching feedback. This is important because young athletes may become discouraged from participation due to excessive drill demands and lack of reinforcement from the coach. The coach, therefore, should select appropriate and progressive drills appropriate to his/her athlete's abilities; that is, drill demands that promote the consolidation and extension of skills at a pace that ensures athletes are reinforced with appropriate regularity.

Skill Timing: The Passing session, (group mean = 56%), yielded 20-29% more comments "during" performance than the other session types. Indeed it was the only session where "during" comments outnumbered those given after performance was

complete (i.e., "post"; Figure 5.4). Inspection of individual data in Table 5.1 reveal that in coaching the Passing session, "during" comments formed the majority for Coach's A, B, and C with values of 65%, 58% and 55% respectively. Conversely, the Shooting session, with a group mean of 70%, produced 10-34% more "post" comments than other session types. This session produced the highest "post" value for each coach, values that constituted the majority of their comments in this session. The Shooting sessions also had marginally less comments after the coach had deliberately stopped play (i.e., "stopped") than Defending, Crossing, and Passing sessions (group mean = 4% compared to 7%, 6% and 8% respectively).

INSERT FIGURE 5.4 HERE

Skill related information, in the form of instruction or feedback, is best given when the athlete(s) is free from performance demands and thus able to process coaching information effectively (Magill, 1989). However, on occasion, succinct and direct comments given during performance can provide the necessary reinforcement and/or "cue" an athlete for the immediate task demand(s). A marked feature of Figure 5.4 is that the Passing session appears not to lend itself to such a coaching methodology. It stands alone, in contrast to this theoretical ideal, as the only session type where more comments were given "during" than "post" performance. Inspection of the session characteristics reveal a possible reason. Of the four session types, it was the least intermittent in nature, (e.g., one passing episode could last from 15-30 seconds) therefore affording the coach less natural breaks in play with which to provide coaching information. As a result, there was a greater tendency for coaches to intervene "during" performance. This explanation would appear to be reinforced by the fact that the most

intermittent of sessions, the Shooting session, (e.g., one typical shooting episode lasted less than 5 seconds) realized a notably higher percentage of post performance comments than all other session types.

The effectiveness of a coaching comment is greatly influenced by the timing of its delivery. It is therefore important that coaches be cognizant that drills with regular natural intervals will afford them opportunity to provide the bulk of their coaching information at an appropriate time. However, it is frequently the case that drills, and especially coached games, lack such ideal intervals to provide instruction and feedback. It is in such instances that coaches must show increased sensitivity to when during performance coaching information can be given in an effective manner. Essentially the coach must learn to recognize differences in performance demands (e.g., a 20 yard free run into a support position versus the exactness of controlling the incoming pass while under pressure from an opponent) and choose their "coaching moment" judiciously.

Skill Delivery: The Defending session was the session in which coaches were most likely to demonstrate. Table 5.1 reports group means for Defending, Crossing, Passing, and Shooting sessions to be 9%, 5%, 6% and 5% respectively). In effect, when conducting the Defending session the coaches, as a group, used or performed a "demonstration" once every 11 comments to assist comment delivery. This was markedly more frequent than for the other session types where "demonstration" occurred, on average, every 17-20 comments.

There is much evidence to support the use of demonstrations in the teaching and coaching of motor skills (Magill, 1989; Carroll & Bandura, 1987). The data from this study indicates that this coaching tool was used on average much more frequently in the Defending session than in other session types. Notably, all defensive

demonstrations centered on technique and positioning in order to exert pressure on the ball carrier and did not involve possession of the ball. This feature may well have proved less threatening for demonstration than the skills of the other session types which, by their nature, required some adept ball skills. It is important that the coach seeks a solution(s) to any potential cause of limited demonstrations. For example, if a lack of playing ability is inhibitory, a coach could illustrate without the ball or at a reduced pace, or could consider using athletes to perform the critical features when the speed and flow of the movements are a necessary part of the demonstration.

Skill Emphasis: A group mean value of 66% (Table 5.1) revealed that greatest reference to "key factors" occurred in the Defending session. Indeed, its mean value was 14-19% higher than other session types. Further inspection of Table 5.1 reveals each individual coach made greatest reference to "key factors" during this session.

It is clearly desirable that the majority of "skill" related comments concentrate on the "key factors" of the drill. Mustain (1990), explained the importance of coaching information relating specifically to the focus of the attempted movement task. It is possible that, from a coaching perspective, the relatively discrete nature of the Defending session enhanced the coach's ability to stay focussed in their reference to "key factors". While, like the shooting drill, the coach's attention is focussed solely on the individual performer, the defensive performance occurs over a sufficiently lengthy period of time to perhaps afford the coach the composure to reflect upon the "key factors" before intervening. Through discerning observation, and anticipation of when "key factors" will present themselves, the coach can effectively elevate selected "key factors" in their consciousness, and thus remain more focussed in their ability to provide key information to the athletes.

Summary: The reported data show a differential display of coaching behaviour across session types despite an attempt to standardize the coaching context under observation. It is clear that certain drill characteristics (e.g., low organizational complexity) lend themselves to more effective coaching and that coaching behaviour will, to some degree, be affected by drill selection. Implications also exist for those in supervisory capacities in interpreting the analysis of coaching performance across several sessions. Supervisors should remain sensitive to the fact that, regardless of design, each observed session is essentially a different coaching context. It is now appropriate to acknowledge these differences in describing the behavioural change of the participating coaches.

5.3 Detailed Descriptive Analyses of Participating Coaches

The following analyses are a detailed account of the behavioural changes experienced by each of the participating coaches across the three phases (i.e., baseline, intervention and follow-up). Baseline results are followed by a session by session description of the intervention phase. Coaching and intervention sessions of this phase are discussed in full with written journals, relating each coach's objectives, reflections and reactions during the study, and audio-tape recordings, taken to assist the recall of pertinent discussion and reaction during interventions, drawn upon to describe behavioural change. Follow-up results are also reported. The journals were kept from the point of first intervention, and were not made available to the researcher until the end of the study. It is anticipated that this section will promote insight into the complexity of verbal behaviour and its modification, and the "human factors" that affect this process.

Throughout this section change is quantified and discussed according to the

"organizational" and "instructional" components of coaching behaviour. Organizational behaviour was considered to be all verbal interaction until the coach directed all the players to begin the drill. Organizational behaviour includes any extended coaching provided during the initial set-up (i.e., where only the demonstration group were participating). This behaviour is described through observer responses to the question matrix on organizational behaviour. Instructional behaviour was considered to be all verbal interaction thereafter until the drill's completion. Instructional behaviour was analyzed using the quantitative data of the CAI (II) and observer responses to the question matrix on Athlete Performance. Values for the time spent in organizational and instructional behaviour are also used to assess behavioural change.

Note: All selected drills were the product of design and, as a result, their realism was assumed. However, responses to the Realism questions are included in Tables 5.2, 5.5, 5.8 and 5.11 for completeness.

5.3.1 Coach A

Baseline Phase: Observer responses to organizational questions (Table 5.2) provided valuable information on Coach A's effectiveness in explaining the organizational goal(s) of the drill. Responses pertaining to the baseline phase suggest that while the athletes appeared to understand the organization of the drill (8 positive responses to Question 1) the information was not, on the whole, delivered in a clear, concise or efficient manner (7 negative responses to each of Questions 2 & 3).

INSERT TABLE 5.2 HERE

Data reported in Table 5.3 provide detailed information on Coach A's instructional behaviour across the three study phases. In the baseline phase, 73% of Coach A's comments were "skill" related and, with the exception of Session 1 (58%), all sessions exceeded the 70% threshold identified. The mean focus of these "skill" related comments was 55% "instruction", 23% feedback on "correct" performance and 23% feedback on "incorrect" performance. Session 4 was the only session where "instruction" did not form the majority of "skill" related comments (44%). The majority of "skill" related comments were given "during" performance (mean = 54%), with 45% and 2% of comments given "post" and "stopped" respectively. Session 4 data (38% "during" and 62% "post") was again contrary to phase means. Thus, not only were there proportionally less instructional comments in Session 4, the timing of comment delivery also differed from the other sessions. "Demonstration" accompanied 8% of "skill" related comments and "key factors" were referred to in 50% of comments across the four sessions.

The remaining comments were "non-skill" related. Most meaningfully expressed as a percentage of all comments made, their mean values were 10% "non-specific", 5% "effort", 3% "behavior" and 10% "organization". Notably, in Session 1 "organization" comments constituted 19%; almost twice that of the baseline mean. Importantly, 22% of all comments were considered "inappropriate" during the baseline phase.

INSERT TABLE 5.3 HERE

Observer responses to athlete performance questions (Table 5.2) provide insight into the quality of the learning environment created by Coach A. Responses pertaining to the

baseline phase suggest the sessions to have been both stimulating and challenging (8 positive responses to each of Questions 1 & 2). However, Coach A's ability to effect improvement in his players was not convincing (3 positive responses to Question 3); a feature linked to the quality of his organizational and instructional behaviour.

Intervention 1: Coach A was commended on directing the majority of instructional comments towards "skill" related information (mean = 73%; Table 5.3). However, he was counselled that his ability to maximize "skill" related comments had been diminished by aspects of his organizational behaviour. While his organizational behaviour featured an early demonstration (a trait that could have enhanced clarity and efficiency) a review of his sessions showed a tendency to extend demonstrations, laboring key points and imparting too much coaching information. This was particularly evident in Session 1 where video evidence was used to illustrate the point at which he had sufficiently demonstrated and explained the organizational goals (after 2 minutes 8 seconds), before continuing to show additional information given before the athletes finally dispersed for activity (after 4 minutes 55 seconds). Coach A acknowledged the "extended set-up" could, with this age-group, reduce their understanding of the objectives and lower their attention and captivation. He also conceded the extent to which young athletes could absorb such information before they had experienced the task demands. Coach A was encouraged to be clear and concise in the set-up of the drill as sessional data illustrated that sound organization would afford high reference to "skill" information and pre-empt the need for "organization" comments during the instructional component. For example, poor organization in Session 1 produced the phase's lowest number of skill-related comments (58%), primarily because 19% of comments were devoted to follow-up organization. Sound organization in Session 2 produced the phase's highest number of "skill" related comments (85%), as only 3% of comments were devoted to follow-up "organization".

Coach A made an extremely high number of comments within the instructional component (on average 9 per minute). He acknowledged that athletes may "switch off" if comments constituted a "wash" of information, and conceded it unlikely that quality could be maintained given so many comments. The superfluous comments appeared to be "skill" related instructions given in a "commentary style", and it was proposed that Coach A reduce his "instruction" toward the 40% target value. He reacted: "To eliminate that, hopefully, won't be too much of a problem; just to focus on getting down to the key comments and reducing the other ones. 'Cause I do get so involved in it. I had no idea".

Balance of "instruction" and feedback was also discussed, and Coach A was advised to increase the proportion of feedback he gave on "correct" performance (i.e., from 23% toward 40%). It was postulated that in doing so the timing of his comments would also be enhanced. An increase in feedback (generally not provided "during" performance) would promote an increase in "post" and "stopped" categories, and thus make comment timing more effective as the players' ability to attend to information following a specific trial or as a result of play being stopped would be greater.

Coach A recognized that his coaching behaviour would be more composed and reflective if unnecessary verbal interactions were eliminated. This could, therefore, promote more attention to "key factors" (currently 50%), improve the quality of demonstrations, and almost certainly reduce the number of comments considered "inappropriate". It was envisaged that improvement in the targeted behaviours would enhance coaching effectiveness and thus increase the likelihood of him effecting improvement in athlete performance. Objectives for the intervention phase (detailed in Appendix C: Intervention Objectives - Coach A) were presented to Coach A to focus his thoughts and guide his journal entries. These journal entries are detailed, along with sessional results and prescriptive comment in Appendix D: The Intervention Process - Coach A.

Session 5: Observer responses (Table 5.2) and time values (Table 5.4) suggest that, despite a set objective, Coach A's organizational behaviour remained comparable to that of the baseline phase. This appears to be reinforced by Coach A, whose immediate journal entry (i.e., before Session data was received) reads "Demo may have gone longer than I wanted". Moreover, instructional data (Table 5.3) suggests that it deteriorated from the baseline phase. Only 55% of comments were "skill" related, as a remarkable 36% were required to provide "organization" information.

INSERT TABLE 5.4 HERE

Instructional objectives for Session 5 read "Reduce commentary during sessions and let players attempt the skill - then intervene. Use 'freeze' method of coaching technical points". These personal objectives suggest an attempt by Coach A to improve the focus and timing of his "skill" related comments. Table 5.3 reports a marked decrease in the proportion of comments with focus "instruction" (55% to 26%). The resultant increase in the percentage of feedback comments also reveal an encouraging feature; feedback on "correct" performance was given more frequently than on "incorrect" performance (42% to 33%). This change in focus had, as anticipated, impacted upon the timing of comments. There was a dramatic decrease in comments given "during" (54% to 7%), which resulted in an increased percent of comments given "post" performance (45% to 81%). The method of "freezing" play had also been adopted to a larger degree (12% compared to 2%). Coach A's immediate reflections portrayed a keen appreciation of the changes made. He wrote "I tried not to comment as much while players were attempting skills and felt that I did reduce my comments and observe more of the key points. I felt I used the 'freeze' method more than previous sessions".

Coaching behaviour in Session 5 reveals a marked increase in the percent of comments that referred to "key factors" (81% compared to 50%) and a decrease in the percent of comments considered "inappropriate" (22% to 4%). Both improvements appear to be a direct and positive result of his more composed behaviour. Notably, observer responses concerning athlete performance (Table 5.2) suggest that Coach A's behaviour facilitated improvement in athlete performance.

Intervention 2: Intervention 2 focussed on Coach A's progress in the dimensions of his behaviour. Review of the Session 5 video-tape revealed that, once again, extended coaching had prolonged the organizational component and, as a result, had made the delivery of organization and session goals less effective. The association between ineffective organization during the set-up and the opportunity to maximize "skill" related information was reinforced to Coach A.

Discussion focussed on the huge reduction of unnecessary instructions (now an average 4 per minute). Coach A felt that he had reduced such instances but admitted surprise at the extent to which this had occurred. As well as reducing comments considered "inappropriate", this change had greatly benefitted the composition of "skill" related information. Data illustrating the improved focus and timing of these comments were highlighted. Discussion suggested that conscious effort to eliminate his "commentary style" had, perhaps, caused an extreme change (e.g., 7% "during") and that with due attention this may increase towards the target value and stabilize. Coach A expressed particular pleasure at the increase in feedback on "correct" performance: "I've seen so many benefits from positive reinforcement working with little ones all the way up", and he acknowledged that, with this age-group, improvement is best achieved through quality instruction and reinforcement of correct performance. The benefit of the 'freeze' technique (i.e., "stopped") was also highlighted, and he was pleased

with his increased use of it. It was pointed out, however, that anticipation in stopping performance was essential to the effectiveness of this method. His increased reference to "key factors" was also acknowledged.

Coach A's journal entries following Intervention 2 stated "It was most uplifting to see the definite change in my coaching style; again video and stats were quite convincing. I did not realize how much of a change I had made. Video also showed area where improvement was needed (org. of drill). Looking forward to the next practice as I am beginning to feel much more focussed on key coaching points".

Session 6: Coach A's objectives included: "Ensure players understand how the drill works and where they are to go. Reduce coaching players during explanation of how drill runs". This objective was certainly addressed as observer responses concerning organization (Table 5.2) indicated improved clarity and efficiency at this time. Table 5.4 also reveals that only 20% of session time was now devoted to organizational behaviours. Interestingly, Coach A's immediate journal reflections stated "At first I was a little pre-occupied with adjusting the drill to the smaller group of players which may have extended my explanation time". This added concern made his modified behaviour all the more commendable.

Two features of the instructional data (Table 5.3) support the contention of increased effectiveness in organizational coaching behaviour. Firstly, "organization" comments made during the drill dropped from 36% in Session 5 to 13% and, secondly, "skill" related information duly rose from 55% to 76%. There was also consolidation with respect to the focus of "skill" comments. "Instruction" remained low (19%), and feedback on "correct" performance continued to exceed that of "incorrect" performance (54% to 27%). Indeed, this 2:1 ratio is considered ideal. The imbalance of comment

timing was maintained in Session 6 (5% "during", 91% "post"), but the previously enhanced use of 'freezing' play dissipated (i.e., "stopped" fell from 12% to 4%). Comment data show that 46% referred to "key factors", 20% were considered "inappropriate", and that coaching information failed to improve athlete performance (Table 5.2).

These latter results countered the improvements made from baseline to Session 5 and Coach A's written reflections on the session confessed disappointment in his coaching performance, specifically citing his failure to 'freeze' play, and to demonstrate. However, he did feel that he had again reduced his "commentary style". Finally, he indicated a conscious attempt to focus on key coaching points.

Intervention 3: The increase in "skill" related comments was immediately discussed in Intervention 3. It was made clear to Coach A that his improved organizational set-up had reduced the need for "organization" comments during the drill thus increasing his number of "skill" related comments. The apparent consolidation in the focus and timing of these "skill" related comments was then discussed. It was proposed to Coach A that in greatly reducing information in the form of instructions, particularly those given "during" performance, his behaviour over Sessions 5 and 6 was too extreme. Through discussion he appreciated the benefits of "instruction" (e.g., to "cue" performance, to add to the challenge of the drill) and of comments given "during" performance (e.g., to "cue" performance, to provide immediate information), and target values were restated. The 'freeze' method of imparting information was also reinforced, not least because of its suitability for providing demonstrations. This was perhaps warranted as the number of demonstrations given appeared to be in decline.

A collaborative effort was made to formulate a strategy such that Coach A could aspire

to an appropriate balance in his coaching behaviour. It was resolved that this would require a gradual build up in the presentation of drill information. It was suggested that this would promote balance in coaching behaviour and help his reference to "key factors" return to a suitably high value. Review of the video-tape revealed reduction in reference to "key factors" to be the result of mis-directing his skill information.

Coach A's reaction to the intervention session was very positive. "It was interesting to see such a dramatic change in my coaching in Session 5, then to see what was maintained in Session 6. The video and data pointed out some areas where refinement is needed and the strategies from (the researcher) for improvement were excellent".

Session 7: Observer responses pertaining to Session 7 reveal that the only positive response was with regard to the clarity of Drill 1's goals. Conciseness and efficiency of delivery were, once again, considered to be low (Table 5.2), and organization time increased by 10% from Session 6 (Table 5.4).

The ineffective organizational component caused a drop of 8% in skill-related comments (Table 5.3). The nature of these comments was also less effective than what might have been anticipated. Their focus was 47% "instruction", 24% feedback on "correct" performance and 27% feedback on "incorrect" performance; their timing 66% "during", 26% "post" and 8% "stopped". These values suggest Coach A had regressed toward his baseline behaviour. Once again "demonstration" remained at a relatively low level (5%), and "inappropriate" comments at an inflated level (16%), although there was a huge increase in Coach A's reference to "key factors" (84%). Observer responses (Table 5.2) again suggested coaching information failed to improve performance. Interestingly, Coach A reflected "I felt the session, overall, did not achieve the expectation I had hoped for".

Intervention 4: It was suggested to Coach A that two features may have accounted for the regression in his organizational behaviour. Firstly, because much of Intervention 3 focussed on strategies to improve instructional behaviour (and his objectives for Session 7 showed concerted effort to effect change there) it is possible that he was not as focussed on his organizational behaviour as before. This is reinforced by the fact that following the session no journal entries reflected upon his organizational behaviour. Secondly, bad weather and Christmas holidays had forced a 5 week break in his coaching schedule. This too may well have detracted from progress. Emphasis was placed on re-establishing the key features of effective organizational behaviour, and video-led discussion helped formulate a remedial strategy.

In light of the instructional data (Table 5.3) it was speculated that Coach A's modified behaviour had been insufficiently established to withstand the time lapse between Intervention 3 and Session 7. Therefore, a significant portion of Intervention 4 was spent reinforcing the rationale behind, and target values for, the focus and timing of "skill" related comments. Thereafter, Coach A's reference to "key factors" was addressed and the strategy initiated during Intervention 3 was reinforced.

Session 8: Observer responses (Table 5.2) suggest the organizational component to have been clear, concise and efficient, and time values (Table 5.4) report organizational time equalled its lowest value (20%). Coach A's journal entry revealed a conscious effort to get the drill underway quickly.

Once again sound organization had a positive impact on the instructional component, as the number of "skill" related comments increased to 75% (Table 5.3). The nature of these comments was also closer to the identified target values than any other session from this phase: The focus of comments was 31% "instruction", 37% feedback on

"correct" performance and 32% feedback on "incorrect" performance, the timing of comments 14% "during", 80% "post" and 7% "stopped". Reference to "key factors" decreased to 68% despite Coach A exhibiting a return to a more composed coaching style. This, however, is in part explained by Coach A's reflections on the session. "I altered Drill 2 but found this to reduce the amount of shots players were getting away. As a result my feedback to shooters (the focus of all the Key Factors) was reduced". No explanation was given as to how or why the drill was altered. Table 5.3 also reports consolidation in the number of "demonstrations" given, and a large reduction (i.e., 10%) in those comments considered "inappropriate". Typifying the improved coaching behaviour, observer responses concerning athlete performance (Table 5.2) suggest that Coach A's behaviour facilitated improvement in athlete performance.

Follow-Up Phase: Increase in positive observer responses (Table 5.2) and the reduced mean organizational time (25%; Table 5.4) indicated a positive change in Coach A's organizational behaviour across the intervention phase. However, it was clear this behaviour lacked consistency. Data from the Follow-up phase reveal a further increase in positive observer responses (Table 5.2) and the consolidation of reduced organizational time (mean value = 26%; Table 5.4). Journal entries across the follow-up phase suggested Coach A remained focussed in his attempts to maintain improvement in organizational behaviour.

The quality of instruction undoubtedly benefitted from the improved organizational behaviour as, across the follow-up phase, 80% of comments were "skill" related (Table 5.3). The marked improvement in Coach A's behaviour is also evident in the breakdown of his "skill" related comments. "Instruction" had a mean value of 38% (i.e., within 2% of the stated target), and feedback on "correct" performance (mean = 34%) outnumbered that on "incorrect" performance (mean = 29%). Mean values for the timing of "skill"

related comments reflect closely the target values: Table 5.3 reports values of 30%, 64% and 6%, for "during", "post" and "stopped" respectively. "Demonstrations", an excellent coaching tool for this age-group, increased across the follow-up phase and, on average, accompanied 15% of coaching comments. Reference to "key factors" also improved appreciably over this phase (mean = 81%), and comments considered "inappropriate" fell to a mean value of only 5%. The apparent improvement in coaching behaviour is reinforced by observer responses to athlete performance questions. These responses suggest Coach A's behaviour over the follow-up phase produced a stimulating and challenging environment in which improvement in athlete performance was evident.

Summary: Coach A's initial behaviour was, according to CAI (II) data, somewhat ineffective. Organizational information was not, on the whole, delivered in a clear or efficient manner, and his instructional behaviour was characterized by superfluous "skill" related instructions given in a "commentary style". Intervention sessions focussed on remedying these fundamental concerns, and he was encouraged to increase feedback on "correct" performance and use the "post" and "stopped" methodologies. More composed and reflective behaviour was sought so that he could be more specific to the needs of his athletes. Coach A's journal entries and audio-taped verbal reactions portrayed a concerted effort to address the content of these intervention sessions, and some dramatic change occurred (e.g., "during"). Much intervention discussion centered on making this change more refined and stable; a goal that would require an appropriate balancing of his verbal behaviours. Ultimately, as portrayed by the follow-up data, Coach A had greatly increased the efficiency of his organizational component, and his instructional behaviour was characterized by more "skill" related comments, greater use of feedback, more effective comment timing, and an appreciable improvement in reference to "key factors".

5.3.2 Coach B

Baseline Phase: Observer responses to the organizational questions (Table 5.5) suggest that the athletes appeared to understand the organization of the drill because of Coach B's clarity in stating the goals (7 positive responses to each of Questions 1 & 2). However, observer responses suggest that this information was not, on the whole, delivered in a concise or efficient manner (5 negative responses to Questions 3).

INSERT TABLE 5.5 HERE

Data reported in Table 5.6 provide detailed information on Coach B's instructional behaviour across the three study phases. In the baseline phase, 69% of Coach B's comments were "skill" related; the low value for Session 4 (58%) pulling the phase mean below the 70% threshold identified. The mean focus of these "skill" related comments was 35% "instruction", 21% feedback on "correct" performance and 44% feedback on "incorrect" performance. Feedback always formed the majority of comments, and feedback on "incorrect" performance always exceeded that on "correct" performance. The majority of "skill" related comments were given "post" performance (mean = 51%), with 36% and 13% of comments given "during" and "stopped" respectively. However, it is noted that in Sessions 1 and 3 a greater proportion of comments were given "during" performance than "post". "Demonstrations" accompanied 12% of "skill" related comments and "key factors" were referred to in 56% of comments across the four sessions.

The remainder of Coach B's comments were "non-skill" related. Most meaningfully expressed as a percentage of all comments made, their mean values were 9% "non-

specific", 2% "effort", 2% "behavior" and 18% "organization". 16% of all comments were considered "inappropriate" during the baseline phase.

INSERT TABLE 5.6 HERE

Observer responses to athlete performance questions (Table 5.5) suggest the sessions to have been both stimulating and challenging (7 positive responses to each of Questions 1 & 2). However, Coach B's ability to effect improvement in his players was not convincing (3 positive responses to Question 3); a feature linked to the quality of his organizational and instructional behaviour.

Intervention 1: Coach B was commended for directing the majority of his comments towards "skill" related information (mean = 69%; Table 5.6). However, it was brought to his attention that the percentage of "skill" related comments had progressively decreased across the baseline phase (i.e., from 80% to 58%), and that the resultant increase in "non-skill" comments was, to a large degree, the result of increased "organization" comments within the instructional component (i.e., from 14% to 23%). The importance of the organizational component in establishing the goals of the drill was stressed, and video-tape evidence was used to show where this component was deficient (e.g., failure to demonstrate the main goals, imparting of too much technical information). Coach B acknowledged that such features had increased the need for subsequent "organization" comments during the drill and, with particular respect to Session 4, commented "If I'd demonstrated, those comments wouldn't have to be made. You almost have to rebuild the drill and start over again".

INSERT TABLE 5.7 HERE

The breakdown of "skill" related comments was discussed with Coach B, and in particular the high proportion of comments relating to "incorrect" performance (44%). Coach B was asked the question "Can you see any danger in focussing too much on incorrect performance?". He reacted, "...the players look and say 'do I do anything right'. I think what I've got to do is start picking up the positive and say ...'that was an excellent run because you did this diagonal'.... so maybe bring the negatives down and bring the positives up". Video-tape evidence was used to highlight instances where reference to correct performance could have been made, and suggestion made that girls of that age would improve more readily if reinforced for the display of correct performance.

Balance in the timing of comments was also discussed, and Coach B was praised for the high proportion of "post" comments, and for his use of 'freezing' play to make his coaching point(s). The rationale of these being desirable behaviours was explained to him. At this point, inconsistency in the timing of comments across the phase (e.g., "during" percentages across the four sessions) was not discussed. Coach B was encouraged to increase his reference to "key factors" (currently 56%), and instructed that to achieve this he must concentrate and not let reference diminish as the drill progresses. He was also counselled to be diligent in his use of demonstrations as concern was expressed as to the quality of performance and the accuracy of information. It was anticipated that improvement in the targeted behaviours would increase the likelihood of him effecting improvement in athlete performance. Objectives for the intervention phase (detailed in Appendix C: Intervention Objectives - Coach B)

were presented to Coach B to focus his thoughts and guide his journal entries. These journal entries are detailed, along with sessional results and prescriptive comment, in Appendix D: The Intervention Process - Coach B.

Session 5: The organizational objective for Session 5 reads "Make sure objectives are clear and concise (for the) girls" Observer responses (Table 5.5) suggest that this objective was met in Drill 1. Coach B's journal entry, immediately following the session, reads "(I) felt by starting with a demonstration (the) players had a better idea of what was expected". Instructional data (Table 5.6) would support this as organizational comments made during the session dropped from 18% (baseline mean) to 6%, and "skill" related comments duly rose from 68% to 89%. However, researcher notes reveal that Coach B's demonstration in Drill 2 was followed by additional technical information that detracted from the clarity and conciseness of the organizational component. This is supported by observer responses pertaining to Drill 2, and time values (Table 5.7) reported.

Instructional objectives for Session 5 read "Try to pick out reasons why the drill is breaking down and positive points players are doing. Work on (these) positive comments". These personal objectives suggest an attempt by Coach B to improve the focus of his "skill" related comments. Table 5.6 reports "instruction" to approximate its target value, and feedback to have changed considerably in nature. Feedback on "correct" performance (31%) was now provided more frequently than feedback on "incorrect" performance (26%). Unfortunately the timing of "skill" related comments became less effective as the majority of comments were given "during" performance (59%), causing a fall in the proportion of comments given "post" (51% to 30%). The method of 'freezing' play was consolidated (11%). A marked increase in the percent of comments that referred to "key factors" (71% compared to 56%) and a decrease in the

percent of comments considered "inappropriate" (16% to 10%) is also reported. Both would appear to be the product of his coaching objective "Deal with the Key Factors throughout". Notably, observer responses concerning athlete performance (Table 5.5) suggest that Coach B's behaviour facilitated improvement in athlete performance.

Intervention 2: Initial discussion focussed on the large increase in "skill" related comments and the benefits therein. It was pointed out that this increase was the result of providing more "skill" related information. This is evidenced by the data: "non-specific" comments fell from 9% to 5% (none of which were considered "inappropriate") and reference to "key factors" had increased from 56% to 71%. It was noted, however, that while "inappropriate" comments had fallen from 16% to 10% the vast majority of those remaining had been unnecessary instructions. Instances were shown of "instruction" given immediately after feedback had provided similar information. Such "instruction", it was suggested, was not only redundant, but could create a dependency on information and detract from the athletes attempts to learn the skill. As this instruction inevitably occurred "during" performance, it was anticipated that reduction in such instruction would reduce information given "during" performance, and hence improve effectiveness in the timing of comments. At this point Coach B was also applauded for the considerable and positive change in the provision of feedback, and he was challenged to consolidate. Further discussion centered on continuing to improve the quality of "demonstration" with the amount of accompanying dialogue being targeted for reduction.

Coach B's journal entries following Intervention 2 acknowledged that the data had pinpointed areas of weakness, and that he was now understanding how his comments were affecting the drills. Specifically, he stated "(I am) adjusting to this concept of using key factors, (but that) correcting or praising a player is still going to take time". This

latter point suggests he has not appreciated the extent of change with regard to reinforcing correct performance.

Session 6: Coach B's objectives include: "Work on getting players to understand (the) drills. Use demonstrations to start". Session 6 data reveal mixed results with regard to these. The players' understanding of the drill appears supported by observer responses (3 positive responses to questions 1& 2; Table 5.5), but not by the instructional data ("organization" comments increased by 6% to 12%; Table 5.6). Similarly, the use of a demonstration appears to have improved conciseness and efficiency (2 positive observer responses to question 3), yet time values (Table 5.7) report 19% of session time was devoted to organizational behaviours.

Instructional data from Session 6 (Table 5.6) reveal consolidation in one key aspect of Coach B's modified behaviour. Feedback on "correct" performance continued to exceed that on "incorrect" performance (44% to 28%). A positive reversal in the timing of comments: 21% "during", 76% "post", but a decrease in the use of "stopped" (3%) is also reported. The remaining data displays a profile of less effective coaching. The percentage of "instruction" decreased from 43% (i.e., 3% off the target value) to 28%, demonstrations fell to 6%, "key factors" to only 34%, and "inappropriate" comments rose to 15%. These results had not been anticipated in light of Intervention 2 or Coach B's objectives for the session. It is postulated, however, that the decrease in "instruction" was perhaps the result of an excessive response to reducing unnecessary instructions. Observer responses (Table 5.5) indicate that coaching behaviour failed to improve athlete performance.

Intervention 3: The consolidation of "skill" related comments (i.e., second consecutive session where "skill" related comments exceeded 80%) was immediately discussed, and

it was shown that, compared to the baseline phase, a low percentage of "organization" comments had afforded a high percentage of "skill" related comments (83%). It was also emphasized that this percentage had been enhanced by a reduction in "non-specific" comments. The focus of these "skill" related comments was then discussed. The low percentage of "instruction" was highlighted, and a rationale was provided for their increase. Coach B was commended for the continued progress and apparent stability in his provision of feedback. His reflections on Session 6 state "Felt I was stronger in picking up on the finer points of a players performance (and) by being positive, even when correcting a players mistakes, I was able to get more out of them". This acknowledges the worth of reinforcing players of this age as Coach B, as well as increasing feedback on "correct" performance, has modified his approach in dealing with feedback on "incorrect" performance. The timing of comments was discussed, and Coach B was commended for increasing his "post" comments. However, a rationale was provided for an appropriate and effective balance in the timing of comments; regardless of session type. This included finding opportunity to use the 'freeze' technique. Coach B's journal entry reads "Missed certain key factors when giving instructions". This was immediate acknowledgement that "key factors" had not been satisfactorily addressed (34%). Importantly, it was noted during data that the drill had not functioned as designed. During the intervention Coach B acknowledged this and the negative effect it had caused. He was counselled to be familiar with the drill design, and made aware of how an appropriate build up of the drill(s) would maximize reference to "key factors". The confusion with regard to session design had, it was highlighted, also contributed to the increase in "inappropriate" comments.

Session 7: All of Coach B's objectives for this session focussed on the instructional component. However, Table 5.5 reports that, despite no set objective, Coach B delivered a clear and concise organizational component. Video review revealed an early

demonstration was accompanied by succinct comment detailing the drill's essential goals.

Instructional behaviour duly benefited as 87% of all comments were "skill" related and only 6% were required for further "organization". The focus of comments again showed reduced use of "instruction" (20%), but continued emphasis on feedback on "correct" performance (42%). It was noted, however, that feedback on "incorrect" performance increased (38%). The timing of comments was, once again, less effective ("during" 61%, "post" 33% and "stopped" 5%). "Demonstrations" increased to 10% and "key factors" to 49%; although the latter was still considerably below the target value. This was a disappointing feature as Coach B's objectives revealed a definite emphasis on increasing reference to "key factors". They read "Give thought before commenting on player's performances. Work on Key Factors when giving instructions and try to use (them) when giving positive remarks to players". "Inappropriate" comments were notably reduced (7%) and instructional behaviour, according to observer responses (Table 5.5) was sufficiently effective to have caused improvement in athlete performance.

Coach B's immediate reflections on Session 7 read "(I) feel it will take a little longer (for changes) to become more natural. (I) talked during drills (and) not enough "Post". (I) tried to wait before giving instructions - a little awkward at first but as (the) drill went on it became a little easier". These reflections capture the difficulty Coach B was experiencing in achieving the desired timing of comments.

Intervention 4: The positive impact of a sound organizational component was highlighted to Coach B. His sessions were now characterized by a high proportion of skill information, with little "organization", "non-specific" or "inappropriate" comment. However, while "skill" related comments greatly exceeded that of the target value, their

effectiveness could still be enhanced through greater reference to "key factors". Video evidence was combined with lengthy discussion to devise a strategy by which Coach B could increase his reference to them. This strategy centered on a progressive build up of each drill, and was also seen as a means of improving the focus of his comments. It was proposed that by gradually increasing the scope of the drill, "correct" performance was more likely to prevail. The coach could introduce new information in the form of "instruction" and aim to reinforce performance as complexity increased. Reinforcement would focus specifically on the "key factors" covered to that point in the drill's progression. It was envisaged such a strategy would generate greater reference to "key factors" and a more appropriate balance of "instruction" and feedback types.

The ineffective timing of comments was also discussed and their implications reinforced. Coach B was encouraged to resist the desire to intervene "during" performance; even in drills with few natural breaks in play (e.g., Session 3). Video-tape evidence was used to show instances where too much comment prevailed "during" performance, particularly when excellent feedback was provided in the ensuing break in play. Coach B's reactions to the intervention reflect a sound comprehension of the discussion that took place. The main features of the intervention are formally broken down, and suggest a conscious effort to attend to these features will be made in the follow-up phase.

Session 8: Observer responses (Table 5.5) suggest the organizational component to have been clear, concise and efficient, and time values (Table 5.7) report organizational time to approach its lowest value (11%). Coach B's journal entry revealed a conscious effort to start the drill efficiently by means of a demonstration.

The impact of sound organization is evidenced by the high percentage of "skill" related

comments (82%) and the minimal requirement for "organization" comments (9%; Table 5.6). The focus of "skill" related comments remained predominantly positive but, at 20% "Instruction", 56% feedback on "correct" performance and 23% feedback on "incorrect" performance, only approximate the target values (i.e., 40%, 40% and 20% respectively). The timing of comments show extreme change in the desired direction with a profile of 9% "during", 81% "post" and 9% "stopped". Reference to "key factors" increased markedly; indeed 67% was the second highest value to that date. This appears to be the result of the coaching objective "As the drill progresses, point out Key Factors in (the) hope of building up the drill. Put Key Factors in the right time and place". "Demonstrations" accompanied 8% of comments, and "inappropriate" comments increased marginally (12%). The results compare favorably with target values and, in conjunction with observer responses to athlete performance (Table 5.5), suggest Coach B's behaviour was effective in improving athlete performance.

Follow-Up Phase: Increase in positive observer responses (Table 5.5) and the reduced mean organizational time (14%; Table 5.7) indicated a positive change in Coach B's organizational behaviour across the Intervention Phase. A further increase in positive observer responses (Table 5.5) and reduction in organizational time (mean value = 11%; Table 5.7) is evident in the Follow-up phase. Journal entries across the follow-up phase suggested Coach B remained focussed in his attempts to maintain improvement in organizational behaviour.

The quality of instruction undoubtedly benefitted from the improved organizational behaviour as, across the follow-up phase, 83% of comments were "skill" related (Table 5.6). A notable improvement in Coach B's behaviour is evident in the breakdown of his "skill" related comments. "Instruction" had a mean value of 32%, and feedback on "correct" performance (mean = 42%) outnumbered that on "incorrect" performance

(mean = 27%). Mean values for the timing of "skill" related comments reflect closely the target values: Table 5.6 reports values of 33%, 57% and 10%, for "during", "post" and "stopped" respectively. "Demonstrations" increased across the follow-up phase and, on average, accompanied 12% of coaching comments; reference to "key factors" improved fractionally (mean = 59%) but did not reach its target value; and comments considered "inappropriate" fell to a mean value of only 6%. The improvement evident in coaching behaviour during this phase is reinforced by observer responses to athlete performance questions. These responses suggest Coach B's behaviour over the follow-up phase produced a stimulating and challenging environment in which improvement in athlete performance was evident.

Summary: Coach B's initial behaviour was, on the whole, effective. However, interpretation of the data suggested inefficiency in the delivery of organizational information, as well as low amounts of feedback on "correct" performance and reference to "key factors". Intervention sessions reinforced the strengths of Coach B's behaviour, but drew attention to these areas of concern. Coach B acknowledged these as important points, and his journal entries and audio-taped verbal reactions revealed a concerted effort to attend to the issues raised. The intervention phase saw his attempts to improve effectiveness have a positive impact on his organizational component. Moreover, it saw Coach B consciously attempt to change the nature of his feedback, plan and build up session content to maximize his reference to "key factors", and approximate target values for the timing of comments. Ultimately, Coach B's follow-up results revealed increased efficiency in conducting the organizational component, and increased effectiveness of instructional behaviour. Instructional behaviour was now characterized by increased "skill" related comments, notable improvement in provision and balance of feedback, and increased effectiveness in the timing of comments. Unfortunately, no improvement occurred in the vital area of reference to "key factors".

5.3.3 Coach C

Baseline Phase: Observer responses to organizational questions (Table 5.8) provided valuable information on Coach C's effectiveness in explaining the organizational goal(s) of the drill. Responses pertaining to the baseline phase suggest that while the athletes appeared to understand the organization of the drill (6 positive responses to Question 1) the information was not, on the whole, delivered in a clear, concise or efficient manner (6 and 7 negative responses to Questions 2 & 3 respectively).

INSERT TABLE 5.8 HERE

Data reported in Table 5.9 provide detailed information on Coach C's instructional behaviour across the three study phases. In the baseline phase, 47% of Coach C's comments were "skill" related and no individual session exceeded the 70% threshold identified. The mean focus of these skill-related comments was 62% "instruction", 17% feedback on "correct" performance and 21% feedback on "incorrect" performance. Session 3 was the only session where "instruction" did not form the majority of "skill" related comments (46%). The timing of "skill" related comments was 47% "during" performance, 49% "post" performance and 2% when play was "stopped". Session 4 data (33% "during" and 67% "post") largely accounts for the higher mean value for "post". "Demonstrations" accompanied only 1% of "skill" related comments and "key factors" were referred to in 39% of comments across the four sessions.

The remaining comments were "non-skill" related. Most meaningfully expressed as a percentage of all comments made, their mean values were 16% "non-specific", 6% "effort", 7% "behavior" and 25% "organization". Notably, in Session 4 "non-specific"

comments constituted 29%; almost twice that of the baseline mean. Importantly, 24% of all comments were considered "inappropriate" during the baseline phase.

INSERT TABLE 5.9 HERE

Observer responses to athlete performance questions (Table 5.8) provide insight into the quality of the learning environment created by Coach C. Responses pertaining to the baseline phase suggest the sessions to have been stimulating (7 positive responses to Question 1). However, Coach C's ability to challenge and effect improvement in his players was not convincing (4 and 8 negative responses to Questions 2 and 3 respectively); a feature linked to the quality of his organizational and instructional behaviour.

Intervention 1: Coach C's attention was immediately drawn to the fact that the majority of his comments were "non-skill" related (53%; Table 5.9). He acknowledged this to be less than desirable and agreed that, with 25% of instructional behavior spent on "organization", the root of the problem lay within the organizational component. Video-tape evidence was used to show the typical organization of his sessions, and Coach C accepted that it was characterized by extended and overly-precise directions, and a tendency to impart too much coaching information. He stated "I am over-emphasizing what I want to be perfect first time". Time values (Table 5.10) report that across the baseline phase 38% of session time was spent in organizational behaviour. Coach C stated, "(I am) talking a lot (and) there was not much done", but continued, "(I) can't describe it any faster than I did right there, not unless you only have four girls working". This appeared to highlight his assumption that organization could only be

explained verbally. The advantages of demonstration were stated and it was suggested that his organizational behaviour would benefit from an early demonstration with succinct accompanying comment. Coach C accepted it could greatly reduce the follow-up organization currently evident, and thus promote "skill" related information.

INSERT TABLE 5.10 HERE

The focus of "skill" related comments was discussed, and the target values of 40% "instruction", 40% feedback on "correct" performance and 20% feedback on "incorrect" performance were identified. Coach C was advised to increase the proportion of feedback he gave on "correct" performance (i.e., from 17% to 40%). The rationale for this was explained to him and video-tape examples were shown of the desired behaviour. The examples chosen all included reference to "key factors" so that the quality of these comments could be discussed. Coach C acknowledged that, if he increased his reference to "key factors", the girls would be more focussed and challenged within the drill, and the likelihood of improvement in performance would be increased (thus addressing athlete performance Questions 2 and 3). Increasing specific comment would also have a further impact as it was postulated the number of "non-specific" and "inappropriate" comments would decrease markedly.

Balance in the timing of comments was also discussed. Coach C was encouraged to increase the proportion of comments given "post" performance and when play was "stopped" (currently 49% and 4% respectively). This, it was suggested, would enhance the players' ability to attend to his coaching information. The latter coaching methodology was also promoted as an ideal opportunity for demonstration: an excellent

coaching behavior that currently only accompanied 1% of Coach C's comments.

Objectives for the intervention phase (detailed in Appendix C: Intervention Objectives - Coach C) were presented to Coach C to focus his thoughts and guide his journal entries. These journal entries are detailed, along with sessional results and prescriptive comment, in Appendix D: The Intervention Process - Coach C.

Note: It is clear from Coach C's journal that entries were not always made at the time requested. For example, objectives for Session's 5 and 6 were clearly written up retrospectively. As such it is difficult to ascertain the extent to which objectives were formalized prior to the session, or reflections were written before intervention occurred.

Session 5: The organizational objectives for Session 5 were "Demonstrate the drill. Be concise in comment, explaining the drill, but do not over emphasize". Despite the set objectives, observer responses (Table 5.8) suggest Coach C's organizational behaviour remained comparable to that of the baseline phase. Instructional data (Table 5.9) suggests it may have deteriorated: While 58% of comments were now "skill" related, 36% of comments were required to provide further "organization" information. Review of the video-tape reveals a demonstration occurred, but that Coach C imparted too much technical information both preceding and during it. The inclusion of a demonstration, however, did reduce the time spent in organizational behaviour. Table 5.10 reports a decrease of 10% in organizational time from the baseline phase.

Table 5.9 reveals that, while excess "instruction" remained (62%), there was a positive change in the nature of feedback. Feedback on "correct" performance increased to 28%; a level notably higher than that on "incorrect" performance (10%). Coach C set two objectives concerning the timing and delivery of comments: "Give more "post" comments", and "Try to vary my coaching methods". In response to these his behavior

showed an increase in "post" comments (from 49% to 59%), but effectively no change regarding the use of 'freezing' play in order to demonstrate. "Stopped" decreased to 0%, and "demonstration" remained at 1%. Coach C's objective of increasing reference to "key factors" was met (increased by 20% to 59%). While this also produced a decrease in "non-specific" comments (16% to 4%), it did not reduce those considered "inappropriate"(25%). Data files reveal that 8 out of 19 comments considered "inappropriate" were in fact due to improper reference to "key factors" (e.g., "Just remember the key factors"). Coach C's behaviour was, according to observer responses (Table 5.8), sufficient to stimulate and challenge the athletes, but not to facilitate improvement. Coach C's immediate reflections conveyed that he had fulfilled his objectives. This would appear to be only partially accurate.

Intervention 2: The first aspect of Coach C's behaviour discussed was the increase in "skill" related comments (47% to 58%). Despite not reaching the threshold value (i.e., 70%) Coach C was commended on this positive change and was informed that this was a direct result of decreasing comment in three areas of his behaviour: "Non-specific" from 16% to 4%, "effort" from 6% to 0% and "behavior" from 7% to 1%. It was stressed, however, that the threshold value would only be surpassed if "organization" comments could be reduced. Video-tape evidence was used to illustrate the aspects of Coach C's organizational component that were less effective and that had, essentially, necessitated 36% of comments in the instructional component to be devoted to "organization" behaviour. Ensuing discussion indicated that Coach C appreciated the utility of succinct demonstrations in establishing the organizational goals yet, importantly, portrayed Coach C's belief that his athletes should be able to understand goals that are solely verbalized. He was counselled that while he, and perhaps some of his athletes, could cope with this method of delivery a demonstration of the organizational goals was probably essential if all his athletes were to function effectively within the drill.

Discussion proceeded to the focus of Coach C's "skill" related comments and it was pointed out that "instruction", at 62%, was unduly high. Target values for "instruction" and feedback were reemphasized and Coach C acknowledged the benefits of increasing his proportion of feedback comments. He was, at this point, commended for establishing greater reference to feedback on "correct" performance (28%) than on "incorrect" performance (10%). Positive change with regard to the timing of comments was also brought to Coach C's attention. However, while there had been an excellent increase in "post" comments (49% to 59%), concern was expressed over the inflated number of "during" comments and Coach C's failure to use the 'freeze' technique (i.e., "stopped"). Remedial action was suggested; anticipate instances where the 'freeze' would be more effective than comment made "during" performance. It was postulated that this would not only help him approximate the target values for the timing of comments, but also afford him opportunity to demonstrate. Following video-tape evidence Coach C appreciated the benefits of the 'freeze' technique and appeared to acknowledge the utility of demonstrations at this time. However, he did state "The number of demonstrations well I could have picked up on that, but I wanted the girls to do it that's why. I'm very cautious on demonstrations. I could go in and give them but I don't feel right about it I really don't". This concern failed to appreciate that the quality of practice time could be greatly enhanced. Finally, the increase in reference to "key factors" was also discussed and it was conveyed to Coach C that the session, as a whole, had been more informational and thus the environment more challenging to the athletes. Coach C's journal entries following Intervention 2 express pleasure at what the data had revealed. The entries are, however, very general and do not convey the extent to which Coach C had absorbed the information given.

Session 6: Six positive responses (Table 5.8) suggests that Coach C's organizational behaviour was most effective in Session 6. Time values (Table 5.10) also reveal a

comparatively small amount of time spent in organizational behaviour (30%). The brevity of his organizational behaviour (4 mins 20 secs) is somewhat masked in the percentages (30%; Table 5.10) as Session 6 only lasted 14 mins 20 secs. It appears that this behaviour was the result of a set objective, and Coach C's behaviour did address issues raised in Intervention 2. For example, review of the video-tape reveals an early demonstration with appropriate accompanying dialogue. Instructional data (Table 5.9) also provides support for a more effective organizational component. Only 14% of all instructional comments were devoted to points of "organization", thus promoting a greater proportion of comments to "skill" related information (74%).

Table 5.9 reveals the focus of "skill" related comments to approach the target values. "Instruction" fell to 48%, and the proportion of feedback duly rose. Feedback on "correct" performance remained more frequent than that on "incorrect" performance (29% to 24%), although the differential does not approach the desired 2:1 ratio. There was a significant use of the 'freeze' technique during the session (14%), although this appears to have been detrimental to "post" comments which decreased from the target value by 16%. As anticipated, the increased use of the 'freeze' technique promoted greater use of demonstration, and "demonstrations" accompanied 7% of comments. Reference to "key factors" decreased to 45%; a feature that can be partly accounted for by the increase in "non-specific" comments (4% to 11%). The number of "inappropriate" comments fell appreciably to a low value of 12%. Coach C's behaviour was, according to observer responses (Table 5.8), sufficient to stimulate and challenge athletes, but not to facilitate improvement. Supplemental notes reveal the key areas of performance were largely ignored, a feature which perhaps explains the low reference to "key factors".

Intervention 3: The increase in "skill" related comments was immediately discussed in Intervention 3, and it was impressed upon Coach C that this had been the result of an

improved organizational component. He reacted, "One of the things I really set myself down to do was to be concise and straight to the point, give a demonstration, which I did, which pleases because I feel that was the hardest part before". Coach C was commended for this, and observer responses were shown to Coach C to highlight the increased effectiveness of the organizational component.

Specific attention was paid to the focus and timing of these "skill" related comments. Changes in the focus of Coach C's comments were discussed and he was challenged to continue to reduce the amount of "instruction" given and increase the amount of feedback that reinforced "correct" performance. With regard to the timing of comments Coach C was congratulated on the very evident use of the 'freeze' technique (i.e., "stopped" = 14%; Table 5.9). He explained, "One of the things I wanted to do on my objectives was, OK, if its going wrong I wanted to stop it, take it back and say now go down. I think the stopping and getting in there happened about 4 times and I liked the way it was done". This suggested Coach C appreciated the benefits of this coaching methodology and how its intelligent use would create more effective coaching. Moreover, he explained how it had provided him with opportunity to give demonstrations as to what was expected of the girls within the drill. Video-tape evidence was used to counsel Coach C as to the ideal use of 'freezing' and demonstrating, and he was encouraged to consolidate this within his instructional behaviour. At this point he was also advised to increase the proportion of "post" comments towards the target value of 60%. Coach C's attention was then directed to the decrease in "inappropriate" comments (12%; Table 5.9); a feature facilitated by a reduction in unnecessary instructions and the elimination of the inappropriate use of "key factors" (i.e., a feature raised by Session 5 results). Lastly, the decrease in reference to "key factors" was discussed. The reason for this decrease was isolated, and Coach C acknowledged a failure to address the "key factors" when interacting with

those athletes working as central strikers to be the cause. While continually challenging those performing the crossing action through reference to "key factors" his comments to the central strikers had been much less specific (e.g., "Finish", "Put it away"). Coach C was encouraged to ensure his observations, and therefore his comments, concentrated on all aspects of the drill in which "key factors" were pertinent.

Coach C's journal did not include any reaction to the intervention session. However, during the intervention session he stated, "The whole of my objectives were covered and it came out what I wanted to do. I thought, right at the end when I took the mic off, I goes yes, I nailed that one right on the head and I felt it nailed on the head because I didn't deviate". This conveys his pleasure at what was, undoubtedly, more effective coaching behaviour. Unfortunately, it is difficult to ascertain from Coach C's journal entries (i.e., objectives for, and reflections of, Session 6) the dimensions of behavior he sought to change, or the extent to which he understood change had occurred.

Session 7: Five negative responses (Table 5.8) suggests Coach C's organizational behaviour in Session 7 to be ineffective. "Organization" comments within the instructional component rose by 8% to 22% (Table 5.9), and "skill" related comments decreased to 60%. This information indicates organizational behaviour in Session 7 to be less effective than the previous session. Interestingly, none of Coach C's objectives for the session focussed on organizational behaviour.

Table 5.9 reveals "instruction" to once again form the majority of "skill" related comments. "Instruction" rose to 57%, while feedback on "correct" performance (25%) remained well below the target value. The timing of comments also reports a decrease in effectiveness. Comments given "during" increased to 61%, while those given "post" and "stopped" fell to 38% and 2% respectively. It is noted that no objectives were

formalized for either the focus or timing of comments. The number of comments accompanied by "demonstrations" fell to 2%, "key factors" remained below 50%, and "inappropriate comments" rose to 16%. According to observer responses (Table 5.8), Coach C's behavior in Drill 1 of the session was sufficient to challenge and effect improvement, but in Drill 2 it was not. This suggests some fundamental differences in behaviour across the two drills.

Coach C's reflections on the session read "I found it very hard to keep focussed on what I wanted from the girls. It did not appear to me at the end of the session that the "key factors" were addressed". The journal does not portray an introspective examination as to why this was so, rather it continues, "The girls were not overly interested in the drill. I felt that I had to keep them going and that they did not want to work for me tonight. Wednesday nights seem to be consistently bad, and I feel that the time of practice (i.e., 7:00 - 8:00 p.m.) is a major factor". It is further suggested that the design of the drill contributed to the evening's events and his coaching behaviour.

Intervention 4: Observer responses and instructional data suggested verbal coaching behaviour during Session 7 to be rather ineffective. Review of the data and session video-tape revealed that the cause of the ineffective behaviour lay in Coach C's organizational behaviour. It was conveyed to him that, while some appropriate verbal information had been given to the athletes, confusion clearly existed among the athletes as to what the organizational goals were. He reacted "What can I do other than repeat it again?" A demonstration of the organizational goals, similar to that which had been so successful in Session 6, was offered as a means of assisting the delivery of organizational information. At first Coach C accepted this, but it was soon clear he believed that the girls behavior during the session had been a greater determinant in the proceedings than his own. He stated, "I would argue, and argue until I'm blue over

this one, its because they don't listen and I can't help if they don't listen". He then reiterated the external factors he believed detracted from the work ethic of his athletes. Dealing only with what the data revealed, the use of a demonstration was again offered as a possible solution; one which, as was evident from Session 6, could promote greater understanding in the athletes and thus help generate a more productive and effective coaching session. Very open and honest discussion ensued and it was clear that Coach C had reflected at length on the session. However, he remained reticent to adopt the solution offered, closing the discussion by saying "Is there something wrong with the way I explain it? If there is I'd like to know because I'm having a problem here. Either its a lack of ability from me, and I don't think it is, because I was quite clear and concise".

Coach C then enquired what could be done within the session to off-set the lethargy and indifference he believed his athletes had shown. He was counselled that the constructive solution for the coach was to ensure that their behaviour promoted effort and challenge in the session. Consequently, this question provided a platform with which to reinforce the rationale behind the target values in the various dimensions of verbal coaching behaviour. To this end the remainder of Intervention 4 focussed on encouraging Coach C to; increase his use of feedback, increase the number of "post" and "stopped" comments, anticipate opportunities for "demonstration" and make greater reference to "key factors". Video-tape evidence was used to highlight some of these points, and he was reinforced that by attending to these recommendations the challenge of the drill would increase and, as a consequence, it would increase the likelihood of the athletes responding in a positive manner. Coach C responded "After seeing (these examples) I still didn't get much out of them, even though I gave them all the key factors they needed". He was referred to the data which suggested otherwise, and asked to consider it more carefully.

Coach C's reactions to Intervention 4 acknowledge his behavior to have contributed to the nature of the session, and also point to other factors which, he as a coach, felt contributed. Importantly, his final statement reveals that at the time of this session there were events happening within the club that he found unsettling.

Session 8: Observer responses (Table 5.8) suggest that the organizational component to have been understood by the athletes, but that clarity, conciseness and efficiency in the information given was lacking. Review of the video-tapes reveal too much technical information was given during the set up of both session drills, and failure to demonstrate the requirements of Drill 2 led to misbehavior and a "false start". Instructional data reveal "skill" related comments to fall to 50%, and comparably high values of "organization" (18%) and "behavior" (10%). Notably, Coach C's objectives for Session 8 did not address his organizational behaviour.

The nature of "skill" related comments showed some positive change. While "instruction" remained high (53%), there was an increasing differential in favour of feedback on "correct" performance. The timing of comments; "during" (25%), "post" (72%) and "stopped" (4%), approximated the target values. However, "demonstration" (2%), and "key factors" (45%) remained lower than desired, and "non-specific" (16%) and "inappropriate" (19%) increased again.

The results suggests Coach C did not approach the behaviour required to challenge and effect improvement in his athletes. This is reinforced by the observer responses (Table 5.8). Interestingly, Coach C's reflections on the session read "This session was one of the better ones". His reflections convey, in more detail than previous entries, which aspects of his performance he believed contributed to this.

Follow-up Phase: Increase in positive observer responses (Table 5.8) indicated some positive change in Coach C's organizational behaviour across the follow-up phase, although time values (Table 5.10) report an increase in the time spent in this component. Review of the video-tapes revealed that, when used, a demonstration greatly enhanced the clarity and efficiency of the organizational component: For example, note the observer responses and time values pertaining to Session 10. Unfortunately the provision of a demonstration at such times remained infrequent. Journal entries across the follow-up phase suggested Coach C focussed some attention on improvement in organizational behaviour.

Across the follow-up phase there was a decline in several key areas of verbal coaching behavior. The percentage of "skill" related comments had a mean value of 51%, feedback on "correct" performance fell to 18% (approximately half that of feedback on "incorrect" performance), and "non-specific" and "organization" comments rose to 15% and 29% respectively. However, Coach C showed very positive change in several aspects of his behaviour. Mean values for the timing of "skill" related comments reflect closely the target values: Table 5.9 reports values of 31%, 62% and 8% for "during", "post" and "stopped" respectively. "Demonstration" increased across the follow-up phase and, on average, accompanied 5% of coaching comments. Reference to "key factors" also improved appreciably over this phase (mean 63%), and comments considered "inappropriate" fell to a mean value of 12%.

Observer responses (Table 5.8) suggest those aspects of improved coaching behaviour may have helped Coach C generate more enthusiasm and challenge in his sessions. However, the responses suggest Coach C's ability to effect improvement in his players remained low.

Summary: Coach C's initial behaviour was, according to the CAI (II) data, somewhat ineffective. Organizational information was not, on the whole, delivered in a clear or efficient manner, and his instructional behaviour was characterized by low reference to "skill" information, low amounts of feedback (particularly on "correct" performance), few demonstrations and low reference to "key factors". Intervention sessions focussed on addressing areas of ineffective coaching. The benefits of effective organization, increasing feedback on "correct" performance, and increasing reference to "key factors" were illustrated, as was the use of the "stopped" methodology to promote the use of "demonstration". Coach C acknowledged this information to be valid and pertinent. The intervention phase saw Coach C attempt to approximate the target values given for effective behaviour. Conscious efforts appeared to be made, although coaching objectives were limited, and audio-taped verbal reactions suggested Coach C did not always give credence to all recommendations made. Coach C's follow-up results reveal that several improvements occurred. The timing of "skill" related comments reflect closely the target values, and the use of "demonstrations" and reference to "key factors" increased appreciably. However, efficiency in the delivery of organizational information was not consistently achieved as Coach C remained reticent to use an introductory demonstration. As a consequence, reference to "skill" related information was disappointing, and feedback on "correct" performance was, at times, extremely low.

5.3.4 Coach D

Coach D was asked to perform the function of "control" subject. The only deviation from the protocol established for the other coaches was the content of Coach D's intervention sessions. No CAI (II) data was made available to Coach D at this point. Rather, he was provided with the video-tape of his previous performance, instructed to focus on his verbal behaviour, and asked to formulate and implement any modifications to his behaviour he felt necessary. The analysis of his behavioural change would

provide information on the benefits of discretionary viewing of past performance, while comparison with the behavioural change of Coaches A, B and C would allow for informed statement regarding the utility of the CAI (II) intervention strategy.

Note: Session 5 through 12 constitute eight consecutive practice sessions. However, as a result of technical difficulties the video-tape of the Defending session (that would have constituted Session 9) could not be used. The session content for the follow-up phase, therefore, continued in the order proposed, and Coach D repeated the "lost" session at the end to complete a four session phase. Sessions are numbered according to their final order of presentation.

Baseline Phase: Observer responses to organizational questions (Table 5.11) provided valuable information on Coach D's effectiveness in explaining the organizational goal(s) of the drill. Responses pertaining to the baseline phase suggest that while the athletes appeared to understand the organization of the drill (7 positive responses to Question 1) the information was not, on the whole, delivered in a clear, concise or efficient manner (6 & 7 negative responses to Questions 2 & 3 respectively).

INSERT TABLE 5.11 HERE

Data reported in Table 5.12 provide detailed information on Coach D's instructional behaviour across the three study phases. In the baseline phase, 56% of Coach D's comments were "skill" related, with Session 2 (78%) the only individual session to exceed the 70% threshold identified. The mean focus of these "skill" related comments was 48% "instruction", 11% feedback on "correct" performance and 42% feedback on

"incorrect" performance. Notably, in all baseline sessions, feedback on "incorrect" performance was given more frequently than that on "correct" performance. The majority of "skill" related comments were given "post" performance (mean = 60%), with 33% and 7% of comments given "during" and "stopped" respectively. "Demonstration" accompanied 3% of "skill" related comments and "key factors" were referred to in 49% of comments across the four sessions.

The remaining comments were "non-skill" related. Most meaningfully expressed as a percentage of all comments made, their mean values were 6% "non-specific", 6% "effort", 4% "behavior" and 29% "organization". Notably, in Session 2 "organization" comments were appreciable lower than the other three session; a feature that appears to have afforded Session 2 its high "skill" related value. Importantly, 12% of all comments were considered "inappropriate" during the baseline phase; the majority of which (14 out of 20) were due to failure to address the "key factors".

INSERT TABLE 5.12 HERE

Observer responses to athlete performance questions (Table 5.11) provide insight into the quality of the learning environment created by Coach D. Responses pertaining to the baseline phase suggest the sessions to have been both stimulating and challenging (6 positive responses to each of Questions 1 & 2). However, Coach D's ability to effect improvement in his players was not convincing (2 positive responses to Question 3); a feature linked to the quality of his organizational and instructional behaviour. Time values (Table 5.13) report that Coach D spent, on average across the baseline phase, 31% of practice time in organizational behaviour.

INSERT TABLE 5.13 HERE

It is important to remember that none of the data reported was available to Coach D until after the completion of the study.

Intervention 1: Initial discussion set the scene regarding the purpose of the study.

Coach D was informed that the study was an investigation of the coaching process, and that verbal coaching behaviour was the specific variable under analysis. He was told that verbal coaching behaviour was those interactions made when organizing and explaining the goals of the drill(s), as well as those providing instruction and feedback once the drill(s) was underway. Coach D was asked to view the video-tapes of his baseline sessions and focus his attention on his verbal coaching behaviour. Following this, he was to identify any strengths and weaknesses in his behaviour and, where necessary, try to effect a positive change in subsequent behaviour. To focus his thoughts for the remainder of the study period he was asked to maintain a written journal that would detail his own sessional objectives, convey his immediate reflections on the session and, during the intervention phase only, express his reactions to viewing his video-taped performances. These journal entries are detailed in Appendix D: The Intervention Process - Coach D. Coach D agreed to these requests and stated that he understood what was being asked of him.

In reaction to the intervention session Coach D wrote, "I feel positive about the study in that I think it will be of benefit to me as a coach. It will allow me to see and evaluate my performance and interactions during the practices". Coach D then viewed the video-

tapes prior to conducting Session 5 and concluded, "(I am) too slow in getting the drill underway. The explanation at the start is a bit too long - must get to the point a bit sooner". He also wrote, "Need to be more positive before correcting", suggesting a view to change the nature of his feedback. In light of the data reported (but not, at this point, available to Coach D), these reactions appear very astute.

Session 5: Coach D's objectives for Session 5 reflected the conclusion he had drawn on his baseline behaviour. Specifically, they revealed his intent to produce quicker and more pointed organization, and that a demonstration would be included. Observer responses (Table 5.11) and time values (Table 5.13) suggest that, despite the set objectives, Coach D's organizational behaviour continued to lack clarity and conciseness. Moreover, observer responses indicate that the athletes did not understand what was asked of them. Review of the video-tapes and supplemental notes reveal that Coach D took for granted that the athletes would remember the operation of the drill(s). As it became evident that they had not, he reiterated the goals of the drill(s); in all a lengthy process. He chose not to demonstrate the organizational goals of Drill 1 and, only as a last resort, did he provide an excellent demonstration for Drill 2. Instructional data (Table 5.12) suggests a rather ineffective organizational component. Only 55% of comments were "skill" related, as 23% were required to provide additional "organization".

The instructional objective for Session 5 read, "Emphasize positive points before correcting". Table 5.12 reports a marked increase in the proportion of comments that provided feedback on "correct" performance (11% to 32%), and a decrease in feedback on "incorrect" performance (42% to 32%). These reveal considerable change in the nature of Coach D's feedback. The majority of "skill" related comments continued to be given "post" performance (64%), with 32% and 4% of comments given "during" and

"stopped" respectively; no "skill" comments were accompanied by a "demonstration"; "key factors" were referred to in 50% of comments; and comments considered "inappropriate" decreased to 8%. Notably, observer responses concerning athlete performance (Table 5.11) suggest that Coach D's behaviour was sufficient to stimulate and challenge the athletes and, in Drill 1, facilitated improvement in athlete performance. Data pertaining specifically to Drill 1 reports greater reference to "key factors" at this time. Coach D's immediate reflections on the session convey disappointment in his performance, and a feeling that he talked too much when a demonstration would have sufficed.

Intervention 2: Coach D viewed the video-tape of Session 5 and reacted, "Not as bad as I thought". He indicated, through his journal, that the video-tape reinforced his own feelings that he talked too much at the beginning of the drills. Notably, reactions to Session 5 do not acknowledge any aspect of his instructional behaviour.

Session 6: Coach D's organizational objective for Session 6 was to address only "the important points" before walking his athletes through the drill. Review of the video-tape revealed this occurred in Drill 1, but not in Drill 2. Accordingly, observer responses (Table 5.11) suggest greater effectiveness in Coach D's organizational behaviour in Drill 1. Across Session 5 observer responses suggest Coach D's organizational behaviour to be more effective and efficient than previously, and time values (Table 5.13) report a decrease of 11% in the time spent in this behaviour. Moreover, instructional data (Table 5.12) report only 6% of comments were required for subsequent "organization" and that 73% of comments now dealt with "skill" information.

The lone objective for instructional behaviour was the same as that in Session 5. Table 5.12 reports that Coach D's feedback remained more positive in focus than it had been

during the baseline phase. While feedback in total decreased from Session 5, feedback on "correct" performance remained equal to that on "incorrect" performance (27%). This revealed another appreciable decrease in feedback on "incorrect" performance. The timing of "skill" related comments changed slightly as an increased proportion of comments was given "during" performance (46%). This resulted in a decrease in comments given "post" and "stopped" (54% and 0% respectively). Coach D's information was, as the data suggests, much less specific in nature in this session. Reference to "key factors" decreased to only 32%, "non-specific" comments increased dramatically to 17%, and 8 of the 14 comments considered "inappropriate" (18%), were for failure to address the "key factors". Finally, and as was the case in Session 5, no "demonstrations" were given during the instructional component. Observer responses concerning athlete performance report that Coach D's behaviour was sufficient to stimulate and challenge the athletes but not to effect improvement in his athlete's performance. Coach D's reflections on the station stated, "I felt that this drill, and my running of it, went fairly well. I think I achieved the objective of being less verbal initially and I got the drills going quickly". The data would appear to support this opinion.

Intervention 3: Coach D viewed the video-tape of Session 6 and reacted, "I felt that my impressions before seeing the video were more or less confirmed. Overall I'm pretty happy with the outcome". Interestingly, viewing of the video-tape allowed him to state "On reflection I think I should have emphasized the more determined shooting of the crossed ball". While enlightening for Coach D, this feature focuses on the technical performance of his athletes. No reactions focus on any aspect of his instructional behaviour other than the nature of feedback.

Session 7: Organizational objectives for Session 7 restated Coach D's desire to get the

drill underway quickly through the use of a demonstration. Review of the video-tape reveals a demonstration increased the efficiency of delivery in Drill 1; a feature acknowledged in the observer's responses (Table 5.11). Unfortunately, the organization of Drill 2 was entirely verbalized and, while the goals were clearly stated, efficiency of delivery was diminished. Nevertheless, time values for Session 7 (Table 5.13) remain well below those of the baseline phase. Instructional data (Table 5.12) report the proportion of "skill" comments to have decreased to 63%, and "organization" comments to have increased to 20%. Data pertaining to the individual drills of the session report a higher proportion of "organization" comments were given in Drill 2.

Coach D's instructional objective read, "Emphasize the important points during the drill". While somewhat general, this would suggest a conscious attempt to attend more closely to the "key factors" contained in the practice plan. Table 5.12 reports that 52% of comments of "skill" comments made reference to "key factors", a value only surpassed in Session 1. This positive change is also evidenced by "non-specific" and "inappropriate" comments decreasing to 6% and 8% respectively. Change occurred regarding the focus of Coach D's comments. "Instruction" decreased to 32%, allowing feedback to increase. Unfortunately the proportion of feedback on "incorrect" performance returned to a high level (39%) and exceeded that on "correct" performance (29%). Interestingly, Coach D's previous objective of increasing positive feedback was not stated for this session. The timing of "skill" comments remained similar to that of Session 6, although the use of the 'freeze' technique (i.e., "stopped") returned (3%). Finally, once again no "demonstrations" featured in Coach D's instructional behaviour.

Observer responses concerning athlete performance (Table 5.13) suggest that the athletes had been challenged by the drills, but that they had not worked enthusiastically during Drill 1. In neither drill did athlete performance appear to have

improved. Interestingly, Coach D reflected on the session and wrote, "a number of the players were not in a mood to try and put in effort" In these circumstances I have to give them a talking to this happened later in the practice after the video session".

Intervention 4: Coach D's reactions to the video-tape of Session 7 express that once again his own general perceptions of the session were valid. He acknowledges his own behaviour to be fairly effective, but that the girls attitude had been the main problem. He felt he had achieved little, and that he should have reprimanded the girls earlier in the practice for the attitude they displayed.

Session 8: Coach D's sessional objectives once again focussed on the efficiency of his organizational behaviour and, consistent with his behaviour during this intervention phase, he chose to demonstrate the organizational goals of Drill 1 yet not those of Drill 2. Consequently observer responses (Table 5.11) reveal greater efficiency and athlete understanding occurred during Drill 1. Despite aspects of ineffective organization, "skill" comments in the instructional component increased to 67%, and "organization" comments decreased to 12%.

Instructional data reports the focus of "skill" comments to be 47% "instruction", 22% feedback on "correct" performance and 31% on "incorrect" performance. The proportions of feedback are a disappointing feature considering Coach D's previous objectives. However, it is noted that the wording of his Session 8 objective was "Correct as the drill proceeds. Try and be positive". This may suggest that he was in fact focussing on errors in performance (i.e., "incorrect") and simply being more positive (e.g., sympathetic, friendly) when doing so. The timing of comments report a decrease in "during" and "stopped" comments (38% and 0% respectively) and a subsequent increase in "post" comments (62%). One demonstration was made during the session,

and "key factors" were referred to in 47% of comments. Notably, 18% of all comments were "non-specific", and "inappropriate" comments increased to 15%; all of which were the result of failure to address "skill: or "key factor" information. Observer responses reveal Coach D's behaviour, while effective in stimulating and challenging the athletes, was not sufficient to effect improvement in his athlete's performance. His reflections on the session simply stated, "Overall, it was satisfactory".

Follow-up Phase: Observer responses (Table 5.11) indicated that Coach D's organizational behaviour remained inconsistent and that, if anything, conciseness and efficiency diminished. Time values (Table 5.13) support this contention as, were it not for Session 9's value of 13%, the time spent across the follow-up phase would have approached that of the baseline phase. Review of the video-tapes revealed that demonstrations were used in the set up of only two drills: otherwise Coach D relied entirely on verbal explanation. Interestingly, Coach D's organizational objectives across this phase stressed getting the drill underway expeditiously, but did not mention using a demonstration.

Instructional data (Table 5.12) report that Coach D's behaviour became less effective across the follow-up phase. Several key areas of coaching behaviour illustrate this. Firstly, mean values report that 59% of all comments were "skill" related, and of these only 34% contained reference to "key factors"; secondly, the focus of comments reverted to heavily favour feedback on "incorrect" performance (i.e., 34%, compared to only 17% on "correct" performance), and the majority of these comments were given "during" performance (52%); thirdly, with the exception of Session 12, Coach D failed to use the 'freeze' technique when making a comment (i.e., "stopped"); and fourthly, "demonstrations" only accompanied 1% of all "skill" related comments. Notably, no written objectives during this phase focussed on Coach D's instructional behaviour.

Across the follow-up phase observer responses (Table 5.11) suggest the athletes were stimulated and challenged, but that their performance did not improve because of the information given by the coach.

Summary: Coach D 's instructional behaviour was, according to the CAI (II) data rather ineffective. Organizational information was not delivered concisely or efficiently, and his instructional data revealed poor reference to "skill" related information, infrequent feedback on "correct" performance, and low reference to "key factors". Coach D was then asked to view his immediate past performances, and generate any improvements he felt necessary. Coach D immediately identified a need for improved effectiveness in his organizational behaviour, and a need to increase feedback that reinforced performance (i.e., "correct"). Intervention phase results revealed some notable change in both behaviours although this seemed to dissipate during the follow-up phase. Interestingly, Coach D was not able to identify or make appreciable changes in any other dimensions of his behaviour. It was also evident in the follow-up phase that Coach D's behaviour decreased in efficiency in several key areas of coaching (e.g., reference to "skill" information, feedback on "correct" performance, reference to "key factors"). It is suspected that this may have been related to the practice circumstances at this time.

5.4 Time-Series Analysis : Interpretation of Behavioural Change

The following section provides a time-series analysis of the instructional data to allow visual inspection and analysis according to the multiple baseline design. Evaluation criteria include baseline stability, overlap of data between phases, change in level from baseline to intervention sessions, and trends within intervention and follow-up sessions

(Grant, Ballard & Glynn, 1990; Kazdin, 1978). This criteria is expanded in Appendix E. In evaluating behavioural change it is acknowledged that visual inference from time-series data can be subjective, and interpretation may differ between individuals (Wampold & Furlong, 1981).

Focus: Figure 5.5 illustrates the percent of comments that each of the four coaches focussed on "skill" related information. Much variability is evident in the baseline phase of each coach, and it is clear that no coach exceeded the 70% threshold in all baseline sessions. Other features of this phase are that Coach A's behaviour in Session 1 (Defending) is markedly different to his other sessions, and Coach B, C and D's data show a decreasing trend; one that is opposite to that of prescribed change. As a result of the interventions described in Section 5.3 it was envisaged that Coaches A, B and C would show an increase in reference to "skill" related information. An increase by Coach D, it was predicted, would depend upon his ability to identify and remedy his deficiencies.

INSERT FIGURE 5.5 HERE

The most reliable evidence of change in behaviour is seen in Coach B's data. There is an immediate and consistent increase in level of behaviour, all sessions surpass the 70% threshold, and intervention and follow-up means exceed that of the baseline phase by 16% and 14% respectively. The intervention phase of Coach A reveals a similar pattern to that of his baseline with, again, the Defending session (i.e., Session 5) producing a notably low data point. However, the follow-up phase displays a more consistent pattern with all data points exceeding the threshold. Coach C's data

portrays much similarity across phases although the pattern of data for the intervention phase exists at a higher level (mean = + 14% over baseline). Notably, following Session 6 (the only data point to exceed the threshold) the emerging increase in level of behaviour dissipates and the follow-up phase approximates that of the baseline.

Coach D's journal entries (Section 5.3) identified his organizational behaviour to be non-effective. It was, therefore, anticipated that the time-series analysis may reveal some positive change in his ability to refer to "skill" related information. Considerably less variability is evident in the intervention phase (Figure 5.5.) and, if one includes Session 9's data point, behaviour is approaching that of effective coaching (i.e., the threshold of 70% identified to Coaches A, B and C). However, the last three data points approximate his baseline behaviour and suggest the benefit gained by viewing his own performance has dissipated.

It is most evident in Figure 5.5 that improvement can be effected in coaches who receive interventions driven by CAI (II) data. The time-series analysis clearly portrays a reliable and consistent improvement in Coach B's behaviour, and interpretation of Coach A's data points could suggest that he simply required a longer period of time to accommodate and consolidate the changes asked of his behaviour. One distinct outcome is shown by Coach C's data: Without the appropriate contingencies (e.g., focussing of objectives) positive change can be limited and may soon dissipate. With regard to Coach D's data, while positive change occurred, it is difficult to speculate whether the availability of video and the formation of one's own strategies for improvement is powerful enough to produce lasting improvement. During the last three sessions Coach D assumed his players would remember the drill's organization without the use of an introductory demonstration. This change in strategy had an adverse effect on his ability to provide "skill" related information once the drill was underway.

Skill Focus: The percent of "skill" related comments that were "instruction", "correct" or "incorrect" in nature is illustrated in Figure 5.6. Again, much variability is evident in the baseline phase of each coach. It was anticipated that variability in the data of Coaches A, B and C would decrease as, following intervention, they sought to approximate the target values. Modification to Coach D's behaviour would again be dependent upon the viewing of his video-tapes.

INSERT FIGURE 5.6 HERE

From the point of first intervention there is clearly much less variability in the behaviour of Coaches A and B, with many data points around the target values. A reduction in the amount of "instruction" given can be seen in Coach A's data, and by the follow-up phase this behaviour has a mean value within 2% of the target. Similarly, feedback on "correct" performance shows increasing stability at a value approximating the target. Interpretation of Coach B's data reveals a remarkable improvement in both the level and stability of feedback on "correct" performance. It also reveals an absence of overlap in the data pertaining to feedback on "incorrect" performance between baseline and intervention phases. This desirable change in behaviour is further improved during the follow-up phase. Positive change is less evident in the time-series analysis of Coach C's behaviour. While there is a tangible decrease in "instruction", all data points remain above the target value and there is much overlap across phases. Also, while there is less variability in the provision of feedback during the intervention phase, Coach C's behaviour becomes more variable following the withdrawal of intervention sessions.

As Coach D's journal entries indicate, an attempt was made to increase feedback on "correct" performance. A change in level was, therefore, anticipated. This was clearly achieved as, with the exception of the data point of Session 12, there is a marked increase in level of behaviour, and no overlap with baseline data is evident. As a consequence of this strategy there was also relative improvement (i.e., a reduction) in the provision of feedback on "incorrect" performance. No change in the level or variability of "instruction" is revealed through time-series analysis.

Figure 5.6 illustrates three main features. Firstly, the CAI (II) intervention strategy can effect considerable change in specific behaviours (e.g., Coach A , "correct"; Coach B, "correct"). Secondly, as evidenced by all Coach A and B data points, the CAI (II) interventions can help orchestrate and balance the provision of "skill" related information: There was a considerable reduction in variability of data points and a general movement toward the target values. Thirdly, the viewing of video-tapes appears to allow specific non effective behaviours to be isolated, and that these can, to a degree, be improved. However, Coach D was only able to detect a problem in one of the three descriptors of "skill" related information.

Skill Timing: Figure 5.7 illustrates the percent of comments for the timing of "skill" related comments. The extreme variability evident in the baseline data of all coaches suggest consistency in the timing of comments, across different session types, is difficult to attain. Nevertheless, it was anticipated that, as a result of intervention, variability would decrease and behaviour would approximate the target values. Again, modification to Coach D's behaviour would depend on judgements made on viewing his own performance.

INSERT FIGURE 5.7 HERE

Variability continued to be prevalent in the data of Coaches A, B and C following intervention. While intervention and follow-up phase means, reported in Section 5.3, provide some evidence for positive behavioural change, analysis of the time-series data reveals a distinct lack of consistency and stability. In particular, the extreme interaction between "post" and "during" indicates the coaches were unable to show sufficient sensitivity to the changing nature of the sessions to consistently display effective coaching. The interactions occur as a result of high data points for comments given "during" performance, when delivering the Passing session (i.e., Sessions 3, 7 and 11). If these data points are temporarily ignored there is some evidence of behaviour moving toward the target values; particularly the data points of Coach C.

Coach D's journal entries made no mention of any concerns he may have had with the timing of his "skill" related comments. Interestingly, behaviour exhibited during the baseline phase of the study corresponded with those of effective coaching; behaviour in the intervention phase became more stable; and behaviour in the follow-up phase was considerably less effective.

The most salient feature of Figure 5.7 is the lack of consistency in the timing of verbal coaching behaviour. Despite specific CAI (II) intervention information promoting strategies for effective behaviour in this dimension, it is evident from visual inspection that no coach was able to consistently approximate the effective timing of comments. There is convincing evidence here, and in Section 5.2, that the nature of the session is a great determinant of when a coach will deliver information. For example, it was

illustrated that the more intermittent nature of the Shooting session promoted more "post" comments. It appears that the intervention sessions were not, on the whole, able to negate this.

Skill Delivery: The percent of "skill" related comments in which a "demonstration" occurred is illustrated in Figure 5.8. No target value is indicated as the researcher felt that the time devoted to, and the complexity of, varying demonstrations made a specific target difficult to isolate. Rather, interventions sought to promote this coaching methodology if demonstrations were infrequent, and sought to improve the quality of demonstrations if they were used frequently. This latter point was the case for Coach B, whose frequency of demonstrations during the baseline phase was considered adequate.

INSERT FIGURE 5.8 HERE

Indications of behavioural change are only partially evident in the time series analysis of Coach A. If the consistently high number of demonstrations given during the Defending session (i.e., Sessions 1, 5 and 9) are ignored, the remaining data suggests an increased level of behaviour during the follow-up phase. Data points 10, 11 and 12 do not overlap with points from either the baseline or intervention phases. Behavioural change is more apparent in the time-series analysis of Coach C. Following a baseline phase bereft of demonstrations, both intervention and follow-up phases reveal an appreciable number of demonstrations. Coach D had no journal entries attending to this dimension of his behaviour, and showed a consistent lack of demonstration throughout the study phases.

Skill Emphasis: Figure 5.9 illustrates the percent of "skill" related comments in which reference was made to the "key factors" of the session. Reliable evidence of change in behaviour is seen in Coach A's data. With the exception of the data point for Session 6, there is an immediate and consistent increase in the level of behaviour. There is no overlap between baseline and "post-baseline" phases, and intervention and follow-up means exceed that of the baseline phase by 19% and 31% respectively. Behavioural change is also evident in Coach C's data. A marginal increase in level of behaviour is noted during the intervention phase, although some overlap in data points do exist. Two further data points suggest behaviour may approximate the target value, but the remainder of the follow-up phase returns to a more accustomed level. Nevertheless, as reported in Section 5.3, intervention and follow-up means exceed that of the baseline phase by 10% and 24% respectively. There is no change in the behaviours of Coaches B and D after intervention. In Coach D's case this was anticipated, as his journal entries made no mention of this dimension of his behaviour.

INSERT FIGURE 5.9 HERE

Appropriateness: The percent of comments that were considered "inappropriate" in nature are illustrated in Figure 5.10. As comments could be considered "inappropriate" at any level (e.g., focus, timing, emphasis) it was felt the CAI (II) interventions would reduce these instances in two ways. Firstly, the intervention sessions attempted to effect positive change in each of the CAI (II)'s dimensions. Consequently, "inappropriate" comments would reduce as a result of more effective coaching. Secondly, attention was paid to specific instances of "inappropriate" verbal coaching, and this direct influence was expected to effect change.

During the baseline phase of the study Coaches A, B and C exceeded the target value for "Inappropriate" comments (Figure 5.10). However, from the point of first intervention there is a marked decrease in level of behaviour, and the follow-up data of all three coaches show no overlap with their baseline phase. The most considerable change occurs for Coaches A and B, as during the follow-up phase their behaviour is below the target value. Again there is no change in Coach D's behaviour as a result of intervention. This is consistent with previous findings where no journal entries pertain to the behaviour under analysis.

INSERT FIGURE 5.10 HERE

Summary: It appears that the CAI (II) intervention strategy used in this study (i.e., the provision of data and selected video-taped examples), can effect positive change in verbal coaching behaviour. There is evidence from each of the dimensions discussed that behaviour can change in level, towards previously specified target values, and increase in stability. However, it is also clear that this change will only occur, and be maintained, if the coach remains focussed and committed to changing these particular coaching behaviours. Failure to do so (e.g., absence of objectives, resistance to the intervention) clearly detracts from the effects of the CAI (II) intervention strategy. The analysis of Coach D's behaviour suggests there is also merit in the discretionary viewing of previous behaviour as, when he was able to isolate specific behaviours for attention, some positive change occurred. However, there appears to be limitations to the sensitivity of such viewing (e.g., Coach D only identified two aspects of behaviour that required modification), and maintenance in the changes made was unconvincing.

5.5 Trends in the Behavioural Change of "Experimental" and "Control" Subjects

Table 5.14 shows instances of desirable behavioural change as a result of each coach's respective intervention. These instances are reported for each coach in ten areas of verbal behaviour. For change to be considered desirable, the mean value of the intervention and/or follow-up phases must have changed in the direction of the target value, and have a value equal or closer to that target than the baseline mean. For example, if the baseline, intervention and follow-up phases had mean values of 33%, 38% and 48% respectively, and the target value for that dimension was 40%, desirable change would only be considered to have occurred in the intervention phase. The cumulation of these instances (i.e. Yes/No decisions) for the "experimental" subjects (i.e., Coaches A, B & C) allows for trends to be identified in this data. Comparison between the trends of this "experimental group" and those of Coach D will advance speculation on the utility of the CAI (II) intervention strategy.

INSERT TABLE 5.14 HERE

From Table 5.14 it can be seen that in four instructional behaviours (i.e., "correct", "post", "stopped" & "inappropriate"), desirable changes are evident in the entire "experimental group" for both the intervention and follow-up phases. Table 5.14 also shows desirable change in a further four behaviours (i.e., "skill", "during", "demonstration" & "key factors"). Change occurred for two coaches in the intervention phase and for all three in the follow-up phase. "Incorrect" was the sole verbal behaviour in which only one of the "experimental group" made desirable change in either intervention or follow-up phases. Instances of desirable change in Coach D's verbal

coaching behaviour are also evident in Table 5.14. Coach D improved his reference to "skill" related information, and made desirable changes in each descriptor of "skill" information (i.e., "instruct", "correct", "incorrect"). However, no desirable change is reported for the timing, delivery, emphasis or appropriateness of verbal coaching comments. Significantly, the changes that occurred (i.e., focus & skill focus) were limited to the dimensions of behaviour identified for change in Coach D's journal.

The results pertaining to the "experimental group" provide evidence that desirable and lasting change is possible after exposure to the CAI (II) intervention strategy. Instances of desirable change are evident in the majority of verbal behaviours reported, including dimensions that require the orchestration and balancing of constituent behaviours (e.g., skill focus, skill timing). Furthermore, the extent of behavioural change exhibited by Coach D suggests that there are limitations to behavioural change as a result of discretionary viewing of past performance. While two dimensions of behaviour (i.e., focus & skill focus) were identified for, and resulted in, change, one suspects that a lack of structured viewing prohibited further change. Coach D had no framework or model to compartmentalize and understand the different areas of his verbal behaviour; thus viewing remained indiscriminate. The provision of such a framework is the cornerstone of the CAI (II). Its hierarchical structure (see Figure 3.2) alone can be extremely informative as it promotes the sequential introspection of verbal coaching behaviour. Moreover, once data generated on coaching behaviour is scrutinized in relation to specified targets (as done with Coaches A, B and C) an understanding of one's own behaviour can develop and some sensitive refinements in behaviour can ensue.

5.6 Validity and Reliability of Data

5.6.1 Validity of Data

It is central to the findings of this study, and the future use of the CAI (II) within teacher/coach education, that the CAI (II) data used for the modification of behaviour is a valid description of the observed coaching session. To this end, selected data generated on the participating coaches was compared to information gathered by an "expert" and independent observer on the same coaching sessions. Comparison will provide information as to the validity of the CAI (II) data generated in this study. Appendix F details both sets of information on a sessional basis, and allows for comparison of the 4 paired sessions (see Methodology).

Sessions 3 and 7 of Coach A were selected for their similarities in CAI (II) profile. Each was characterized by organizational components that lacked clarity and conciseness, and instructional components that included high proportions of "instruction", much information given "during" performance, and few "demonstrations". "Expert" information parallels the quantitative CAI (II) data, as it states "confusion re organization of practice groups" (Session 3), and "slow start on 2nd drill" (Session 7). Furthermore, the "expert" comments include "constant commentary with no demo of what is required. Demanding but annoying". One difference in the CAI (II) data between the sessions is the great disparity in reference to "key factors" (47%, Session 3; 84%, Session 7). The assessment scale used by the "expert" reports equally low ratings for both sessions, but written comments identify an emphasis on "the fake" (one specific "key factor") in Session 7.

Sessions 2 and 6 of Coach D were also selected for their similarities. Both sessions report relatively little feedback on "correct" performance, much information given

"during" performance, very few "demonstrations", and low reference to "key factors". "Expert" information also identifies low reference to key factors as well as little or no demonstration. While the CAI (II) data on Session 2 and 6 are similar, some differences do exist. For example, CAI (II) data on Session 6 report considerably less organization time (18% compared to 33%), but notably less reference to "key factors" (32% compared to 48%). Importantly, these features are also identified by the "expert". In Session 2, special mention is made that Coach D was "slow to organize start of drill" and, in Session 6, the "expert" assessment scale reports a more extreme value for failure to coach the key factors.

Sessions 1 and 9 of Coach A were selected because of marked differences in CAI (II) profile. Behaviour in Session 9 was considered much more effective. Its organizational component consumed 17% less session time, and the information given was considered more clear and concise. Instructional data indicate greater reference to "skill" information (79% compared to 58%), increased feedback on "correct" performance (33% compared to 14%), a reduction in comments "during" performance (31% compared to 50%), more comments when play was "stopped" (9% compared to 3%), and notably higher reference to "key factors" (91% compared to 60%). "Expert" information confirms many of these differences. The assessment scale portrays greater effectiveness within the organizational component, and in the identification and coaching of key factors. Written comments identify a reduction in commentary (e.g., "Better! - only talks when he's got something to say"), and that more comments were given when play was stopped.

Sessions 1 and 9 of Coach B were also selected because of marked differences in CAI (II) profiles. Again, behaviour in Session 9 was considered much more effective. The organizational component consumed 12% less session time, there was increased

feedback on "correct" performance (42% compared to 15 %), less comments "during" performance (34% compared to 59%), more when play was "stopped" (8% compared to 4%), and greater reference to "key factors" (72% compared to 62%). "Expert" information confirmed such differences in Coach B's behaviour. The assessment scale used by the "expert" portrays a definite trend towards the effective end in all aspects of coaching. Organizational behaviour is recognized as more expedient in Session 9, the identification and coaching of key factors is acknowledged as more frequent, and increased use of the "stopped" methodology resulted in the written comment; "frequent stops to show players demonstrating or taking position himself".

Comparison of CAI (II) data with "expert" information provides strong evidence for the validity of the CAI (II) data. Comparable profiles of coaching behaviour are reported for specific sessions, and there is much parity in identifying similarities and differences across paired sessions. While these results, on one hand, confirm the validity of the CAI (II) data, they perhaps bring into question the need for such rigorous analysis: If a comparable analysis can be obtained from subjective viewing (as occurred with the "expert" observer), why bother with the CAI (II) analysis?

The merit of the CAI (II) analysis can be promoted on two fronts. Firstly, from direct comparisons in Appendix F, it is clear that the CAI (II) data is able to objectively quantify behaviour in a manner that is not possible subjectively. The CAI (II)'s hierarchical framework makes data collection and analysis logical, and the comprehensive profile obtained is extremely sensitive to coaching idiosyncrasies. Thus, the quantitative data generated can provide convincing evidence if behaviour modification is warranted. Secondly, the CAI (II) describes and analyses verbal coaching behaviour by means of objective definitions of behaviour. Once these definitions are understood, any individual can provide a valid description of the

observed coaching behaviour. Thus, extensive knowledge and expertise in the coaching environment are not pre-requisites to valid assessment. Novice coaches, with limited training in the use of the CAI (II), could produce data on their own coaching behaviour, or that of a colleague, and initiate improvements independent of "expert" supervision". They could do so, assured in the knowledge that they have a valid and objective description of verbal coaching behaviour.

Note: Appendix G details the reactions of Coaches A, B and C to their exposure to the CAI (II) intervention strategy. It could be argued that these reactions provide support for the face validity of the CAI (II).

5.6.1 Reliability of Data

Data reliability is important, both to the findings of this study and to the future use of the CAI (II) within teacher/coach education. Of particular importance to the CAI (II)'s use as a supervisory tool is the need for its data to be objective and reproducible. Changes in data (i.e., coaching behaviour) must, with some confidence, be attributable to the teacher/coach and not to observer error or bias. To this end, inter-observer reliability coefficients were calculated for 15 of the study's 48 sessions. The measure used was the percentage agreement statistic (House, House & Campbell, 1981), and the level of reliability sought was 80% (Rushall, 1977).

"Sample" Comparisons: The amount of coherence between the observers (i.e., the researcher and the independent observer) was, in the first instance, calculated for six sample sessions taken randomly from the three study phases. Inter-observer results (Table 5.15) reveal mean percentage agreements to exceed 80% in seven of the instrument's eight dimensions. The Intent dimension failed to reach the target, and reports a mean value of 77%. This finding appears to support the researcher's decision

not to present data on the Intent of comments to the coaches during intervention. Therefore the data collected during the study was objective and reproducible, with the exception of the dimension of Intent.

INSERT TABLE 5.15 HERE

"Baseline", "Intervention" and "Follow-up" Phase Comparisons: To establish whether the researcher had remained objective across the three study phases, inter-observer measures were taken on three sessions from each phase. It was envisaged that coefficients exceeding 80% would dispel any concerns over expectations or biases affecting the objectivity of data collection. Comparable means, across the three phases within each dimension, would further support the objectivity of the data used to assess and modify the behaviour of the participating coaches.

Inter-observer results (Table 5.15) again reveal percentage agreements to exceed 80% in seven of the instrument's eight dimensions, across the three phases. The Intent dimension failed to exceed the target value during baseline and intervention phases. Furthermore, there appears to be stability in the coefficients reported for each dimension across the three phases. For example, coefficients of 92%, 90% and 92% are reported for baseline, intervention and follow-up phases respectively, in the dimension Skill Focus. Scrutiny of this and other comparisons across phases (Table 5.15) provides strong evidence for the objectivity of data collection throughout this study. Thus, both the data used to modify behaviour (i.e., baseline data) and the data reporting changes to have occurred (i.e., intervention and follow-up data) would appear to be accurate and defensible.

6 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to test the utility of the CAI (II) as a means of reliably analyzing and modifying aspects of ineffective verbal coaching behaviour. The analysis and modification of a full range of verbal behaviour was of central importance to the study as the modification of selected and independent verbal behaviours has been evidenced (McKenzie, 1981). The research hypothesis that the CAI (II) is a useful instrument for the objective analysis of a complete range of verbal coaching behaviour is supported by the results of this study. Comparison of the CAI (II) data with "expert" information provided strong evidence for the validity of the CAI (II) data, and inter-observer reliability coefficients, obtained from comparisons across the study, strongly support the objectivity of CAI (II) data collection throughout the study.

The hypothesis that this objective analysis of performance is a useful tool for changing behaviour in the desired direction is also supported by this study. This finding provides backing for the premise that modification can occur if attention is paid to one process variable (Rink, 1993). However, the failure of this study to report consistent, desirable change in all dimensions of analyzed behaviour suggests that the current CAI (II) intervention strategy has limitations. It is suspected that this strategy, in its current form, demands a greater understanding of verbal behaviour than can be achieved in the time period of this study. Thus, it is suggested that further study is required to assess an optimal dissemination of CAI (II) information.

Two areas of study require investigation. Firstly, more consistent and lasting change may be achieved by adapting the scheduling of CAI (II) interventions. Study to determine the appropriate onset and scheduling (i.e., consecutive, alternate) of CAI (II) interventions for maximal behaviour change is merited. Secondly, study should focus

on how, and in what amounts, the pre-requisite knowledge and CAI (II) information should be imparted to the coach. It is believed that a limiting factor of the intervention strategy had more to do with the complexity of verbal behaviour than it did the diversity of verbal behaviour. Thus it is suggested that the CAI (II) intervention strategy should be "packaged" in two stages to allow a more gradual diffusion of information. In the first instance the CAI (II) model should be presented as a framework to educate coaches on the diversity of verbal behaviour. The organizational and instructional components of behaviour would be established as well as the dimensions of instructional behaviour therein. This elucidation would include the rationale, and target values, for effective behaviour within these dimensions. Once this model and rationale is instilled into the coaches the data generated by the CAI (II) software would be used to assess and modify aspects of ineffective behaviour. This second stage, however, could now occur with the assumption that the coaches had a fundamental understanding of effective verbal behaviour. This two stage process would be beneficial to both supervisor and coach, and negate the concern of the current intervention strategy that too much information was condensed and imparted in intervention sessions.

It is evident from the data and descriptive analyses that the extent of behavioural change varied from coach to coach. While it is difficult to ascertain why change did not occur in specific instances, or as readily for one coach as for another, two reasons can be proposed to explain differential success in modifying behaviour. Firstly, enhancement in teaching performance can occur if the attention of the supervisor is reinforcing to the coach (Siedentop, 1984). While the intervention sessions of this study attempted to address areas of concern to each coach in a supportive and collaborative manner, it is possible that not all information was accepted in this vein and, therefore, the coach would not perceive the supervisor's (or in this case the researcher's) attention to be reinforcing. Such perceptions are evident in the coach reactions and journal

entries detailed. Secondly, it is possible that the context of the study was not perceived with sufficient importance by all the coaches. O'Sullivan (1984) concluded that the intervention model tested in her study would remain ineffective until the participants had incentives to use it productively. If not enough importance is attached to the results or context in which this intervention strategy was given, there may be little incentive for a coach to accept prescriptive comment and strive for improvement. If the CAI (II) intervention strategy was used to improve verbal coaching behaviour for the purposes of coach certification for example, more focussed and committed attention might be displayed by all coaches, and greater change may result.

The extent to which the "control" coach changed his behaviour, without the CAI (II) model, inferred much about the utility of the CAI (II) intervention strategy. Journal entries revealed that the "control" coach could only identify change in two areas. It was concluded that either that was all he perceived to require change, or that he had insufficient knowledge with which to structure his observations. Grant, Ballard and Glynn (1990), successfully used interviews as a means of gaining insight into individual perceptions of trying to modify behaviour. They revealed teachers were unaware of their initial levels and were therefore unaware of a need to change. These findings point in favour of the use of the CAI (II), both as a structure for knowledge, and as a means of assessment across the range of verbal behaviour.

The changes that were made by the "control" coach were appropriate and, in the first instance, considerable. This was anticipated, as the review of his past performance to initiate change was considered analogous the modeling of effective behaviour.

Modeling, it is established, can aid the learning of skills by portraying the critical features of performance (Magill, 1989). The limiting factor to this process was the lack of information or instruction to ensure that attention is directed to the aspects of

performance that would yield benefit (Mawer, 1990). It is this role that the CAI (II) data performs; it creates the information with which to direct the learners attention.

Conclusions can also be made with regard to the role of the supervisor/educator in analyzing verbal behaviour. It was discussed in Sections 5.2 and 5.4 how the nature of the coaching session was a great determinant of when a coach would deliver information, and that the intervention sessions were not, on the whole, able to negate this. The powerful influence of the coaching context was also identified by Whaley (1980), who concluded that changes in ALT-PE were associated with changes in activity rather than with intervention. It would also appear that consistency in the effective timing of verbal comments is not able to be preserved across different coaching contexts. The implication being that the supervisor must remain sensitive to the fact that despite design, each observed session is essentially a different learning context.

While the CAI (II) intervention strategy provided evidence that modification can occur across a range of verbal coaching behaviours, including those that require the balancing and orchestration of behaviour, the study failed to produce consistent and desirable changes in all aspects of verbal behaviour. Further research is recommended to investigate both the "packaging" of the CAI (II) intervention strategy and the scheduling of intervention sessions. Attempts to establish the optimal dissemination of the CAI (II) intervention strategy would be most worthwhile, as it is clear from this study that understanding and improved coaching effectiveness can be enhanced through the current approach.

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Table 5.1: Individual and group mean values of "Instructional" behaviour for Defending (D), Crossing (C), Passing (P) and Shooting (S) session types. Values are reported for 13 categories of the CAI (II).

DIMENSION		COACH A	COACH B	COACH C	COACH D	GROUP
FOCUS	(D)	64	84	54	50	63
"SKILL"	(C)	81	82	65	76	76
%	(P)	72	77	50	57	64
	(S)	78	73	43	57	62
SKILL FOCUS	(D)	40	44	57	42	46
"INSTRUCT"	(C)	36	31	58	47	43
%	(P)	51	28	53	42	44
	(S)	37	23	52	51	41
SKILL FOCUS	(D)	30	29	12	14	21
"CORRECT"	(C)	36	36	23	25	30
%	(P)	26	32	17	16	23
	(S)	36	44	31	18	32
SKILL FOCUS	(D)	31	27	30	44	33
"INCORRECT"	(C)	28	33	20	28	27
%	(P)	23	40	31	42	34
	(S)	28	33	17	31	27
SKILL TIMING	(D)	29	51	35	28	36
"DURING"	(C)	25	21	43	48	34
%	(P)	65	58	55	47	56
	(S)	23	13	27	44	27
SKILL TIMING	(D)	63	42	60	63	57
"POST"	(C)	71	70	47	52	60
%	(P)	30	30	38	46	36
	(S)	74	76	72	56	70
SKILL TIMING	(D)	08	08	04	09	07
"STOPPED"	(C)	03	09	10	00	06
%	(P)	05	12	07	07	08
	(S)	03	11	01	00	04
SKILL DELIVERY	(D)	18	14	02	03	09
"DEMO'N"	(C)	07	07	05	01	05
%	(P)	05	13	05	00	06
	(S)	10	09	01	01	05
SKILL EMPHASIS	(D)	77	68	61	57	66
"KEY FACTORS"	(C)	57	42	54	35	47
%	(P)	71	52	41	40	51
	(S)	63	65	45	37	52
NON-SKILL FOCUS	(D)	06	05	10	07	07
"NON-SPECIFIC"	(C)	09	05	16	13	11
%	(P)	09	07	08	09	08
	(S)	10	07	21	15	13
NON-SKILL FOCUS	(D)	04	01	01	09	04
"EFFORT"	(C)	02	00	03	00	01
%	(P)	05	04	07	08	06
	(S)	04	03	04	04	04
NON-SKILL FOCUS	(D)	02	00	04	08	04
"BEHAVIOR"	(C)	01	01	03	02	02
%	(P)	02	02	05	03	03
	(S)	01	02	06	02	03
NON-SKILL FOCUS	(D)	24	10	31	25	23
"ORGAN'N"	(C)	07	12	14	09	11
%	(P)	12	11	31	23	19
	(S)	09	15	26	23	18

Table 5.2: Observer responses to "Organizational" behaviour of Coach A across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.

	SESSIONS																		
	BASELINE				INTERVENTION								FOLLOW-UP						
	S1	S2	S3	S4	YES	NO	S5	S6	S7	S8	YES	NO	S9	S10	S11	S12	YES	NO	
Organization:																			
1. Did the athletes understand the organization of the drill?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
2. Were the goals of the drill clearly stated?	NN	NY	NN	NN	1	7	NN	YY	YN	YY	5	3	YY	YN	YY	YY	7	1	
3. Was the organization of the drill delivered in a concise and efficient manner?	NN	NY	NN	NN	1	7	NY	YN	NN	YY	4	4	YY	YN	YY	YN	6	2	
Realism:																			
1. Was the drill representative of game situations?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
2. Did the coach use an adequate area?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
3. Did the coach use an adequate number of athletes?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
4. Did the drill match the goals set?	YY	YY	YY	YY	8	0	YY	NY	YY	YN	6	2	YY	YY	YY	YY	8	0	
Athlete Performance:																			
1. Did the athletes work enthusiastically throughout the drill?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
2. Did the drill challenge the athletes?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	
3. Did the athlete's performance appear to improve because of the information given by the coach?	YN	NN	NN	YY	3	5	YY	NN	NN	YY	4	4	YY	YY	YY	YY	8	0	

Table 5.3: Individual and mean values of "Instructional" behaviour for Coach A across the three study phases. Values are reported for 14 categories of the CAI (II).

	SKILL	INSTRUCT	CORRECT	INCORRECT	DURING	POST	STOPPED	DEMO'N	K-FAC	NON-SPEC	EFFORT	BEHAV	ORGAN'N	INAPP
SESSION	PHASE (1): BASELINE (%)													
S 1	58	59	14	27	50	47	03	18	60	13	05	05	19	23
S 2	85	59	16	25	56	41	03	06	48	09	02	02	03	24
S 3	75	57	23	20	71	28	01	02	47	07	09	01	08	16
S 4	73	44	37	19	38	62	00	04	46	11	03	02	11	23
MEAN	73	55	23	23	54	45	02	08	50	10	05	03	10	22
S.D.	11	07	10	04	14	14	02	07	07	03	03	02	07	04
SESSION	PHASE (2): INTERVENTION (%)													
S 5	55	26	42	33	07	81	12	17	79	03	05	01	36	04
S 6	76	19	54	27	05	91	04	04	46	11	00	01	13	20
S 7	68	47	24	29	66	26	08	05	84	07	03	04	18	16
S 8	75	31	37	32	14	80	07	06	68	10	03	00	13	06
MEAN	69	31	39	30	23	70	08	08	69	08	03	02	20	12
S.D.	10	12	12	03	29	29	03	06	17	04	02	02	11	08
SESSION	PHASE (3): FOLLOW-UP (%)													
S 9	79	34	33	33	31	60	09	20	91	02	01	00	18	00
S10	83	31	39	31	15	81	03	11	78	07	03	01	06	03
S11	73	50	30	20	57	35	07	09	81	14	04	00	09	12
S12	85	36	33	32	18	79	03	19	75	08	05	00	02	06
MEAN	80	38	34	29	30	64	06	15	81	08	03	00	09	05
S.D.	05	08	04	06	19	21	03	06	07	05	02	01	07	05

Table 5.4: Individual and mean values for the time Coach A spent in "Organizational" and "Instructional" behaviour across the three study phases.

SESSION	ORGANIZATION (MIN:SEC)	TOTAL (MIN:SEC)	ORGANIZATION (%)	INSTRUCTION (%)
BASELINE				
S 1	12:45	32:20	39	61
S 2	4:45	23:40	20	80
S 3	10:55	27:30	40	60
S 4	8:30	24:45	34	66
MEAN			33	67
S.D.			09	09
INTERVENTION				
S 5	7:40	26:50	29	71
S 6	4:45	23:30	20	80
S 7	6:50	22:50	30	70
S 8	4:15	21:35	20	80
MEAN			25	75
S.D.			06	06
FOLLOW-UP				
S 9	4:45	21:30	22	78
S10	4:55	20:55	24	76
S11	4:45	15:05	31	69
S12	5:10	19:50	26	74
MEAN			26	74
S.D.			04	04

Table 5.5: Observer responses to "Organizational" behaviour of Coach B across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.

	SESSIONS																	
	BASELINE				INTERVENTION								FOLLOW-UP					
	S1	S2	S3	S4	YES	NO	S5	S6	S7	S8	YES	NO	S9	S10	S11	S12	YES	NO
Organization:																		
1. Did the athletes understand the organization of the drill?	YY	YY	YY	NY	7	1	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
2. Were the goals of the drill clearly stated?	YY	YY	YY	YN	7	1	YN	YN	YY	YY	6	2	YY	YY	YN	YY	7	1
3. Was the organization of the drill delivered in a concise and efficient manner?	NN	NY	YY	NN	3	5	YN	YY	YY	YY	7	1	YY	NY	YY	YY	7	1
Realism:																		
1. Was the drill representative of game situations?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
2. Did the coach use an adequate area?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
3. Did the coach use an adequate number of athletes?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
4. Did the drill match the goals set?	YN	NN	YY	YY	5	3	YN	YN	YY	YY	6	2	YY	YY	YY	YY	8	0
Athlete Performance:																		
1. Did the athletes work enthusiastically throughout the drill?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
2. Did the drill challenge the athletes?	YN	YY	YY	YY	7	1	YY	YY	YY	YY	8	0	YY	YY	YY	NY	7	1
3. Did the athlete's performance appear to improve because of the information given by the coach?	YY	NN	YY	NN	4	4	YY	NN	YY	YY	6	2	YY	YY	YY	YY	8	0

Table 5.6: Individual and mean values of "Instructional" behaviour for Coach B across the three study phases. Values are reported for 14 categories of the CAI (II).

	SKILL	INSTRUCT	CORRECT	INCORRECT	DURING	POST	STOPPED	DEMO'N	K-FAC	NON-SPEC	EFFORT	BEHAV	ORGAN'N	INAPP
SESSION	PHASE (1): BASELINE (%)													
S 1	80	49	15	35	59	38	04	11	62	06	00	00	14	17
S 2	73	38	23	39	23	65	12	05	45	09	01	00	17	13
S 3	66	33	14	53	47	31	22	17	51	08	04	04	18	13
S 4	58	20	31	49	16	71	13	13	67	13	03	03	23	22
MEAN	69	35	21	44	36	51	13	12	56	09	02	02	18	16
S.D.	09	12	08	08	20	20	07	05	10	03	02	02	04	04
SESSION	PHASE (2): INTERVENTION (%)													
S 5	89	43	31	26	59	30	11	13	71	05	00	01	06	10
S 6	83	28	44	28	21	76	03	06	34	03	00	03	12	15
S 7	87	20	42	38	61	33	05	10	49	03	04	01	06	07
S 8	82	20	56	23	09	81	09	08	67	04	04	01	09	12
MEAN	85	28	43	29	38	55	07	09	55	04	02	02	08	11
S.D.	03	11	10	07	26	27	04	03	17	01	02	01	03	03
SESSION	PHASE (3): FOLLOW-UP (%)													
S 9	84	39	42	19	34	58	08	18	72	05	03	00	08	04
S10	91	28	40	32	20	68	12	10	48	03	00	00	06	07
S11	79	32	40	29	65	27	08	13	57	11	03	00	08	09
S12	78	30	44	26	14	75	11	05	60	03	01	03	14	04
MEAN	83	32	42	27	33	57	10	12	59	06	02	01	09	06
S.D.	06	05	02	06	23	21	02	05	10	04	02	02	03	02

Table 5.7: Individual and mean values for the time Coach B spent in "Organizational" and "Instructional" behaviour across the three study phases.

SESSION	ORGANIZATION (MIN:SEC)	TOTAL (MIN:SEC)	ORGANIZATION (%)	INSTRUCTION (%)
PHASE (1) : BASELINE				
S 1	4:45	21:55	22	78
S 2	3:20	20:10	17	83
S 3	2:20	23:05	10	90
S 4	4:55	24:25	20	80
MEAN			17	83
S.D.			05	05
PHASE (2) : INTERVENTION				
S 5	5:10	33:15	16	84
S 6	4:05	21:50	19	81
S 7	2:25	21:30	11	89
S 8	2:40	24:00	11	89
MEAN			14	86
S.D.			04	04
PHASE (3) : FOLLOW-UP				
S 9	2:15	22:50	10	90
S10	3:20	24:25	14	86
S11	1:45	20:50	08	92
S12	2:40	22:10	12	88
MEAN			11	89
S.D.			03	03

Table 5.8: Observer responses to "Organizational" behaviour of Coach C across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.

	SESSIONS																	
	BASELINE				INTERVENTION								FOLLOW-UP					
	S1	S2	S3	S4	YES	NO	S5	S6	S7	S8	YES	NO	S9	S10	S11	S12	YES	NO
Organization:																		
1. Did the athletes understand the organization of the drill?	YN	YY	YN	YY	6	2	YY	YY	YN	YY	7	1	YY	YY	YN	YN	6	2
2. Were the goals of the drill clearly stated?	NN	NY	NN	YN	2	6	NN	YY	NN	YN	3	5	NN	YY	NN	YY	4	4
3. Was the organization of the drill delivered in a concise and efficient manner?	NN	NY	NN	NN	1	7	NN	YY	NN	NN	2	6	NY	YY	NN	YN	4	4
Realism:																		
1. Was the drill representative of game situations?	YY	YY	YY	YY	8	0	YN	YY	YY	YY	7	1	YY	YY	YY	YY	8	0
2. Did the coach use an adequate area?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
3. Did the coach use an adequate number of athletes?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
4. Did the drill match the goals set?	YN	YN	YY	YY	6	2	YN	YY	YY	YY	7	1	YN	YY	YY	YY	7	1
Athlete Performance:																		
1. Did the athletes work enthusiastically throughout the drill?	YY	YY	YN	YY	7	1	YY	YY	NY	NY	6	2	YY	YY	YY	YY	8	0
2. Did the drill challenge the athletes?	NN	NY	YY	NY	4	4	YY	YY	NY	NY	6	2	YN	YY	YY	NY	6	2
3. Did the athlete's performance appear to improve because of the information given by the coach?	NN	NN	NN	NN	0	8	NN	NN	NY	NN	1	7	NN	NY	NN	NN	1	7

Table 5.9: Individual and mean values of "Instructional" behaviour for Coach C across the three study phases. Values are reported for 14 categories of the CAI (II).

	SKILL	INSTRUCT	CORRECT	INCORRECT	DURING	POST	STOPPED	DEMO'N	K-FAC	NON-SPEC	EFFORT	BEHAV	ORGAN'N	INAPP
SESSION	PHASE (1): BASELINE (%)													
S 1	56	68	04	28	44	48	08	02	36	09	00	09	27	27
S 2	58	72	14	14	58	41	02	00	47	14	06	06	16	20
S 3	39	46	21	33	54	41	05	01	31	11	12	11	27	21
S 4	34	60	30	10	33	67	00	00	43	29	07	02	28	26
MEAN	47	62	17	21	47	49	04	01	39	16	06	07	25	24
S.D.	12	11	11	11	11	12	04	01	07	09	05	04	06	04
SESSION	PHASE (2): INTERVENTION (%)													
S 5	58	62	28	10	41	59	00	01	59	04	00	01	36	25
S 6	74	48	29	24	43	43	14	07	45	11	02	00	14	12
S 7	60	57	25	18	61	38	02	02	48	10	09	00	22	16
S 8	50	53	28	19	25	72	04	02	45	16	05	10	18	19
MEAN	61	55	28	18	43	53	05	03	49	10	04	03	23	18
S.D.	10	06	02	06	15	16	06	03	07	05	04	05	10	05
SESSION	PHASE (3): FOLLOW-UP (%)													
S 9	48	42	05	53	21	74	05	03	89	18	03	03	30	08
S10	63	53	26	21	29	58	13	07	71	22	02	02	12	13
S11	50	55	05	41	50	36	14	11	45	02	00	05	43	09
S12	44	43	35	22	22	78	00	00	48	19	00	06	31	19
MEAN	51	48	18	34	31	62	08	05	63	15	01	04	29	12
S.D.	08	07	15	16	13	19	07	05	21	09	02	02	13	05

Table 5.10: Individual and mean values for the time Coach C spent in "Organizational" and "Instructional" behaviour across the three study phases.

SESSION	ORGANIZATION (MIN:SEC)	TOTAL (MIN:SEC)	ORGANIZATION (%)	INSTRUCTION (%)
BASELINE				
S 1	6:15	13:45	45	55
S 2	6:05	20:30	30	70
S 3	9:25	25:40	37	63
S 4	8:10	19:55	41	59
MEAN			38	62
S.D.			06	06
INTERVENTION				
S 5	5:15	18:55	28	72
S 6	4:20	14:20	30	70
S 7	5:05	18:40	27	73
S 8	7:00	25:35	27	73
MEAN			28	72
S.D.			01	01
FOLLOW-UP				
S 9	6:15	15:50	39	61
S10	3:25	14:20	24	76
S11	8:25	19:25	43	57
S12	5:15	13:35	39	61
MEAN			36	64
S.D.			08	08

Table 5.11: Observer responses to "Organizational" behaviour of Coach D across the three study phases. Responses are detailed for the two drills of each session and cumulative values are reported for each phase.

	SESSIONS																	
	BASELINE						INTERVENTION						FOLLOW-UP					
	S1	S2	S3	S4	YES	NO	S5	S6	S7	S8	YES	NO	S9	S10	S11	S12	YES	NO
Organization:																		
1. Did the athletes understand the organization of the drill?	YY	YY	YN	YY	7	1	NN	YY	YY	YN	5	3	NY	YY	NY	YY	6	2
2. Were the goals of the drill clearly stated?	NN	NY	YN	NN	2	6	NN	YN	NY	NY	3	5	NN	YN	YN	NN	2	6
3. Was the organization of the drill delivered in a concise and efficient manner?	NN	NN	YN	NN	1	7	NN	YN	YN	YN	3	5	NY	NN	NN	NN	1	7
Realism:																		
1. Was the drill representative of game situations?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
2. Did the coach use an adequate area?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0
3. Did the coach use an adequate number of athletes?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YN	YY	YY	7	1
4. Did the drill match the goals set?	YY	YY	YY	YY	8	0	YY	YY	YY	YY	8	0	YY	YN	YY	YY	7	1
Athlete Performance:																		
1. Did the athletes work enthusiastically throughout the drill?	YN	YY	NY	YY	6	2	YY	YY	NY	YY	7	1	YY	YN	YY	YY	7	1
2. Did the drill challenge the athletes?	YY	YY	YY	NN	6	2	YY	YY	YY	YY	8	0	YY	NY	NY	YY	6	2
3. Did the athlete's performance appear to improve because of the information given by the coach?	YN	NY	NN	NN	2	6	YN	NN	NN	NN	1	7	NN	NN	NN	YN	1	7

Table 5.12: Individual and mean values of "Instructional" behaviour for Coach D across the three study phases. Values are reported for 14 categories of the CAI (II).

	SKILL	INSTRUCT	CORRECT	INCORRECT	DURING	POST	STOPPED	DEMO'N	K-FAC	NON-SPEC	EFFORT	BEHAV	ORGAN'N	INAPP
SESSION	PHASE (1): BASELINE (%)													
S 1	44	52	07	41	19	70	11	08	59	02	10	10	34	10
S 2	78	51	22	28	46	52	01	02	48	08	00	01	13	16
S 3	56	39	00	61	30	52	17	00	39	02	07	02	32	12
S 4	44	48	13	39	35	65	00	00	48	10	06	04	37	10
MEAN	56	48	11	42	33	60	07	03	49	06	06	04	29	12
S.D.	16	06	09	14	11	09	08	04	08	04	04	04	11	03
SESSION	PHASE (2): INTERVENTION (%)													
S 5	57	36	32	32	32	64	04	00	50	06	08	06	23	08
S 6	73	46	27	27	46	54	00	00	32	17	01	03	06	18
S 7	63	32	29	39	45	52	03	00	52	06	08	02	20	08
S 8	67	47	22	31	38	62	00	01	47	18	01	01	12	15
MEAN	65	40	28	32	40	58	02	00	45	12	05	03	15	12
S.D.	07	07	04	05	07	06	02	01	09	07	04	02	08	05
SESSION	PHASE (3): FOLLOW-UP (%)													
S 9	77	45	25	30	51	49	00	00	26	13	00	01	09	17
S10	51	56	19	26	67	33	00	02	30	19	08	06	17	09
S11	59	58	19	23	58	42	00	00	15	16	05	00	20	27
S12	50	38	04	58	33	54	13	01	63	13	10	08	19	06
MEAN	59	49	17	34	52	45	03	01	34	15	06	04	16	15
S.D.	13	09	09	16	14	09	07	01	21	03	04	04	05	09

Table 5.13: Individual and mean values for the time Coach D spent in "Organizational" and "Instructional" behaviour across the three study phases.

SESSION	ORGANIZATION (MIN:SEC)	TOTAL (MIN:SEC)	ORGANIZATION (%)	INSTRUCTION (%)
BASELINE				
S 1	9:15	22:30	41	59
S 2	7:30	22:45	33	67
S 3	3:25	15:20	22	78
S 4	8:00	27:15	29	71
MEAN			31	69
S.D.			08	08
INTERVENTION				
S 5	5:45	19:40	29	71
S 6	2:45	15:25	18	82
S 7	3:30	17:55	20	80
S 8	6:15	25:20	25	75
MEAN			23	77
S.D.			05	05
FOLLOW-UP				
S 9	1:45	13:25	13	87
S10	3:30	14:10	25	75
S11	3:30	14:55	23	77
S12	6:20	18:40	34	66
MEAN			24	76
S.D.			09	09

Table 5.14: Trends in the behavioural change of "experimental" and "control" subjects, from the baseline phase to intervention and follow-up phases.

DESIRABLE CHANGE IN BEHAVIOUR FROM BASELINE											
INTERVENTION PHASE						FOLLOW-UP PHASE					
	"EXPERIMENTAL"				"CONTROL"	"EXPERIMENTAL"				"CONTROL"	
	COACH	A	B	C		COACH	A	B	C		
				GROUP (Y/3)							
FOCUS											
"SKILL"		N	Y	Y	2	Y	Y	Y	3	Y	
SKILL FOCUS											
"INSTRUCT"		Y	N	Y	2	Y	N	Y	2	N	
"CORRECT"		Y	Y	Y	3	Y	Y	Y	3	Y	
"INCORRECT"		N	Y	N	1	N	Y	N	1	Y	
SKILL TIMING											
"DURING"		Y	N	Y	2	Y	Y	Y	3	N	
"POST"		Y	Y	Y	3	Y	Y	Y	3	N	
"STOPPED"		Y	Y	Y	3	Y	Y	Y	3	N	
SKILL DELIVERY											
"DEMONSTRATION"		Y	N	Y	2	Y	Y	Y	3	N	
SKILL EMPHASIS											
"KEY FACTORS"		Y	N	Y	2	Y	Y	Y	3	N	
APPROPRIATENESS											
"INAPPROPRIATE"		Y	Y	Y	3	Y	Y	Y	3	N	

Y = DESIRABLE CHANGE

N = UNDESIRABLE CHANGE

N.B. For the change in behaviour to be considered desirable the mean value of the phase must have changed in the direction of the target value, and have a value equal or closer to that target than the baseline mean.

Table 5.15: Inter-observer reliability co-efficients for the instructional component. Percentage agreements are detailed for each compared session, and mean values are reported for each set of comparisons.

Dimension	Comparisons																			
	Sample							Baseline				Intervention				Follow-up				
	1	2	3	4	5	6	Mean	1	2	3	Mean	1	2	3	Mean	1	2	3	Mean	
Direction	98	91	92	99	100	100	97	100	99	95	98	97	96	99	97	100	99	92	97	
Focus General	98	82	91	93	85	91	90	83	87	87	86	84	84	83	84	91	89	82	87	
Skill Focus	100	94	90	90	94	85	92	100	78	92	90	94	96	87	92	96	97	93	95	
Skill Timing	93	89	97	99	78	85	90	76	84	96	85	91	98	96	95	88	95	100	94	
Skill Delivery	100	91	90	97	94	100	95	98	86	92	92	91	100	85	92	98	85	97	93	
Skill Emphasis	96	89	81	74	83	95	86	81	84	92	86	88	82	79	83	79	92	87	86	
Non-Skill Focus	86	83	100	89	94	85	90	77	83	83	81	91	80	92	88	92	86	100	93	
Intent	70	100	63	83	80	67	77	88	69	75	77	75	79	71	75	83	100	77	87	

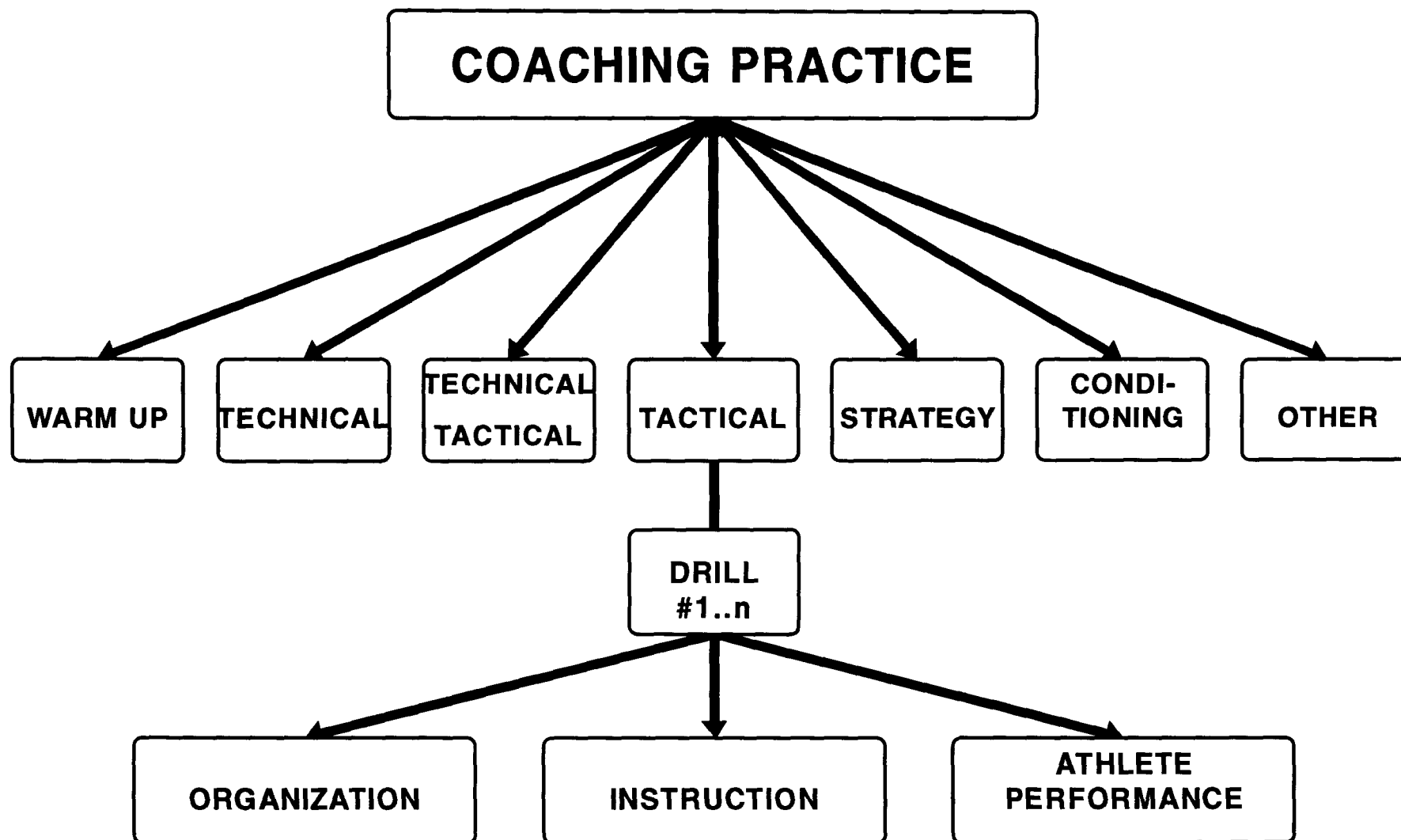


Figure 3.1: Hierarchical model of the coaching practice representing the activity segments and their drill components.

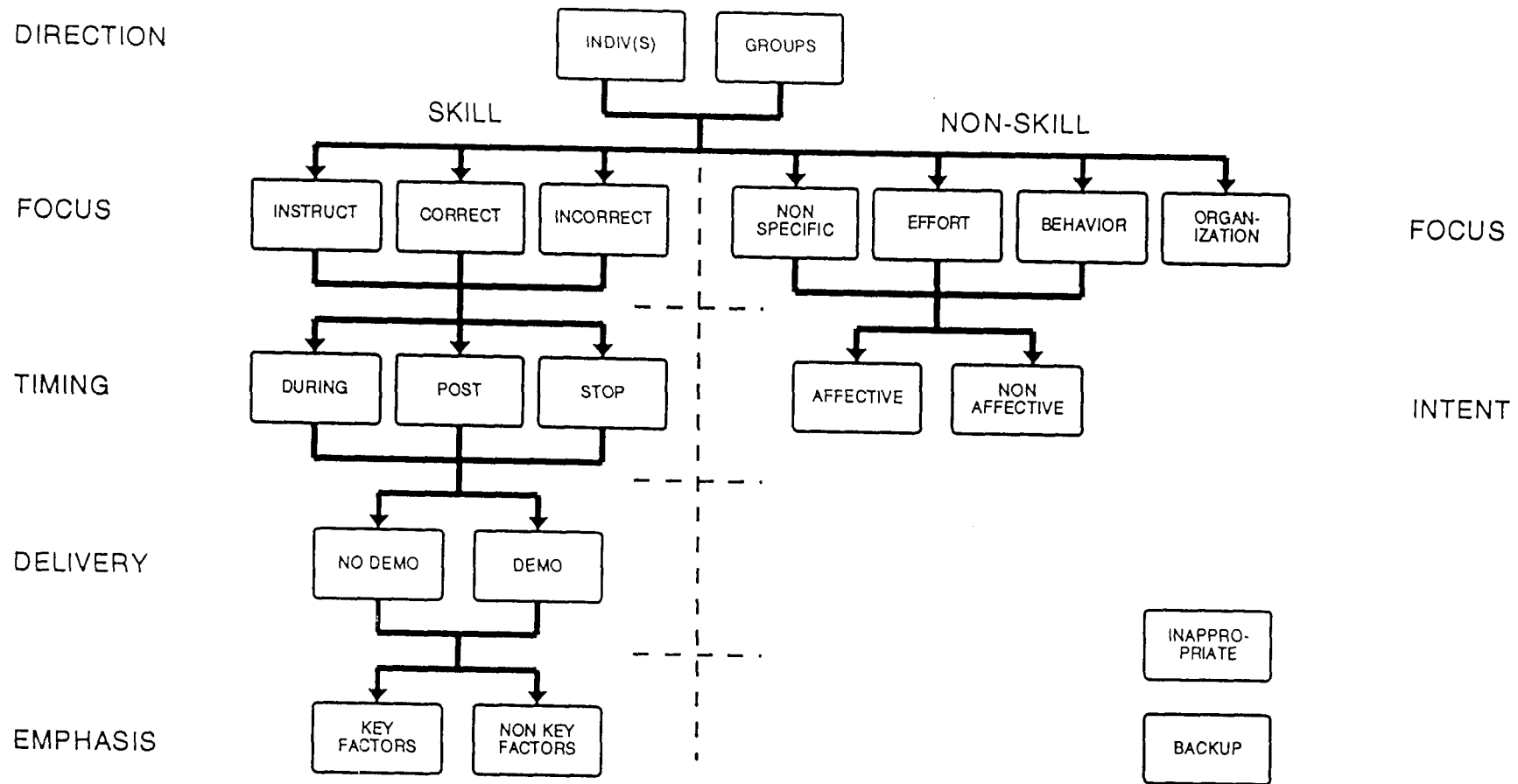


Figure 3.2: Structure of the CAI (II)'s instructional component representing the five levels of data entry mapped onto the QWERTY keyboard.

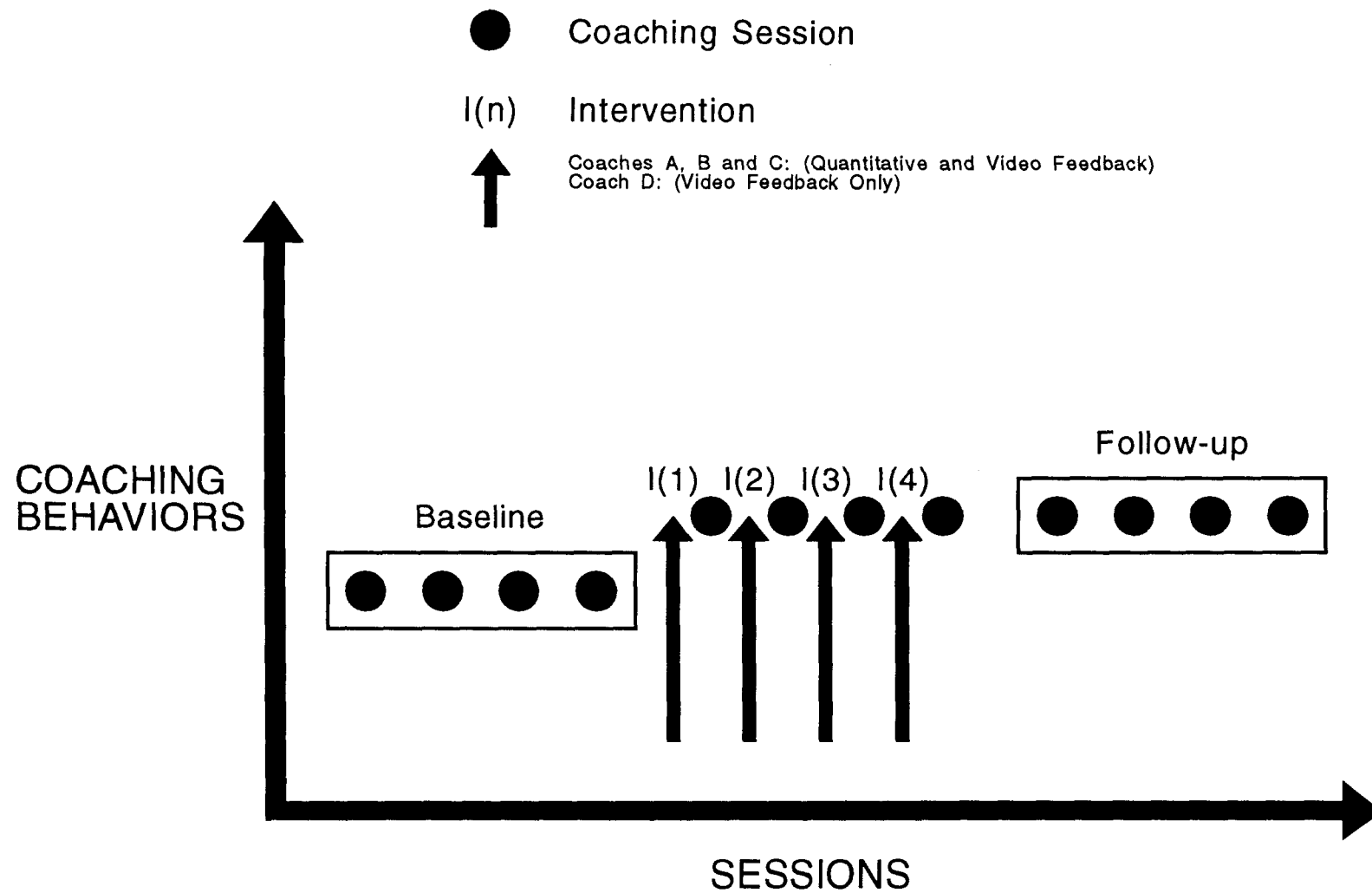


Figure 4.1: Experimental design representing the three study phases and the respective intervention treatments.

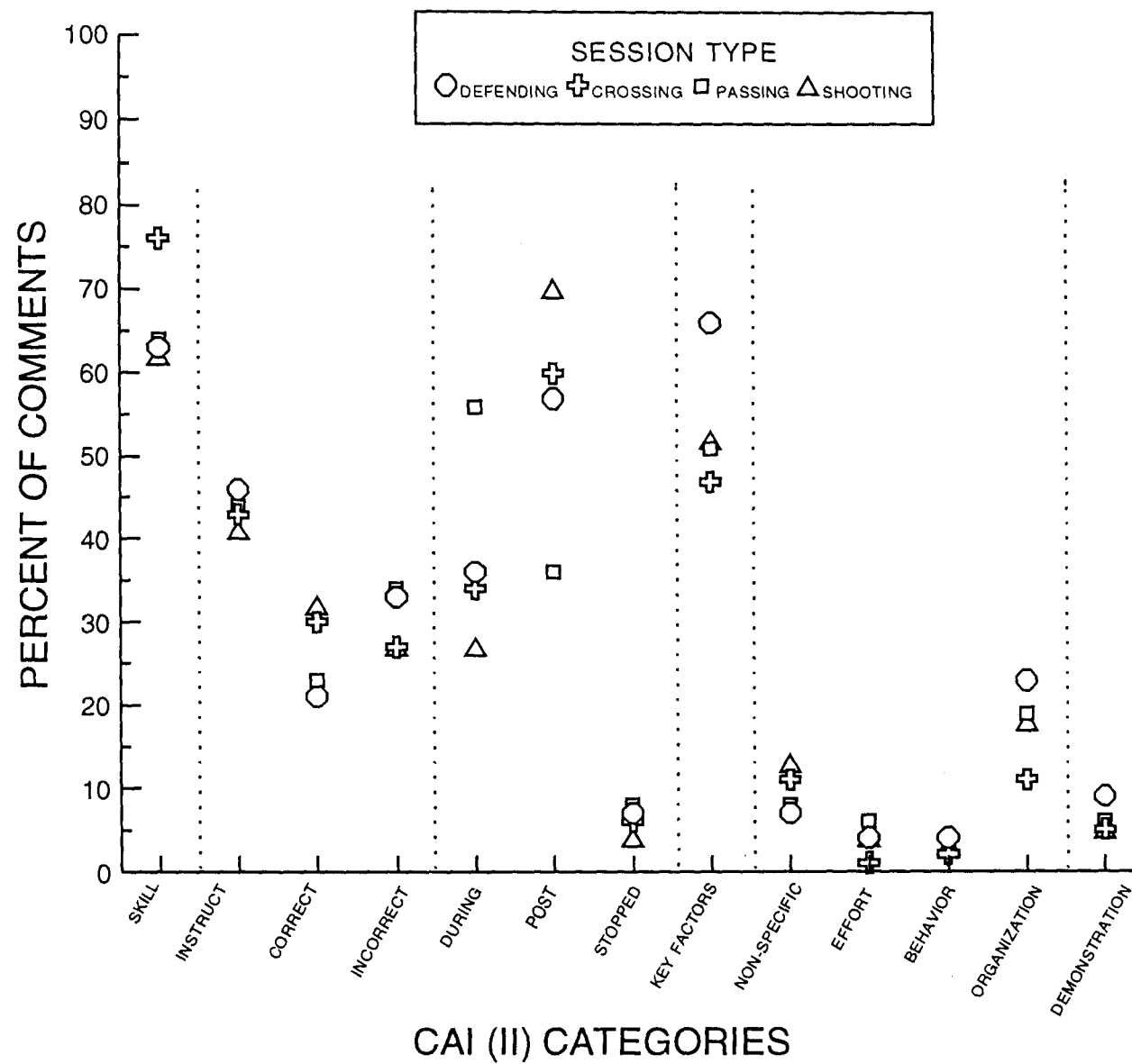


Figure 5.1: Group mean values for each session type represented for 13 categories of the CAI (II).

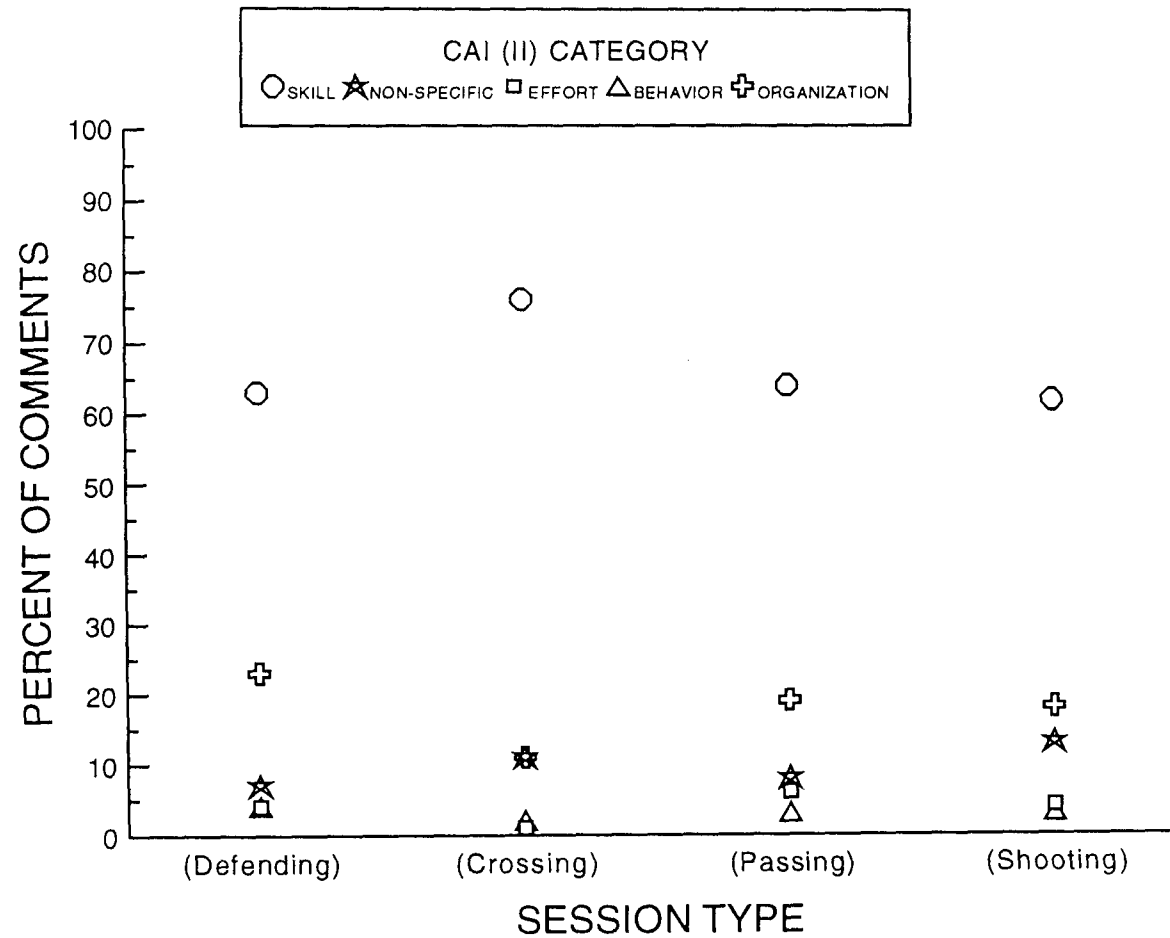


Figure 5.2: Group mean values representing the focus of coaching comments across session types. Note the "non-skill" focus is represented by its four constituent descriptors.

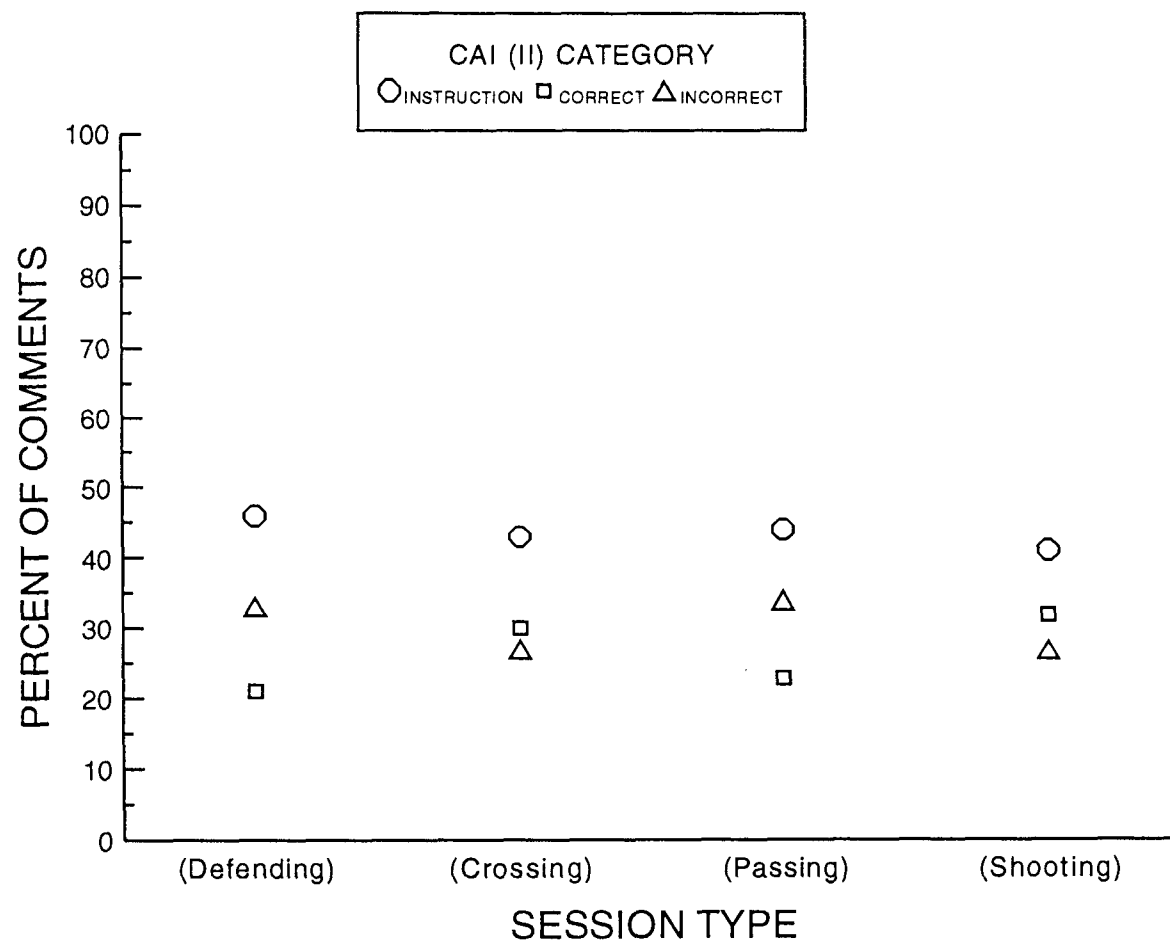


Figure 5.3: Group mean values representing the focus of "skill" related coaching comments across session types.

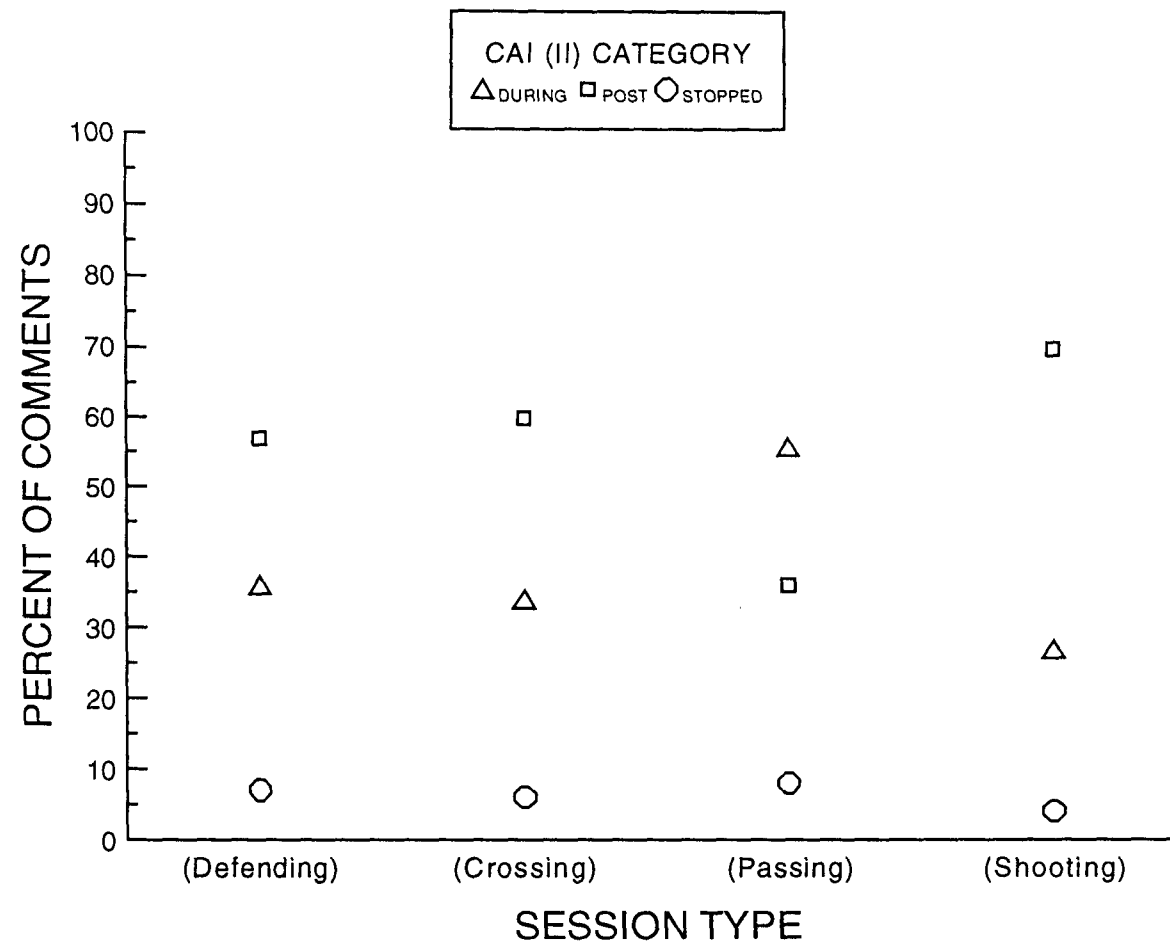


Figure 5.4: Group mean values representing the timing of "skill" related coaching comments across session types.

PERCENT OF COMMENTS

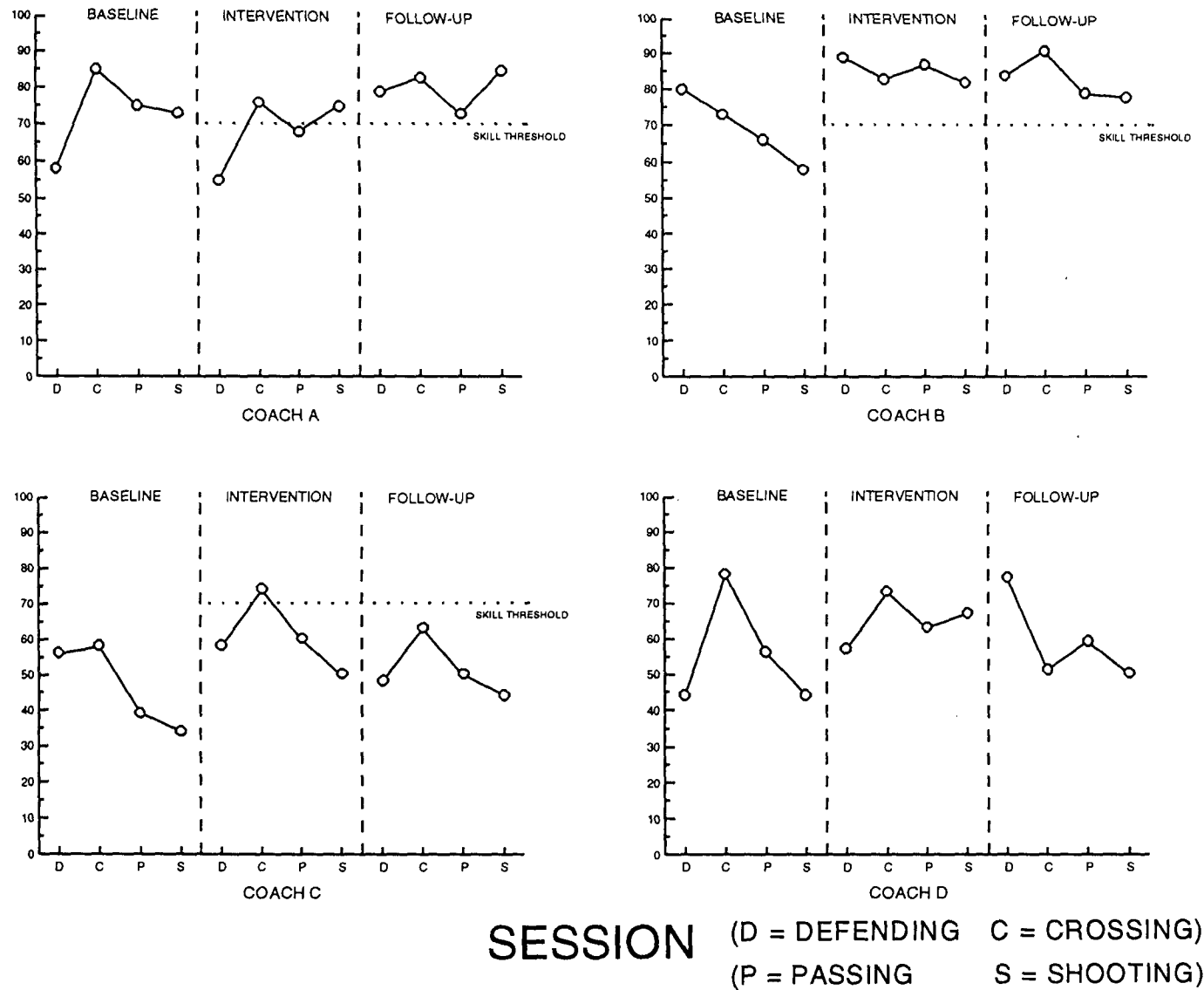


Figure 5.5: Percent of comments that focussed on "skill" related information. Data are presented for Coaches A, B, C and D across the three study phases.

PERCENT OF COMMENTS

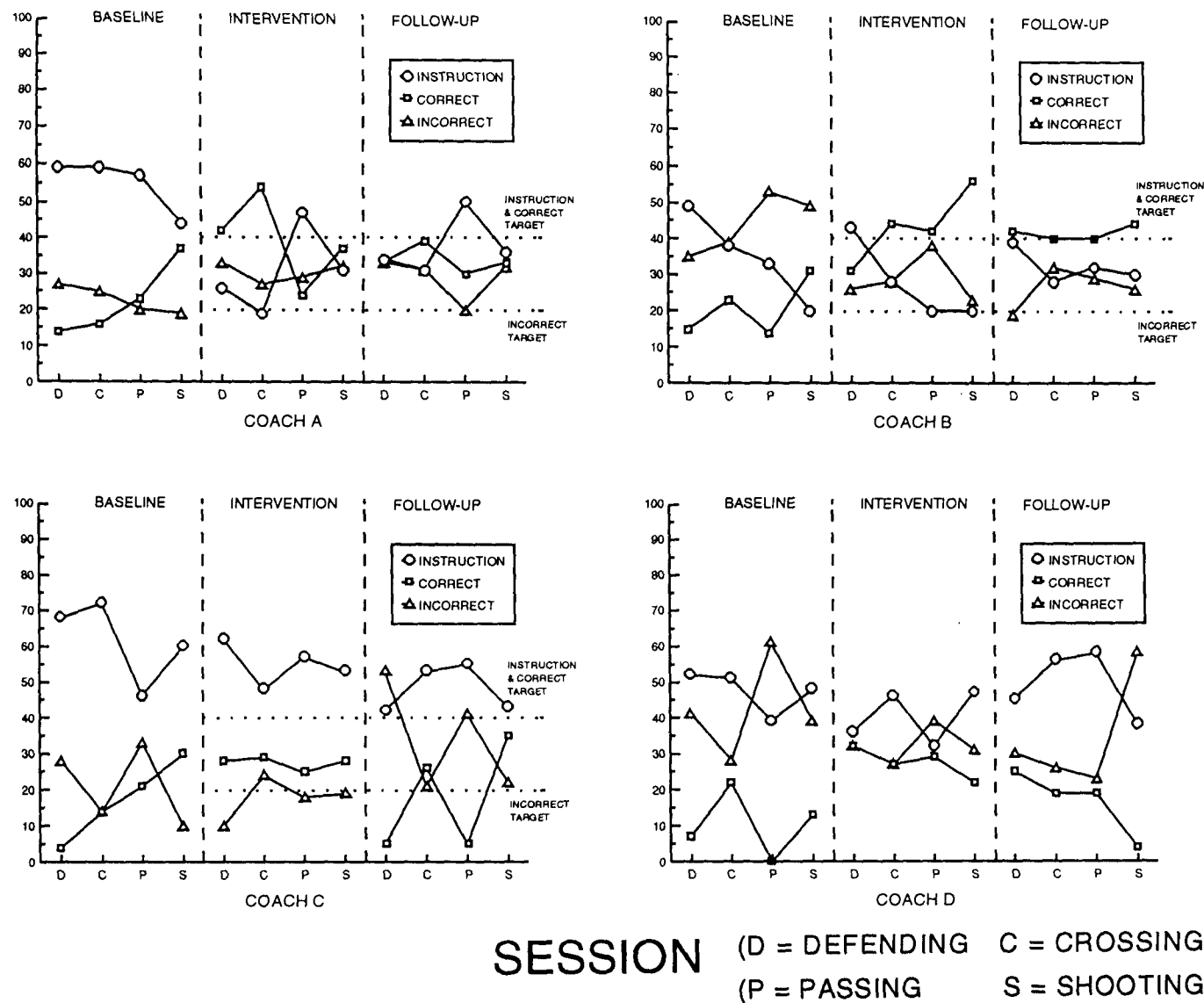


Figure 5.6: Percent of "skill" related comments that focussed on "instruction", feedback on "correct" performance and feedback on "incorrect" performance. Data are presented for Coaches A, B, C and D across the three study phases.

PERCENT OF COMMENTS

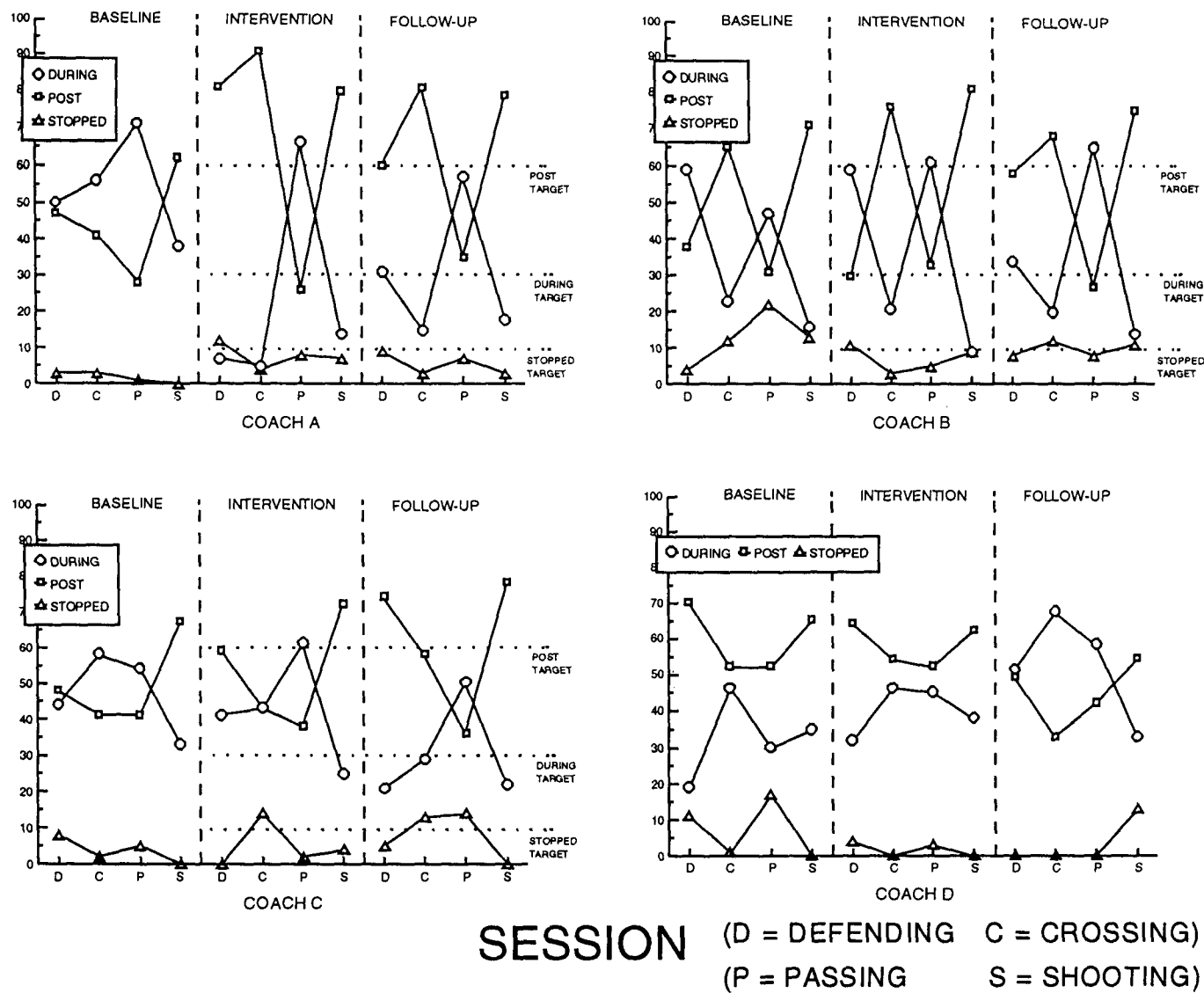


Figure 5.7: Percent of "skill" related comments that were delivered "during", "post" and "stopped". Data are presented for Coaches A, B, C and D across the three study phases.

PERCENT OF COMMENTS

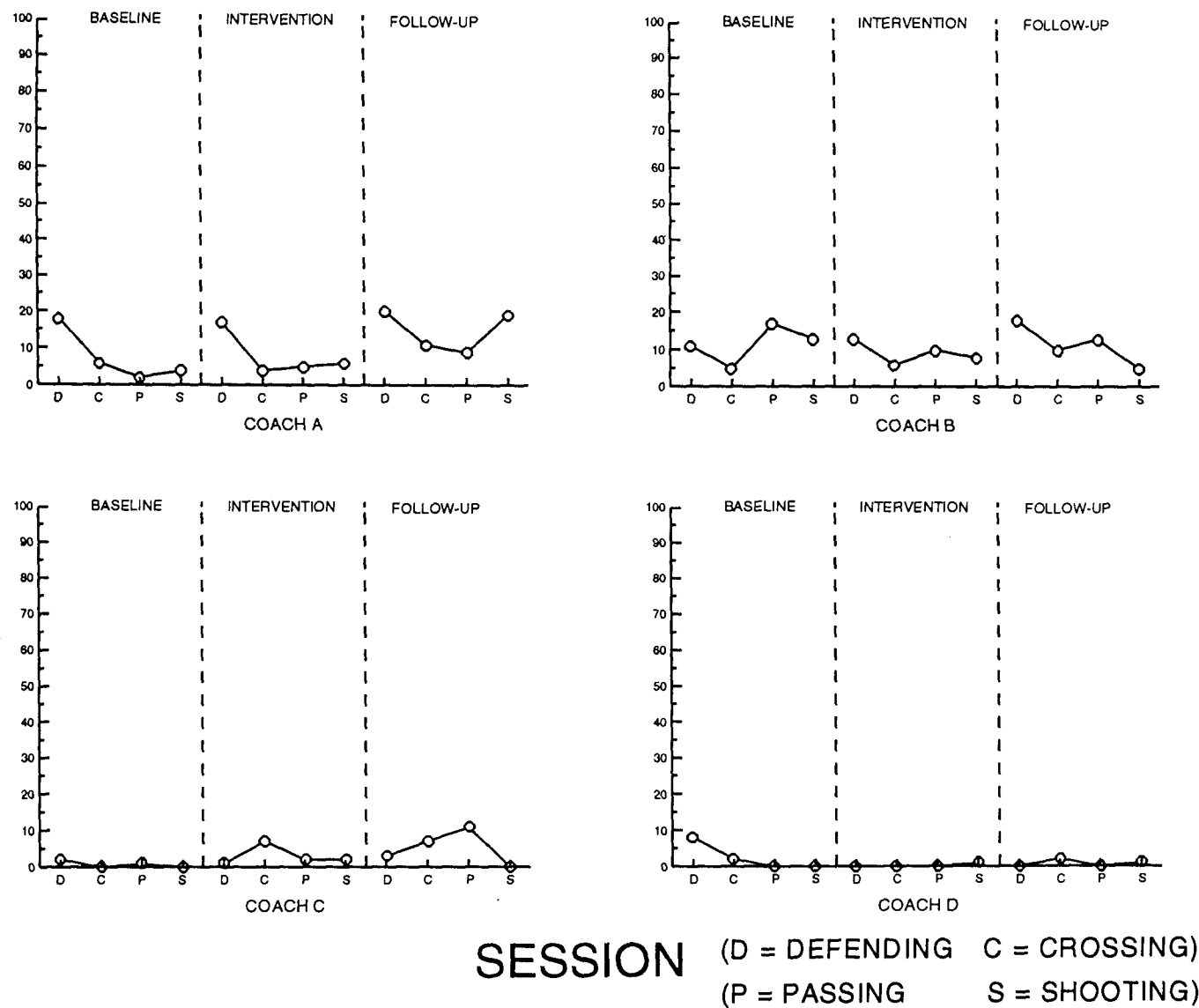


Figure 5.8: Percent of "skill" related comments in which delivery was accompanied by a "demonstration". Data are presented for Coaches A, B, C and D across the three study phases.

PERCENT OF COMMENTS

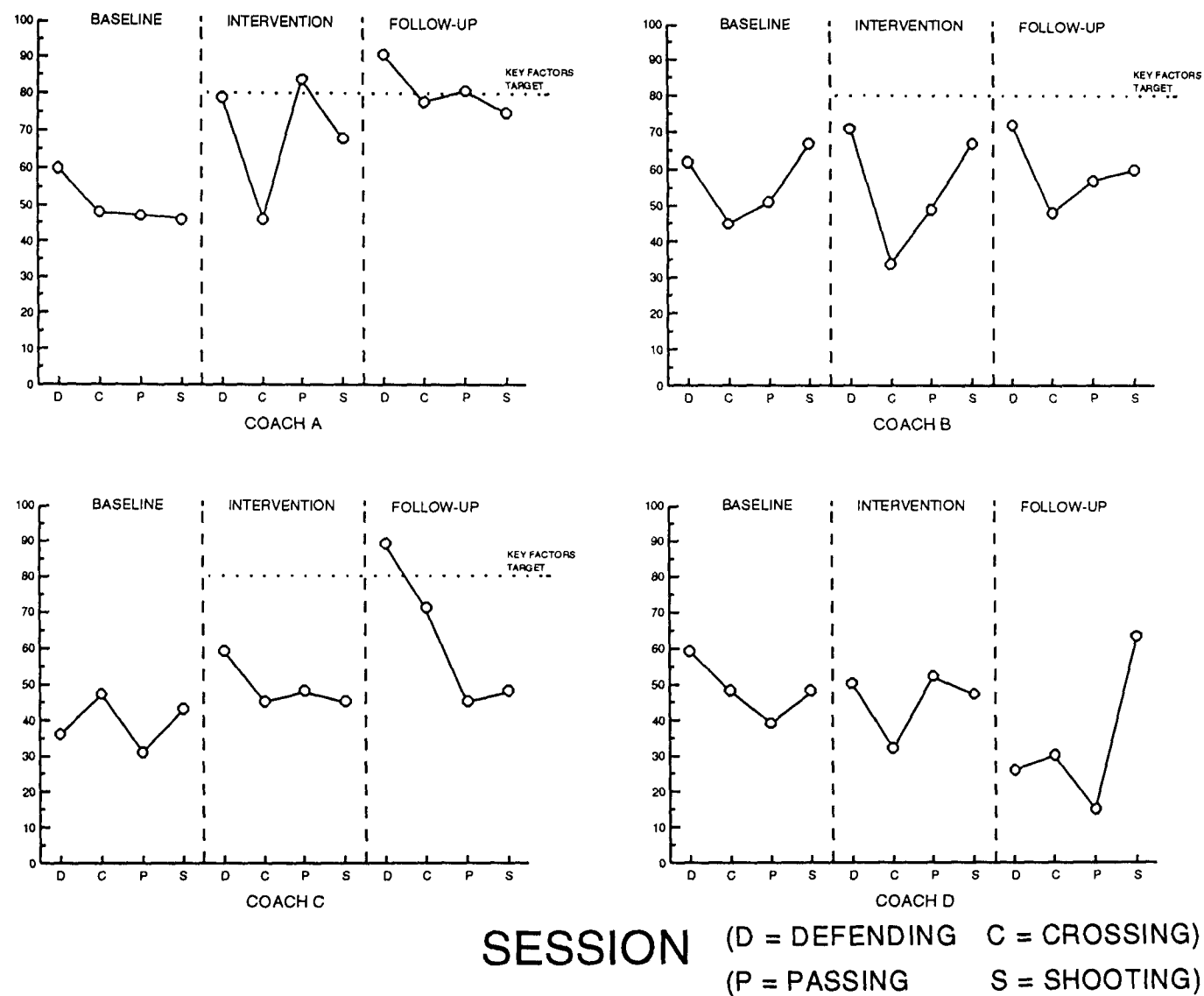


Figure 5.9: Percent of "skill" related comments in which reference was made to the "key factors" of the session. Data are presented for Coaches A, B, C and D across the three study phases.

PERCENT OF COMMENTS

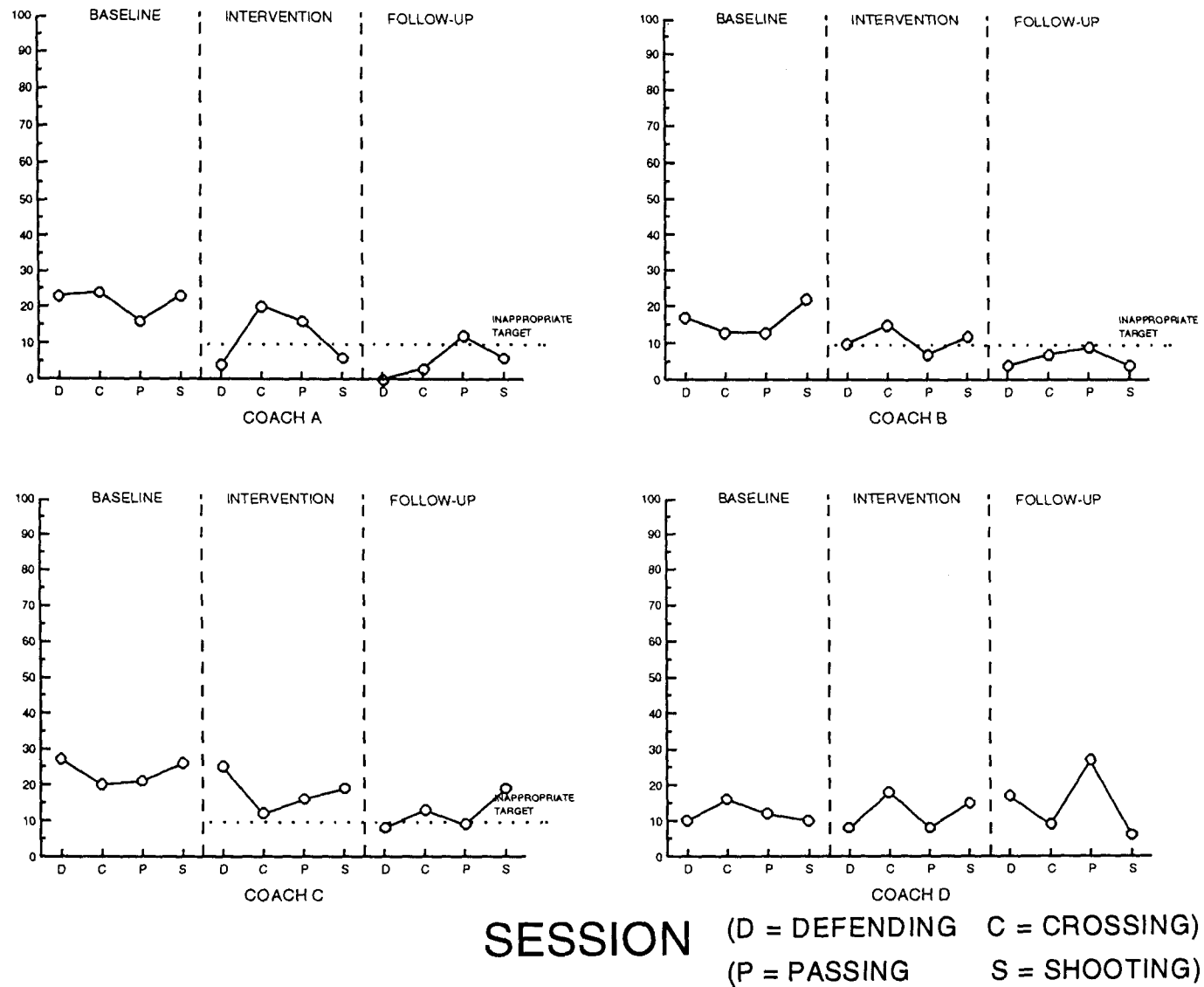


Figure 5.10: Percent of comments that were considered "inappropriate" in nature. Data are presented for Coaches A, B, C and D across the three study phases.

APPENDIX A**(Sample CAI(II) Output Data)**

QUESTION AND ANSWER MATRIX

Organization:

1. Did the athletes understand the organization of the drill?
2. Were the goals of the drill clearly stated?
3. Was the organization of the drill delivered in a concise and efficient manner?

Realism:

1. Was the drill representative of game situations?
2. Did the coach use an adequate area?
3. Did the coach use an adequate number of athletes?
4. Did the drill match the goals set?

Athlete Performance:

1. Did the athletes work enthusiastically throughout the drill?
2. Did the drill challenge the athletes?
3. Did the athlete's performance appear to improve because of the information given by the coach?

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Results

Data File :
Output File:

Coach:

Date:

Sport: SOCCER

Venue: U.B.C.

COMMENT SUMMARY

Number of Drills Recorded	:	3
Total Number of Comments	:	108
Number of Skill Comments	:	81(75%)
Number of Non-Skill Comments	:	27(25%)
Number of Inappropriate Comments	:	16(15%)
Number of Demonstrations	:	8

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 81(75%)
2. DIRECTION of Skill Comments - Individuals : 77(95%)
Groups : 4(5%)
3. FOCUS of Skill Comments - Instruction : 26(32%)
Correct : 34(42%)
Incorrect : 21(26%)
4. TIMING of Comment Delivery - During : 24(30%)
Post : 49(60%)
Stopped : 8(10%)
5. REFERENCE to Key Factors - Key Factors : 49(60%)
Non-Key Factors: 32(40%)
6. Number of INAPPROPRIATE Comments - 10(12%)
7. Number of DEMONSTRATIONS - 8

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 27(25%)
2. DIRECTION of Non-Skill Comments - Individuals : 27(100%)
Groups : 0(0%)
3. FOCUS of Non-Skill Comments - Non-Specific : 17(63%)
Effort : 3(11%)
Behaviour : 0(0%)
Organisation : 7(26%)
4. Number of AFFECTIVE Comments - 16(80%)
4.1 Number of EFFORT and AFFECTIVE Comments - 3 of 3
5. Number of NON-SPECIFIC Comments - 17
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 13 of 17
6. Number of INAPPROPRIATE Comments - 6(22%)

Data File :
Output File:

Coach:
Date :
Sport: SOCCER
Venue: U.B.C.

COMMENT(17)
Individual(s)
Correct
During
No-Demonstration
Non-Key-Factors Inappropriate

COMMENT(21)
Individual(s)
Correct Inappropriate
Post
No-Demonstration
Non-Key-Factors

COMMENT(23)
Individual(s)
Correct
Post
No-Demonstration
Non-Key-Factors Inappropriate

COMMENT(25)
Individual(s)
Correct
Post
No-Demonstration
Non-Key-Factors Inappropriate

COMMENT(28)
Individual(s)
Correct
Post
No-Demonstration
Non-Key-Factors Inappropriate

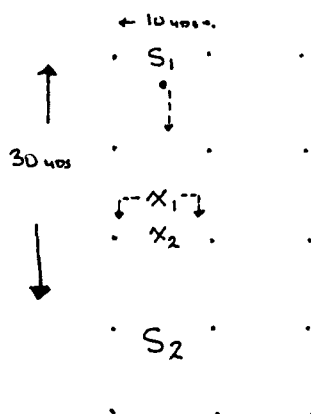
COMMENT(40)
Individual(s)
Correct
During
No-Demonstration
Non-Key-Factors Inappropriate

COMMENT(45)
Individual(s)
Non-Specific
Non-Affective Inappropriate

APPENDIX B**(Practice Plans of Each Session)**

DEFENDING

DRILL 1 : Preventing an opponent from turning with the ball.



Organization : (12 players) 4 players, 30 X 10 grid.

S1 serves X1. X2 must try to prevent X1 from turning with the ball, and passing to S2.

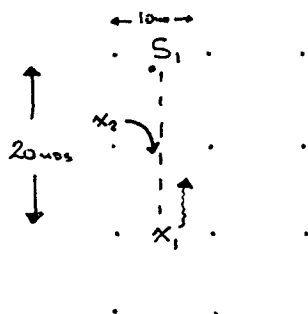
The practice is repeated from the other end with S2 serving X2, who is challenged by X1.

After 3 attempts each, S1 & S2 enter the grid and X1 & X2 become servers. They too will have 3 attempts.....and so on.

KEY FACTORS

1. Make up ground when the ball is travelling.
2. Approach to about 3 feet from opponent.
3. Adopt a flexed, balanced and angled position.
4. Be patient and watch the ball.
5. Tackle on the turn when ball is exposed, and attacker is unbalanced.

DRILL 2 : Challenging when opponents face goal.



Organization : (12 players) 3 players, 20 X 10 grid.

S1 serves X1. X2 must try to prevent X1 returning a pass to S1. S1 must remain stationary (target), and X2 can only move after S1 serves the ball.

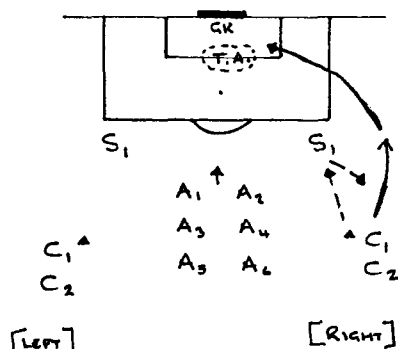
After 3 attempts, players rotate positions.

KEY FACTORS

1. Make up ground when ball is travelling, getting body into line between the ball and the goal (target).
2. Make curved run (i.e., get "in line" early) if in any doubt about achieving target position.
3. Slow the approach to adopt flexed, sideways position, no more than 2 yards from ball.
4. Occasional feint to tackle, to gain initiative.
5. Be patient and watch the ball.

CROSSING & FINISHING

DRILL 1 : Near post crosses.



Organization : (12 players & Goalkeeper)

Wave of 3 players towards goal.

C1 plays S1, who plays ball back towards C1. C1 takes one touch past S1 and crosses low and firm to target area (T.A.)

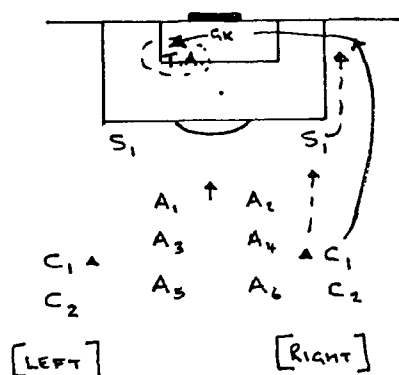
A1 & A2 make cross over runs toward goal.

Alternate attacks from right and left flanks.

KEY FACTORS

1. First touch out of feet by crosser.
2. Firm inside of foot passing action, aiming across "2nd 6 yard box"
3. Strikers not to get ahead of the ball, running into line of ball.
4. Strikers redirect pace of the ball.
5. Near post striker must appear committed, giving option of fake.

DRILL 2 : Back post crosses.



Organization : (12 players & Goalkeeper)

Wave of 3 players towards goal.

C1 plays S1, who turns and plays ball towards the goal line. C1 makes run and chips ball to back post area.

A1 & A2 make cross over runs toward goal.

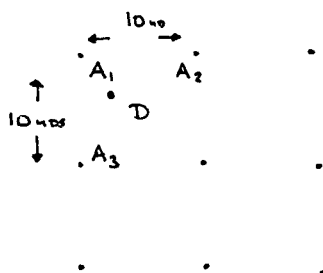
Alternate attacks from right and left flanks.

KEY FACTORS

1. Cross is a chipping action, wedging under the ball.
2. Cross should eliminate GK, reaching level with back post at the top of the 6 yard box.
3. Strikers not to get ahead of the ball, running into line of ball.
4. Near post striker must commit to run - making contact, or occupying GK.
5. Far post striker delays, from wider position, to secure back post area.

PASSING & SUPPORT

DRILL 1 : Passing angles.



Organization : (12 players) 4 players, 10 X 10 grid.

3 V 1, with attackers mobile but limited to corners.

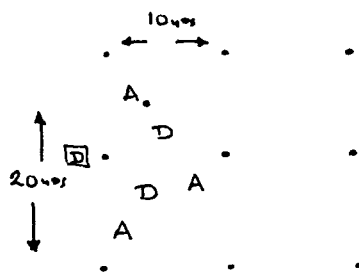
Attackers aim for six consecutive passes, but one attacker is limited to one touch.

Defenders show full effort to challenge and pressure attackers. If defender gets touch, she becomes an attacker.

KEY FACTORS

1. First touch creates angle for safe outward pass.
2. Passes must be accurate and appropriately weighted.
3. If passing angle does not exist, fake to create time or space for pass.
4. Don't release if team-mate is not positioned.
5. Don't release if defender is nearer to receiver than to passer.

DRILL 2 : Creating passing angles.



Organization : (12 players)

5 players (plus one "sub"), 20 X 10 grid.

3 V 2 , with attackers free within grid.

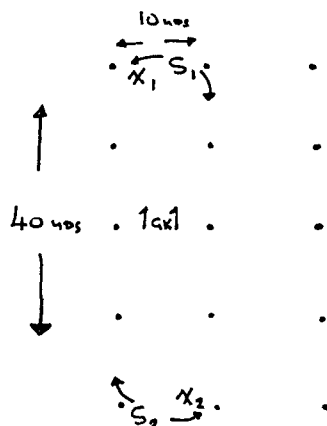
After 2 mins, defenders and "sub" become attackers.
2 attackers become defenders and one becomes "sub".....and so on.

KEY FACTORS

1. First touch creates angle for safe outward pass.
2. Accuracy, weight and timing of pass still crucial.
3. After passing, move to position of advantage - create passing angle to receive a pass.
4. Need for disguise - fake so that passing angles are opened up.
5. Need for disguise - fake to give team-mate time to get into receiving position.

SHOOTING

DRILL 1 : Unopposed - set up and strike.



Organization : (8 players & 2 Goalkeepers)

4 players & 1 GK in a 40 X 10 grid. Central goals.

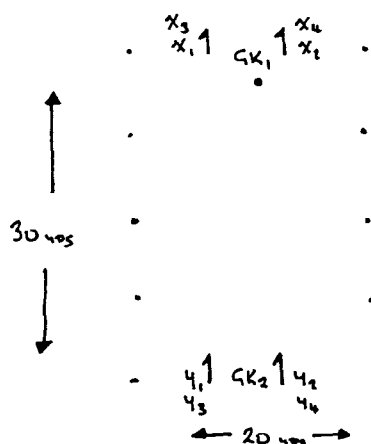
S1 serves X1. X1 sets up and shoots for goal.
Repeat from opposite end S2 serving X2.

After 5 attempts each, S1 & S2 enter grid and X1 & X2 become servers. They too will have five attempts.....and so on.

KEY FACTORS

1. First touch (if taken) is out of feet.
2. Lift head and assess GK position.
3. Non-kicking foot level with ball at time of contact.
4. Head down and upper body steady at contact.
5. Accuracy before power, aiming low and to far post.

DRILL 2 : Challenged - win ball and strike.



Organization : (8 players & 2 Goalkeepers)

4 players and GK at either end of 30 X 20 grid.

GK1 rolls ball put for X1 & X2 to chase. First to secure ball goes on to shoot. Rebound available to either player.

GK2 repeats for Y1 & Y2 to chase.

Alternate plays from GK1 to GK2.

KEY FACTORS

1. Be strong but fair in challenge.
2. Lift head and assess GK position.
3. Decide if need for first time strike, or extra touch for composure.
4. Decide if need to change the shooting angle.
5. Accuracy before power, aiming low and to far post.

APPENDIX C**(Intervention Objectives)**

INTERVENTION OBJECTIVES - COACH A
--

1. ORGANIZATION of drills. Retain use of early demonstration, but reduce amount of technical points during organizational set-up. i.e., get into drill sooner -- then coach.

2. ATHLETE PERFORMANCE. You can be more demanding. This will occur by increasing feedback and through gradual increase of attention to key factors.

3. Reduce total number of comments by eliminating unnecessary instructions (the inappropriate "commentary style").

4. Continue to direct the majority of comments to individuals.

5. Increase the ratio of feedback comments that focus on correct performances by the girls.
 Currently 55% "instruction" 23% "correct" 23% "incorrect"
 Target 40% "instruction" 40% "correct" 20% "incorrect"

6. Increase the ratio of comments that refer to key factors.
 Target of key factors : non key factors ---- 80% : 20%.
 Ensure you are familiar with the key factors and the occasions that they are most likely to arise.

7. Vary your coaching methodologies (get away from "commentary style"). Make more "post" comments, and make use of "freeze" technique to illustrate points.

8. Be discerning in your use of demonstrations. What are the crucial points and who do they apply to?

INTERVENTION OBJECTIVES - COACH B
--

1. ORGANIZATION of drills. Improve clarity and conciseness of preliminary comments.
Early demonstration (picture) will reduce chance of confusion and therefore reduce need to re-emphasize organization throughout the drill.

2. ATHLETE PERFORMANCE. You can be more demanding. This will occur through gradual increase of attention to key factors and by reinforcing instances of good performance.

3. Maintain both total number of comments, and continue to direct the majority of comments to individuals.

4. Increase the number of feedback comments that focus on correct performances by the girls.
Currently 21% "correct" : 44% "incorrect"
Target 40% "correct" : 20% "incorrect"

5. Increase the number of comments that refer to key factors.
Target of key factors : non key factors ---- 80% : 20%.
Ensure you are familiar with the key factors and the occasions that they are most likely to arise.

6. Reduce number of inappropriate comments. e.g., repetitive comments : "that's it".
repetitive failure to address key factors.

7. Maintain quality in your demonstrations (use one of the girls if appropriate).

8. Maintain accuracy of observation.

9. Continue to provide majority of skill comments when girls are "free" from the demands of the drill e.g., between trials or "freeze".

INTERVENTION OBJECTIVES - COACH C
--

1. ORGANIZATION of drills. Improve clarity and conciseness of preliminary comments explaining the organization and goals of the drill. This will reduce need to re-emphasize organization throughout the drill.

2. ORGANIZATION of drills. Use demonstration (picture) to cut down amount of information to be explained.

3. ATHLETE PERFORMANCE. You can be more demanding. This will occur through gradual increase of skill related comments and attention to key factors.

4. Increase the number of skill related comments.
 Target of skill : non-skill comments ---- 70% : 30%.
 This will be helped by #1 (above) and through attention to the key factors when coaching the drill.

5. Continue to direct the majority of comments to individuals.

6. Increase the number of feedback comments that focus on correct performances by the girls.

7. Increase the number of comments that refer to key factors.
 Target of key factors : non key factors ---- 80% : 20%.
 Ensure you are familiar with the key factors and the occasions that they are most likely to arise.

8. Reduce number of inappropriate comments. e.g., repetitive comments : "good stuff" "yes thats it ", repetitive failure to address key factors.

9. Vary your coaching methodologies.
 Make more "post" comments, and make use of "freeze" technique to illustrate points and make demonstrations.

10. Increase use of demonstrations.

APPENDIX D**(The Intervention Process)**

THE INTERVENTION PROCESS - COACH A

Reactions to Intervention 1

Entry missing.

Objectives for Session 5

1. Reduce time during demonstration at beginning of session.
2. Reduce "commentary" during session and let the players attempt the skill, then intervene.
3. Use 'freeze' method of coaching technical points.

Reflections on Session 5

Demonstration may have gone longer than I wanted.

I tried not to comment as much while players were attempting drills and felt that I did reduce my comments and observe more of the key points.

I felt I used the "stop action" method more than previous sessions.

Intervention 2 (Results and Prescriptive Comment)

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Data File :
Output File:

Coach:

Date: 30/11/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded	:	2	
Total Number of Comments	:	78	✓ Wow!
Number of Skill Comments	:	43 (55%)	→ Low - DUE TO TOO MANY ORGANIZATIONAL COMMENTS
Number of Non-Skill Comments	:	35 (45%)	
Number of Inappropriate Comments	:	3 (4%)	✓ FANTASTIC
Number of Demonstrations	:	13	→ . MAINTAIN QUALITY • DO SOME DEMO'S AFFECT EVERYONE?

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 43(55%)
2. DIRECTION of Skill Comments - Individuals : 40(93%) ✓
Groups : 3(7%) ✓
3. FOCUS of Skill Comments - Instruction : 11(26%) ^{WELL} REDUCED
Correct : 18(42%)
Incorrect : 14(33%) EXCELLENT
4. TIMING of Comment Delivery - During : 3(7%) } DRAMATIC
Post : 35(81%) } - MAY SETTLE
Stopped : 5(12%) } EXCELLENT
5. REFERENCE to Key Factors - Key Factors : 34(79%) ✓
Non-Key Factors: 9(21%) EXCELLENT
6. Number of INAPPROPRIATE Comments - 3(7%)
7. Number of DEMONSTRATIONS - 13

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 35(45%)
2. DIRECTION of Non-Skill Comments - Individuals : 32(91%)
Groups : 3(9%)
3. FOCUS of Non-Skill Comments - Non-Specific : 2(6%)
Effort : 4(11%)
Behaviour : 1(3%)
Organisation : 28(80%) ^{TOO MANY}
4. Number of AFFECTIVE Comments - 7(100%) ✓ WELL DONE
4.1 Number of EFFORT and AFFECTIVE Comments - 4 of 4
5. Number of NON-SPECIFIC Comments - 2
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 2 of 2
6. Number of INAPPROPRIATE Comments - 0(0%) → BECAUSE YOU WERE
AFFECTIVE & ELIMINATED

NON-SPECIFIC COMMENTS

* CONT. TO PROVIDE MORE FEEDBACK THAN INSTRUCTION.

Reactions to Intervention 2

Statistics were quite a pleasant surprise. It was most uplifting and encouraging to see a definite change in my coaching style, again video and statistics were quite convincing. I did not realize how much of a change I had made at the session. Video also showed area where improvement was needed (organization of drill) which will give me a further area to work on at next session. Looking forward to the next practice as I am beginning to feel much more focussed on key coaching points and to see how much more of an improvement I can make on player development.

Objectives for Session 6

1. Maintain previous improvements from last session.
2. Ensure players understand how the drill works and where they are to go.
3. Reduce "coaching players" during explanation of how drill runs.
4. Focus on key points.

Reflections on Session 6

At first I was a little pre-occupied with adjusting the drill to the smaller group of players which may have extended my explanation time. I tried to position myself between crossers and finishers so as to give feedback to both. Did not use 'freeze' method of coaching. Reduced my "running commentary". Tried to focus on key coaching points when speaking to players. Could have used group demonstration as players were using 2 and 3 touch after receiving ball. Overall I was not too pleased with my performance this session, but we (the team) did achieve results and that is important to note.

Intervention 3 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date:02/12/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded : 2

Total Number of Comments : 103

Number of Skill Comments : 78(76%)

Number of Non-Skill Comments : 25(24%)

Number of Inappropriate Comments : 21(20%) → DUE TO "GENERAL" NATURE
OF COMMENTS

Number of Demonstrations : 4
e.g., "N-SPEC"
"N.K.F"

LOOK FOR OPPORTUNITIES
TO DEMONSTRATE
ESPECIALLY DURING "BUILD-UP"

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

NEEDED TO ADD CHALLENGE
& PROVIDE "CUES"

1. NUMBER of Skill Comments: 78(76%)
2. DIRECTION of Skill Comments - Individuals : 68(87%) ✓
Groups : 10(13%)
3. FOCUS of Skill Comments - Instruction : 15(19%)
Correct : 42(54%) } RATIO ✓
Incorrect : 21(27%)
4. TIMING of Comment Delivery - During : 4(5%) → INCREASE
Post : 71(91%) (APPROP)
Stopped : 3(4%) → INCREASE
5. REFERENCE to Key Factors - Key Factors : 36(46%)
Non-Key Factors: 42(54%)
6. Number of INAPPROPRIATE Comments - 15(19%)
7. Number of DEMONSTRATIONS - 4

KNOW WHEN &
WHERE THEY APPLY

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

MISSING "KEY FACTORS" WHEN REINFORCING
* CARE: YOU ARE GOOD WHEN PRAISING YET
SPEC WHEN FAULTS.

1. NUMBER of Non-Skill Comments: 25(24%)
2. DIRECTION of Non-Skill Comments - Individuals : 17(68%)
Groups : 8(32%)
3. FOCUS of Non-Skill Comments - Non-Specific : 11(44%) } OK, AS
Effort : 0(0%) } "non-skill"
Behaviour : 1(4%) } TOTAL IS
Organisation : 13(52%) } LOW.
4. Number of AFFECTIVE Comments - 9(75%) ✓
4.1 Number of EFFORT and AFFECTIVE Comments - 0 of 0
5. Number of NON-SPECIFIC Comments - 11
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 8 of 11
6. Number of INAPPROPRIATE Comments - 6(24%) AS ABOVE

* TRY TO BALANCE YOUR STYLE. i.e., INST & F'BACK BOTH POST
& DURING. BUILD UP SESSION IN TERMS OF KEY FACTORS.

Reactions to Intervention 3

I was pleased to see some of the positive aspects of my coaching being maintained at this session. The video and data pointed out some areas where refinement is needed and the strategies from (the researcher) for improvement were excellent. I find myself concentrating more on the key factors of the training drills and less on the non applicable parts. It was interesting to see such a dramatic change in my coaching in Session 5, then to see if consistency was maintained in Session 6. I definitely feel the players are responding better to my interjections during training and it is becoming evident in their overall play during games.

Objectives for Session 7

1. Focus on key coaching points.
2. Break drill down into manageable parts.
3. Progressively build drill up.
4. Use 'freeze' method and on 'group' demonstration.
5. Interject coaching tips while drill is running (key coaching points).

Reflections on Session 7

I felt the session overall did not achieve the expectations I had hoped for. Some areas I tried to increase were; the 'stop action', and comments during the session. I felt that there was an increase in these 2 areas. The drill did not seem to progress, as the girls were still having trouble getting the ball out from their feet which is the first step in the natural progression of this drill. I asked the defenders to be more passive in order to give the girls more time to control. The girls were asked to make feints to give more time if the pass was not on but this was not working because the ball was not out from their feet. Next time I would work more on the passing without a defender until the ball is being played as it should then add defenders, then faking moves.

Intervention 4 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date:18/01/1994

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded	:	2	
Total Number of Comments	:	111	→ STARTING TO INCREASE AGAIN.
Number of Skill Comments	:	76(68%)	} OK, BUT WILL BE HIGHER IF INITIAL ORGANIZATION WAS IMPROVED.
Number of Non-Skill Comments	:	35(32%)	
Number of Inappropriate Comments	:	18(16%)	✓ DON'T WORRY, LINKED TO "FAKE".
Number of Demonstrations	:	6	

COULD ↑, ESPECIALLY GROUP DEMO'S.

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 76(68%)
2. DIRECTION of Skill Comments - Individuals : 74(97%)
Groups : 2(3%) ✓
3. FOCUS of Skill Comments - Instruction : 36(47%) ~~+~~ REDUCE
Correct : 18(24%) ~~+~~ INCREASE
Incorrect : 22(29%)
4. TIMING of Comment Delivery - During : 50(66%) ~~+~~ * REDUCE
Post : 20(26%) ~~+~~ INCREASE
Stopped : 6(8%)
5. REFERENCE to Key Factors - Key Factors : 64(84%) } V.GOOD
Non-Key Factors: 12(16%) }
6. Number of INAPPROPRIATE Comments - 12(16%)
7. Number of DEMONSTRATIONS - 6

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 35(32%)
2. DIRECTION of Non-Skill Comments - Individuals : 35(100%)
Groups : 0(0%)
3. FOCUS of Non-Skill Comments - Non-Specific : 8(23%)
Effort : 3(9%)
Behaviour : 4(11%)
Organisation : 20(57%) Too Many
4. Number of AFFECTIVE Comments - 14(93%)
4.1 Number of EFFORT and AFFECTIVE Comments - 3 of 3
5. Number of NON-SPECIFIC Comments - 8
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 7 of 8
6. Number of INAPPROPRIATE Comments - 6(17%)

* RE-ESTABLISH THE MORE REFLECTIVE STYLE IN FEEDBACK - POST. USE

Reactions to Intervention 4

I was not surprised at the results in this intervention as I had mentally gone over the practice after the session and found most of the areas identified as either positive or negative to be what I concluded on my own. I find myself much more focussed on what is working and what is not when running the sessions and I no longer concern myself with too many factors that don't pertain to the drill's objectives.

Objectives for Session 8

1. Get the drill underway quickly.
2. Use 'freeze' method to demonstrate.
3. Focus on key factors.
4. Try for build up and progression.
5. Reduce comments (unnecessary ones).

Reflections on Session 8

Got underway a little sooner. Still some (organization) instructions going on after drill started. Gave players feedback after they shot. Some 'freeze' action. Group demonstrations ? Comments - fewer. I altered Drill 2 but found this to reduce the amount of shots players were getting away because the defenders were having too much success. As a result my feedback to shooters was reduced. Drill may have been better suited for defending.

Objectives for Session 9

1. Get the drill underway quickly.
2. Use 'freeze' method to demonstrate.
3. Focus on key factors.
4. Try for build up and progression.
5. Reduce comments (unnecessary ones).

Reflections on Session 9

Got drill underway quickly and started coaching sooner. Used 'freeze' method. Used group demonstration. Comments during and after as drill was running. Less unnecessary comments. Drill seemed to flow very smoothly from Drill 1 to Drill 2.

Objectives for Session 10

1. Get the drill underway quickly.
2. Use 'freeze' method to demonstrate.
3. Focus on key factors.
4. Try for build up and progression.
5. Reduce comments (unnecessary ones).
6. Go for build-up.

Reflections on Session 10

Session was a little unorganized due to makeshift drill area. I could have rotated players through the stations. Worked on establishing the crosses coming in, then focussed on runners. Offered feedback during, after and 'freeze' method.

Objectives for Session 11

1. Build up drill.
2. Keep up skill related comments.
3. 'Freeze' and group demonstration.

Reflections on Session 11

Used build up to get drill functioning properly before moving on. 'Freeze' method was used. Started drill as soon as possible. Worked in one drill myself which may not be a good idea for a long period because it takes me away from other groups. Commented on key points, still adding some comments during action (unnecessary).

Objectives for Session 12

1. get the drill underway quickly
2. Mix comments during and after action.
3. Build up drill.
4. Focus on key areas.
5. 'Freeze' and group demonstration.

Reflections on Session 12

Focussed on key areas. Got drill underway fairly quickly. Could have used 'freeze' method more. Used comments during and after action. Did not build up drill as I felt players were performing fairly well. Some players could have been asked on an individual basis to build-up if they were having difficulty, but the group as a whole was ok. Feel much more composed and focussed during session.

THE INTERVENTION PROCESS - COACH B

Reactions to Intervention 1

Opened my eyes up to a different aspect of coaching. More awareness of what comments are made: positive or negative, and their effect in the drill. Use of film to show mistakes made in coaching, use of question and answer matrix to evaluate your drills. Use demonstrations to start a drill. When coaching make points short and to the point. Concise.

Objectives for Session 5

1. Make sure objectives are clear and concise to girls.
2. Work on positive comments.
3. Deal with key factors throughout.
4. Try and observe overall drill and try to pick out reasons why drill is breaking down, and positive points players are doing.

Reflections on Session 5

Felt by starting with a demonstration the players had a better idea of what was expected. Was more aware of my comments. When giving instructions to defence, attacking players should not be overlooked. More instruction. By finding something positive in a players mistake, correcting the problem was easier. Still have a tendency to use inappropriate comments. Stopping a player when an error was committed, correcting the mistake, and allow the drill to continue seemed to allow the girls to be more attentive and the drill picked up.

Intervention 2 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date: 29/11/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded : 2

Total Number of Comments : 131

Number of Skill Comments : 116 (89%)

Number of Non-Skill Comments : 15 (11%)

} VERY +ve SIGN

Number of Inappropriate Comments : 13 (10%) ✓ DUE TO REDUCTION
IN "NON-SPEC"

Number of Demonstrations : 17

CAREFUL NOT TO REPEAT
SAME DEMO'S.

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 116(89%)
2. DIRECTION of Skill Comments - Individuals : 115(99%)
Groups : 1(1%) ✓
3. FOCUS of Skill Comments - Instruction : 50(43%)
Correct : 36(31%) } GREAT
Incorrect : 30(26%) } PROGRESS
4. TIMING of Comment Delivery - During : 68(59%) → TRY TO
Post : 35(30%) REDUCE
Stopped : 13(11%) ✓
5. REFERENCE to Key Factors - Key Factors : 82(71%)
Non-Key Factors: 34(29%) } EXCELLENT
6. Number of INAPPROPRIATE Comments - 12(10%)
7. Number of DEMONSTRATIONS - 17 MAINLY UNNECESSARY INSTRUCTIONS

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 15(11%)
2. DIRECTION of Non-Skill Comments - Individuals : 14(93%)
Groups : 1(7%) ✓
3. FOCUS of Non-Skill Comments - Non-Specific : 6(40%)
Effort : 0(0%) } OK, AS
Behaviour : 1(7%) } "NON-SKILL"
Organisation : 8(53%) } SO LOW.
4. Number of AFFECTIVE Comments - 6(86%) ✓
4.1 Number of EFFORT and AFFECTIVE Comments - 0 of 0
5. Number of NON-SPECIFIC Comments - 6
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 5 of 6
6. Number of INAPPROPRIATE Comments - 1(7%)

* CONTINUE TO GIVE MORE FEEDBACK

Reactions to Intervention 2

Able to pinpoint areas where I was weak. Use of video and paper I was able to understand. Able to analyze comments and see how they effected the drills.

Adjusting to this concept of using key factors. Correcting or praising a player is still going to take time.

Objectives for Session 6

1. Use demonstration to start.
2. Work on getting players to understand drills and confidence in what they do.
3. Keep up number of comments and work on when comment should be made.
4. More on positive remarks, less on negative.
5. Reduce inappropriate comments.

Reflections on Session 6

Missed certain key factors when giving certain instructions. Able to control instructions during drill, not interrupting all the time.

Felt by being positive, even when correcting a players mistakes, I was able to get more out of them.

Felt I was stronger in picking up the finer points of correcting or complimenting a player's performance.

Reduced inappropriate comments and increased skill comments.

Intervention 3 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date:02/12/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded : 2

Total Number of Comments : 108

Number of Skill Comments : 90(83%)

Number of Non-Skill Comments : 18(17%)

EXCELLENT
- MAINTAIN

Number of Inappropriate Comments : 16(15%)

Number of Demonstrations : 7✓

SLIGHT INCREASE DUE
TO D2 "CONFUSION".

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

DON'T DROP TOO LOW.
NEEDED TO CHALLENGE
AND "CUE".

1. NUMBER of Skill Comments: 90(83%)
2. DIRECTION of Skill Comments - Individuals : 83(92%) ✓
Groups : 7(8%) ✓
3. FOCUS of Skill Comments - Instruction : 25(28%)
Correct : 40(44%)
Incorrect : 25(28%) } WELL MAINTAINED
4. TIMING of Comment Delivery - During : 19(21%)
Post : 68(76%)
Stopped : 3(3%) } INCREASE
5. REFERENCE to Key Factors - Key Factors : 31(34%)
Non-Key Factors: 59(66%) }
6. Number of INAPPROPRIATE Comments - 16(18%)
7. Number of DEMONSTRATIONS - 7 ✓

KNOW WHEN & WHERE
THEY APPLY.
"KF" WHEN PRAISING.

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 18(17%)
2. DIRECTION of Non-Skill Comments - Individuals : 17(94%)
Groups : 1(6%)
3. FOCUS of Non-Skill Comments - Non-Specific : 3(17%)
Effort : 0(0%)
Behaviour : 3(17%)
Organisation : 12(67%) } OK, IN TOTAL THEY ARE LOW.
4. Number of AFFECTIVE Comments - 6(100%) ✓ V. GOOD
4.1 Number of EFFORT and AFFECTIVE Comments - 0 of 0
5. Number of NON-SPECIFIC Comments - 3
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 3 of 3
6. Number of INAPPROPRIATE Comments - 0(0%) BECAUSE YOU'VE REDUCED "NON-SPEC"

* MAINTAIN INCREASED USE OF F'BACK ON CORRECT PERFORMANCE,
BUT "STRENGTHEN" THROUGH USE OF "V. F."

Reactions to Intervention 3

Felt I was starting to maintain a level.

Still have to work on key factors. Have to be sure when giving instructions. Make sure there is no confusion in the explanation to the players.

Surprised at low level focus of skill comments. Try to work on focus of skill comments.

Objectives for Session 7

1. Work on key factors when giving instructions.
2. Give thought before commenting on players performances.
3. Try to use key factors when giving positive remarks to players.
4. Try to use stop situations when whole group will benefit

Reflections on Session 7

Stress key factors when giving instructions. Talked during drills, not enough at post. By being positive when giving a player instructions: saw improvement. Tried to wait a moment before giving instructions; a little awkward at first, but as drill went on it became a little easier. Tried to keep positive comments high, while increasing demonstrations.

Feel it will take a little longer to become more natural, and using the points will come easier. By using key points I am finding it easier to develop drills from basics to game situations.

Intervention 4 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date:06/12/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded : 2

Total Number of Comments : 107

Number of Skill Comments	: 93(87%)	} SIGNS OF STABILITY - EXCELLENT (URG ↓, N-SPEC ↓)
Number of Non-Skill Comments	: 14(13%)	

Number of Inappropriate Comments : 8(7%) ✓

Number of Demonstrations : 11 ✓ GOOD

TARGET = 40%.

• INST = CHALLENGE & "CUE"

ALSO NEUTRAL TO DEVELOP
DRILL

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 93(87%)
2. DIRECTION of Skill Comments - Individuals : 88(95%) ✓
Groups : 5(5%) ✓
3. FOCUS of Skill Comments - Instruction : 19(20%)
Correct : 39(42%)
Incorrect : 35(38%) CAREFUL
4. TIMING of Comment Delivery - During : 57(61%) REDUCE
Post : 31(33%) SO
Stopped : 5(5%) POST ↑
STOPPED ↑
5. REFERENCE to Key Factors - Key Factors : 46(49%)
Non-Key Factors: 47(51%)
6. Number of INAPPROPRIATE Comments - 7(8%) ✓ INCREASE.
7. Number of DEMONSTRATIONS - 11 ✓ USE K.F. GIVING PRAISE
USE K.F. AS DRILL
BUILDS UP.

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 14(13%)
2. DIRECTION of Non-Skill Comments - Individuals : 14(100%)
Groups : 0(0%)
3. FOCUS of Non-Skill Comments - Non-Specific : 3(21%) GOOD
Effort : 4(29%)
Behaviour : 1(7%)
Organisation : 6(43%) WELL DONE
4. Number of AFFECTIVE Comments - 7(88%)
4.1 Number of EFFORT and AFFECTIVE Comments - 4 of 4
5. Number of NON-SPECIFIC Comments - 3
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 2 of 3
6. Number of INAPPROPRIATE Comments - 1(7%) ✓

* BUILD UP DRILL - INST. RATHER THAN FIND FAULT. "STRENGTHEN"
FEEDBACK ON SKILLED PERF. BY USING KEY FACTORS

Reactions to Intervention 4

Happy that a high percentage of skill comments are continuing through the drills.

Must remember when running a drill: 1) Direction of comments; Who am i addressing a group or individual. 2) Focus of skill comments; Instruction, developing a drill. Neutral observations. Correct, letting a player know she's done well and reasons for. 3) Timing of comments; During, only to reinforce positive things. Post, when main instructions should be given. Stopped, when players will have your full attention, good time for demonstrations. 4) Key Factors; Very important.

As if building up a drill must take it in stages, starting with a demonstration. Then adding new instructions to build up to where I want the drill to go. Remembering to focus on key factors. As I become more confident in using these factors I become more at ease and try to use these in other drills with good success. I know I must work hard in using these just right, but every practice I feel more at ease, and awareness of what a player is doing, and be able to correct a player in a positive way. Players seem to be acting in a positive manner, and performance seems to be higher. Must continue to improve and maintain a stable level.

Objectives for Session 8

1. To carry on where I left off before the break.
2. To start with a demonstration then, as drill progresses, point out key factors in hope of building up drill using praise.
3. To put into practice the key factors; in the right time and place.
4. Keep up a high percentage of skill comments during and post and stops.
5. To point out mistakes, use key factors, praise good points, offering another alternative.

Reflections on Session 8

The first session back after a four week lay-off went well. I felt that, by being positive, using the key factors. Illustrating factors, the players were using the other players to improve the level of the drill. I also felt by pointing out to players, using a demonstration, I felt the level of skill in the drill went up.

Objectives for Session 9

1. To maintain a level set from previous drills.
2. Increase positive comments, decreasing non-positive and inappropriate comments.
3. Still use demonstrations as a method to illustrate point to the group.

Reflections on Session 9

Felt it went well. By using the key factors I was able to get more response from players. Still have to think - when do I say something, what do I say, therefore making me more aware of the drill and allow me to be more positive on my comments.

Objectives for Session 10

1. To try to keep a high level.
2. Pick the right time to illustrate points to players.
3. Try to keep comments positive and instructional.
4. If the drill breaks down correct it at the beginning, then follow it through.

Reflections on Session 10

Drill 1: By going through each position I felt I was able to follow and correct any problems, therefore allowing the drill to continue and see a steady improvement. Drill 2: Where it broke down was the skill of the players to go to the touchline and chip the ball. But by being there to work with each player I was able to get a few of them to try and do it right. I was happy with the overall way the girls progressed.

Objectives for Session 11

1. Use a demonstration to start drill and introduce key factors as drill progresses.
2. To keep the same level of instruction.
3. Maintain positive attitude when talking to players.

Reflections on Session 11

Felt it was one of my better sessions. Girls seem to respond better to positive talk. Thought I let play go and tried to correct problems at end of play.

Objectives for Session 12

1. Work on speaking with a positive response to players when explaining a mistake to a player. Start with a positive key factor she did, and then correct her mistake.
2. To build up a drill and to get players to progress in the drills.
3. Try and not feed players too much information at the start, but add information to build up the drill.

Reflections on Session 12

Entry missing.

THE INTERVENTION PROCESS - COACH C
Reactions to Intervention 1

When I met with (the researcher) I did not know what to expect. As the axe fell, my head was spinning for the rest of the afternoon! (just kidding). It is amazing when people see so many things about you that you are not aware of. I believe in honesty and being up front with people and therefore did not take (the researchers) evaluation personally but rather to do with the job at hand. The analyzing of coaching ability, management, speaking and communicating to others will greatly help me and in turn should help the girls on the team I coach. Better coaching means more informed players about this wonderful world of soccer and, we hope, everyone will benefit from this study.

Objectives for, and Reflections on, Session 5

1. Was I prepared - yes I think I was.
2. To be concise in comment, explaining the drill but not to over emphasize.
3. Demonstrate the drill.
4. Point out "key" words and "key factors".
5. Step in and coach when/if necessary.
6. Give more "post" comments.
7. I did try to vary my coaching methods.

Bottom line in the segment of defending was to reduce my inappropriate comments, keep to the job at hand using "key factors". I think that the objectives were fulfilled in this section.

Intervention 2 (Results and Prescriptive Comment)

UNIVERSITY OF BRITISH COLUMBIA
CENTRE FOR SPORT ANALYSIS
Coaching Analysis II
Results

Data File :
Output File:

Coach:

Date: 19/11/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded	:	2	
Total Number of Comments	:	67	MAINTAIN & INCREASE
Number of Skill Comments	:	39 (58%)	} GREAT - CONT THIS INCREASE BY DECREASING ORG ^N COMMENTS.
Number of Non-Skill Comments	:	28 (42%)	
Number of Inappropriate Comments	:	17 (25%)	AS BEFORE, BUT NOW
Number of Demonstrations	:	1	DUE TO INAPP REFERENCE TO "KEY FACTORS"

TRY TO INCREASE

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 39(58%)
2. DIRECTION of Skill Comments - Individuals : 38(97%) ✓
Groups : 1(3%) ✓
3. FOCUS of Skill Comments - Instruction : 24(62%) ~~REDUCE~~
Correct : 11(28%)
Incorrect : 4(10%) } INCREASE
4. TIMING of Comment Delivery - During : 16(41%)
Post : 23(59%) ~~V. GOOD~~
Stopped : 0(0%) INCREASE
5. REFERENCE to Key Factors - Key Factors : 23(59%)
Non-Key Factors: 16(41%)
6. Number of INAPPROPRIATE Comments - 14(36%)
7. Number of DEMONSTRATIONS - 1

KEY FACTOR ISSUE

GOOD PROGRESS

INCREASE BY "FREEZE"

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 28(42%)
2. DIRECTION of Non-Skill Comments - Individuals : 27(96%)
Groups : 1(4%)
3. FOCUS of Non-Skill Comments - Non-Specific : 3(11%) ^{MUCH IMPROVED}
Effort : 0(0%)
Behaviour : 1(4%)
Organisation : 24(86%) _{STILL TOO HIGH}
4. Number of AFFECTIVE Comments - 3(75%)
4.1 Number of EFFORT and AFFECTIVE Comments - 0 of 0
5. Number of NON-SPECIFIC Comments - 3
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 2 of 3
6. Number of INAPPROPRIATE Comments - 3(11%) - WELL DONE, YOU'VE ALL BUT ELIMINATED "NON-SPECIFIC".

Reactions to Intervention 2

After this discussion with (the researcher) my reactions to the meeting were as follows:

- positive in my approach to the session.
- positive action on the players part.
- demonstrations felt better.
- interventions during coaching felt better.
- I felt effective during session.
- the girls worked hard during session.

In summary it felt good.

Objectives for, and Reflections on, Session 6

At this training session my goal was to be myself with regards to coaching the drills.

"Ideas and Goals".

To be clear and concise and not to over emphasize. Set up cones for mock demonstrations.

Stop, coach and give post game talk with reference to key factors.

I felt that I achieved my goals on coaching this session.

Intervention 3 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date: 26/11/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded	:	2	
Total Number of Comments	:	57	- LOW : LENGTH OF SESSION
Number of Skill Comments	:	42(74%)	} NEAR IDEAL - CONTINUE
Number of Non-Skill Comments	:	15(26%)	
Number of Inappropriate Comments	:	7(12%)	- GREAT IMPROVEMENT.
Number of Demonstrations	:	4	} WELL DONE

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 42(74%)
2. DIRECTION of Skill Comments - Individuals : 40(95%) ✓
Groups : 2(5%) ✓
3. FOCUS of Skill Comments - Instruction : 20(48%) ^{GOOD}
Correct : 12(29%) ^{REDUCTION}
Incorrect : 10(24%) ^{INCREASE}
4. TIMING of Comment Delivery - During : 18(43%) ^{REDUCE}
Post : 18(43%)
Stopped : 6(14%) ✓
5. REFERENCE to Key Factors - Key Factors : 19(45%) ^{INCREASE}
Non-Key Factors: 23(55%)
6. Number of INAPPROPRIATE Comments - 4(10%)
7. Number of DEMONSTRATIONS - 4

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 15(26%)
2. DIRECTION of Non-Skill Comments - Individuals : 12(80%) ✓
Groups : 3(20%) ✓
3. FOCUS of Non-Skill Comments - Non-Specific : 6(40%) } OK, AS
Effort : 1(7%) } MUCH
Behaviour : 0(0%) } REDUCED
Organisation : 8(53%) }
4. Number of AFFECTIVE Comments - 6(86%)
4.1 Number of EFFORT and AFFECTIVE Comments - 1 of 1
5. Number of NON-SPECIFIC Comments - 6
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 5 of 6 ✓
6. Number of INAPPROPRIATE Comments - 3(20%)

* AIM FOR MOST "Post" COMMENTS THAT REINFORCE "CORRECT" PERFORMANCE. USE KEY FACTORS TO DO SO.

Reactions to Intervention 3

Entry missing.

Objectives for Session 7

1. To be myself.
2. To coach fluently - speak to the girls so that they can understand key factors.
3. Give skill comments.
4. Cut back on inappropriate comments.

Reflections on Session 7

The girls were not overly interested in the drill. I felt that I had to keep them going tonight and that they did not want to work for me tonight.

I felt that if we take away the restrictions i.e., the grid, and give them 3 vs 2 but in front of goal we would get a better response and work rate.

As for my goals - I found it very hard to keep focussed on what I wanted from the girls.

It did not appear to me at the end of this session that the key factors were addressed.

Wednesday nights seem to be consistently bad, and I feel that the time of practice i.e., 7:00 - 8:30 p.m. is a major factor.

Intervention 4 (Results and Prescriptive Comment)

<p>UNIVERSITY OF BRITISH COLUMBIA</p> <p>CENTRE FOR SPORT ANALYSIS</p> <p>Coaching Analysis II</p> <p>Results</p>

Data File :
Output File:

Coach:

Date:01/12/1993

Sport: SOCCER

Venue:

COMMENT SUMMARY

Number of Drills Recorded	:	2	
Total Number of Comments	:	94	
Number of Skill Comments	:	56(60%)	THIS HAS DROPPED
Number of Non-Skill Comments	:	38(40%)	- CAREFUL WITH ORGANIZATION.
Number of Inappropriate Comments	:	15(16%)	✓
Number of Demonstrations	:	2	WERE THERE MORE INSTANCES WHERE A DEMONSTRATION WAS MERITED.

ANALYSIS OF SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Skill Comments: 56(60%)
2. DIRECTION of Skill Comments - Individuals : 54(96%) ✓
Groups : 2(4%)
3. FOCUS of Skill Comments - Instruction : 32(57%) TOO HIGH
Correct : 14(25%) } INCREASE
Incorrect : 10(18%) }
4. TIMING of Comment Delivery - During : 34(61%) TOO HIGH
Post : 21(38%) } INCREASE
Stopped : 1(2%) }
5. REFERENCE to Key Factors - Key Factors : 27(48%)
Non-Key Factors: 29(52%)
6. Number of INAPPROPRIATE Comments - 11(20%) BE FAMILIAR WITH THEM
7. Number of DEMONSTRATIONS - (2) ! * ANTICIPATE THEIR USE.

ANALYSIS OF NON-SKILL COMMENTS COMMENT SUMMARY

1. NUMBER of Non-Skill Comments: 38(40%)
2. DIRECTION of Non-Skill Comments - Individuals : 37(97%) ✓
Groups : 1(3%)
3. FOCUS of Non-Skill Comments - Non-Specific : 9(24%)
Effort : 8(21%)
Behaviour : 0(0%)
Organisation : (21) 55% INCREASED
AGAIN - CARE.
4. Number of AFFECTIVE Comments - 12(71%)
4.1 Number of EFFORT and AFFECTIVE Comments - 6 of 8
5. Number of NON-SPECIFIC Comments - 9
5.1 Number of NON-SPECIFIC and AFFECTIVE Comments - 6 of 9
6. Number of INAPPROPRIATE Comments - 4(11%) ✓

* CONTINUE WITH DEMO WHEN ORGANIZING. USE MORE F'BACK,
THE "REFLECTIVE" STYLE WILL HELP INCREASE "KEY FACTORS"

Reactions to Intervention 4

After this discussion with (the researcher) my reactions to the meeting were as follows:

- Giving the drill, size of grid and task at hand.
- Some of the girls knew what was said to them and went ahead with the drill. Perhaps as a coach I did not come across very well or the girls had a problem with the drill itself.
- I was a bit slow on speaking at the right time on key factors. I felt the girls did not move to support and yes, while the drill was in progress, I was talking to them.
- The response to moving, creating angles, space to make a pass seemed to go right over their heads.
- I have tried stopping, move in or 'freeze' to coach - sometimes it works others not.
- As I have indicated previously, having the practice from 7 - 8:00 p.m. seems to show a consistent lack of effort by some/most of the girls.

P.S. Maybe the fact that I had other things on my mind contributed to this.

Objectives for Session 8

1. Shooting unopposed, set up and shoot.
2. Challenge, win ball and strike.

Reflections on Session 8

This session was one of the better ones. Perhaps due to the fact that there were only seven players. Positive attitude on the player's part and good drills. My comments:

- demonstration worked well, talked about key factors, post comments felt good.
- 'freeze', stop play and coach worked, girls worked with positive actions.

Negative aspects:

- talking during and while the girls were moving with the ball. Fetching the balls!!

Objectives for Session 9

1. Demonstration.
2. Zone into the key factors.
3. Stop, freeze and coach.
4. To be organized in drills.

Reflections on Session 9

Preventing the opponent from turning with the ball:

Coach tried to be organized, point out drill and key factors. The demonstration worked so-so. I found this drill, after speaking to the girls, pointing out key factors and giving a demonstration - it was not great but organized.

Challenging when opponents face goal:

This worked a little better. Key factors and demonstration seemed better also. Keeping the girls attention was a bit trying. The weather made it a bit more testy but overall I thought it went quite well.

Objectives for Session 10

1. Demonstrate, talk about drill, 'freeze' and coach.
2. Give post game talks on drills - watch teams mood to see if listening or not.
3. Key factors will be zoomed in on.
4. To be organized in drills.

Reflections on Session 10

Near post crosses:

This drill, I thought, went well. The coaching, 'freeze', coach, was put into practice as well as one on one demonstration. It felt good during and after.

Back post crosses:

As in Drill 1 it felt good. Positive attitude of the players towards drill and coach.

Demonstration, 'freeze', coach, one on one went well.

Objectives for Session 11

1. To be clear and concise.
2. To demonstrate.
3. To stop, 'freeze' and coach.
4. To give post game comments.
5. To refer to key factors.
6. Have girls enjoy the drill and my coaching.
7. To be organized.

Reflections on Session 11

Reflecting on tonight's drills - girls may listen but do not understand the drills. I thought that I was concise on each of the passing angles and creating passing angles drills, key factors were emphasized. On watching the girls at drill #1 I may have stepped in too soon therefore not leaving them time to go astray. On Drill #2 - passing after demonstration to get them to make nice weighted passes and to think of key factors. After a couple of tries it started to come.

Objectives for Session 12

1. To speak and be concise.
2. To be organized.
3. To point out key factors.
4. To 'freeze' stop and coach.
5. Give a good demonstration.
6. Girls to enjoy drill.

Reflections on Session 12**Drill #1:**

I felt it went well, girls working within 5 minutes. Key factors were covered and coached. Not too many 'freeze' and coach as it was going well. The demonstration went quite well. I think the girls enjoyed this session.

Drill #2:

This drill went very well from the point that the girls were allowed to exercise the drill. Key factors were covered and one on one coaching. I think the girls enjoyed this drill.

THE INTERVENTION PROCESS - COACH D

Reactions to Intervention 1

I feel positive about the study in that I think it will be of benefit to me as a coach. It will allow me to see and evaluate my performance and interactions during the practices. I also expect that at the end of all of this - (the researcher) will offer some helpful suggestions.

On watching my performances:

- too slow in getting the drill underway. The explanation at the start is a bit too long - must get to the point sooner. Keep balls away from girls while explaining.
- need to be more positive before correcting.
- need to be a little better organized.

Objectives for Session 5

1. Be quicker and to the point in the explanation, then walk through the drill.
2. Divide the girls quickly into groups and get the drill underway.
3. Emphasize positive points before corrections.

Reflections on Session 5

I can't feel that I ran an effective drill tonight. I think I still talked too much and should just walk them through the drill first and then emphasize the important points. Next time I think I'll go over the important points 1, 2, 3 and then demonstrate.

Reactions to Video-tape of Session 5 (i.e., Intervention 2)

Not as bad as i thought. Reinforces feeling that I'm talking too much at the beginning of the drill.

Objectives for Session 6

1. I'll just go over the important points and then walk through the drill.
2. Emphasize the positive points before correcting mistakes.

Reflections on Session 6

I felt that this drill, and my running of it, went fairly well. I think I achieved the objective of being less verbal initially and I got the drills going quickly. Also tried to be more positive.

Reactions to Video-tape of Session 6 (i.e., Intervention 3)

I felt that my impressions before seeing the video were more or less confirmed. I got the drill going quickly and I was more positive during the running of the drill. On reflection I think I should have emphasized the more determined shooting of the crossed ball. Overall, I'm pretty happy with the result. I also tried to eliminate distractions when explaining the drill.

Objectives for Session 7

1. Get the drill underway quickly.
2. Walk through the drill.
3. Emphasize the important points during the drill.

Reflections on Session 7

Very poor execution of the drills. I felt I got the drills going fairly quickly, but a number of the players were not in a mood to try or put in effort and this was reflected in their efforts. In these circumstances I have to give them a talking to and this happened later in the practice after the video session.

Reactions to Video-tape of Session 7 (i.e., Intervention 4)

Confirmed initial impressions. The girls executed very poorly mainly because of their poor attitude. Achieved little. Needed talking to earlier.

Objectives for Session 8

1. Follow up on attitude correction at beginning of practice.
2. Be brief in the initial explanation of the drills and get the drills in progress quickly.
3. Correct as the drill proceeds.
4. Try and be positive.

Reflections on Session 8

Overall, it was satisfactory.

Objectives for Session 9

1. Get the girls to attack the cross.
2. Try and be as succinct as possible in emphasizing the important points in the drill.
3. Get the drill going quickly.

Reflections on Session 9

Set up drill and got it going reasonably expeditiously. Emphasized attacking the cross which they did not badly. I think I was reasonably positive and emphasized the good points. Not too bad a practice.

Objectives for Session 10

Entry missing.

Reflections on Session 10

Girls were in a frisky mood tonight. Difficult to get them to cooperate and put effort into the drill. They are also a bit bored with this drill.

Objectives for Session 11

1. Explain the objectives as succinctly as possible.
2. Get the drill set up and going as soon as possible.

Reflections on Session 11

Girls in a better mood. Performed a lot better although not perfect and still need repetition to improve. May be a bit long in the preliminary explanation - perhaps I should have walked them through the drill quicker. They need to be pushed and maybe I'm not demanding enough.

Objectives for Session 12

Entry missing.

Reflections on Session 12

Entry missing.

APPENDIX E

(Time Series Analysis - Evaluation Criteria)

The following criteria for evaluation of time-series data was taken from Kazdin (1978), and Grant, Ballard and Glynn (1990).

1. Baseline data describes the original level of performance and serves as the basis for predicting the performance level for the immediate future should no intervention occur.
2. A projection of baseline performance into the future is the implicit criterion against which treatment is evaluated.
3. If treatment is effective, the actual level of behaviour should deviate from the projected level of behaviour from baseline performance.
4. If performance during an intervention phase does not overlap with performance during the baseline phase when these points are plotted over time, the effects are usually regarded as reliable.
5. For comparison to be made easily, one has to be sure that the changes from one phase to another are likely to be due to the intervention rather than to a continuation of a existing trend. A stable rate of performance during baseline is important and is characterized by the absence of trend (slope) in the data and only slight or moderate variability in performance.
6. As a general rule, when the intervention is designed to change behaviour in a direction opposite from the trend in baseline, the trend is not problematic. Evaluating the effect of intervention in which baseline trends move in the direction of therapeutic change is extremely difficult. The intervention has to produce very marked change to draw unambiguous conclusions.

APPENDIX F**(Validity of Data)**

COACH A : SESSION 3

CAI (II) DATA

ORGANIZATIONAL:	40% of session	
	No clarity or conciseness	
INSTRUCTIONAL:	FOCUS	
	"Skill"	75%
	SKILL FOCUS	
	"Instruct"	57%
	"Correct"	23%
	"Incorrect"	20%
	SKILL TIMING	
	"During"	71%
	"Post"	28%
	"Stopped"	01%
	SKILL DELIVERY	
	"Demonstration"	02%
	SKILL EMPHASIS	
	"Key Factors"	47%
	NON-SKILL FOCUS	
	"Non-Specific"	07%
	"Effort"	09%
	"Behaviour"	01%
	"Organization"	08%
	APPROPRIATENESS	
	"Inappropriate"	16%

"EXPERT" INFORMATION

Organization		
A	Correct Area/Groupings	Incorrect
B	Activity Level High	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear
Instruction		
E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Confusion re organization of practice groups

Back to correct coaching with no demonstration of what is required

Shouted during the practice - little private coaching of individuals

That ball is back

COACH A : SESSION 7

CAI (II) DATA

ORGANIZATIONAL:	30% of session	
	Little clarity or conciseness	
INSTRUCTIONAL:	FOCUS	
	"Skill"	68%
	SKILL FOCUS	
	"Instruct"	47%
	"Correct"	24%
	"Incorrect"	29%
	SKILL TIMING	
	"During"	66%
	"Post"	26%
	"Stopped"	08%
	SKILL DELIVERY	
	"Demonstration"	05%
	SKILL EMPHASIS	
	"Key Factors"	84%
	NON-SKILL FOCUS	
	"Non-Specific"	07%
	"Effort"	03%
	"Behaviour"	04%
	"Organization"	18%
	APPROPRIATENESS	
	"Inappropriate"	16%

"EXPERT" INFORMATION

Organization

A	Correct Area/Groupings	Incorrect
B	Activity Level	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear

Instruction

E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Quick organization after initial drills - slower start on 2nd drill

*Constant chatter during practice
Telling rather than showing
Told "Make a fake" constantly*

*Extra ball in hands?
Demanding but amusing?
Constant commentary.
Success?*

COACH D : SESSION 2

CAI (II) DATA

ORGANIZATIONAL:	33% of session Not concise	
INSTRUCTIONAL:	FOCUS	
	"Skill"	78%
	SKILL FOCUS	
	"Instruct"	51%
	"Correct"	22%
	"Incorrect"	28%
	SKILL TIMING	
	"During"	46%
	"Post"	52%
	"Stopped"	01%
	SKILL DELIVERY	
	"Demonstration "	02%
	SKILL EMPHASIS	
	"Key Factors"	48%
	NON-SKILL FOCUS	
	"Non-Specific"	08%
	"Effort"	00%
	"Behaviour"	01%
	"Organization"	13%
	APPROPRIATENESS	
	"Inappropriate"	16%

"EXPERT" INFORMATION

Organization			
A	Correct Area/Groupings	Incorrect	} Slow to organize start of drill } poor perception due to lack of demonstration
B	Activity Level High	Low	
C	Realistic Practice	Unrealistic	
D	Simple & Clear	Unclear	
Instruction			
E	Key Factors Identified	Not Identified	} Talked about not shown
F	Individual Faults Identified	Not Identified	
G	Communication Clear/Constructive	Not Clear/Negative	
H	Demonstration Simple/Correct	Complicated Incorrect	} Non-existent (except for initial organization)
I	Key Factors/Coached	Not Coached	
J	Individual Factors Coached	Not Coached	} Did not coach
K	Looks the Part	Poor Impression	
L	Demanding & Purposeful	Low Key	} appeared nervous and unsure of self.
M	Voice Inspiring	Dull	
N	Practice Enjoyable	Not Enjoyable	

COACH D : SESSION 6

CAI (II) DATA

ORGANIZATIONAL:	18% of session	
	Poor clarity and conciseness	
	in Drill 2	
INSTRUCTIONAL:	FOCUS	
	"Skill"	73%
	SKILL FOCUS	
	"Instruct"	46%
	"Correct"	27%
	"Incorrect"	27%
	SKILL TIMING	
	"During"	46%
	"Post"	54%
	"Stopped"	00%
	SKILL DELIVERY	
	"Demonstration"	00%
	SKILL EMPHASIS	
	"Key Factors"	32%
	NON-SKILL FOCUS	
	"Non-Specific"	17%
	"Effort"	01%
	"Behaviour"	03%
	"Organization"	06%
	APPROPRIATENESS	
	"Inappropriate"	18%

"EXPERT" INFORMATION

Organization		
A	Correct Area/Groupings	Incorrect
B	Activity Level	High
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear
Instruction		
E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated/Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

No demos! Talked about chipping - but never shown how.

1: _____

COACH A : SESSION 1

CAI (II) DATA

ORGANIZATIONAL:	39% of session	No clarity or conciseness
INSTRUCTIONAL:	FOCUS	
	"Skill"	58%
	SKILL FOCUS	
	"Instruct"	59%
	"Correct"	14%
	"Incorrect"	27%
	SKILL TIMING	
	"During"	50%
	"Post"	47%
	"Stopped"	03%
	SKILL DELIVERY	
	"Demonstration"	18%
	SKILL EMPHASIS	
	"Key Factors"	60%
	NON-SKILL FOCUS	
	"Non-Specific"	13%
	"Effort"	05%
	"Behaviour"	05%
	"Organization"	19%
	APPROPRIATENESS	
	"Inappropriate"	23%

"EXPERT" INFORMATION"

Organization		
A	Correct Area/Groupings	Incorrect
B	Activity Level High	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear
Instruction		
E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated/Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Good quick organization after initial demo.

Public comments.

Constant yelling during practice

That unfortunate growth is boxed under his arm - preventing him from demonstrating?

Gave information but never showed what he meant.

Ball under arm?

Demanding but by yelling not in standards.

Constant commentary.

COACH A : SESSION 9

CAI (II) DATA

ORGANIZATIONAL:	22% of session	
	Clear and concise	
INSTRUCTIONAL:	FOCUS	
	"Skill"	79%
	SKILL FOCUS	
	"Instruct"	34%
	"Correct"	33%
	"Incorrect"	33%
	SKILL TIMING	
	"During"	31%
	"Post"	60%
	"Stopped"	09%
	SKILL DELIVERY	
	"Demonstration"	20%
	SKILL EMPHASIS	
	"Key Factors"	91%
	NON-SKILL FOCUS	
	"Non-Specific"	02%
	"Effort"	01%
	"Behaviour"	00%
	"Organization"	18%
	APPROPRIATENESS	
	"Inappropriate"	00%

"EXPERT" INFORMATION

Organization

A	Correct Area/Groupings	Incorrect
B	Activity Level High	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear

Instruction

E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Good quick organization of groups.

Better! - only talks when he's got something worth saying. Better demos - actually showed some techniques.

Spoke to individuals about specific key factors - privately.

Got rid of that growth under his arm! (extra ball).

Better use of voice - used when play is stopped - not during.

COACH B : SESSION 1

CAI (II) DATA

ORGANIZATIONAL:	22% of session	
	Not concise	
INSTRUCTIONAL:	FOCUS	
	"Skill"	80%
	SKILL FOCUS	
	"Instruct"	49%
	"Correct"	15%
	"Incorrect"	35%
	SKILL TIMING	
	"During"	59%
	"Post"	38%
	"Stopped"	04%
	SKILL DELIVERY	
	"Demonstration"	11%
	SKILL EMPHASIS	
	"Key Factors"	62%
	NON-SKILL FOCUS	
	"Non-Specific"	06%
	"Effort"	00%
	"Behaviour"	00%
	"Organization"	14%
	APPROPRIATENESS	
	"Inappropriate"	17%

"EXPERT" INFORMATION

Organization

A	Correct Area/Groupings	Incorrect
B	Activity Level High	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear

Instruction

E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Did not demonstrate whole technique

COACH B : SESSION 9

CAI (II) DATA

ORGANIZATIONAL:	10% of session	
	Clear and concise	
INSTRUCTIONAL:	FOCUS	
	"Skill"	84%
	SKILL FOCUS	
	"Instruct"	39%
	"Correct"	42%
	"Incorrect"	19%
	SKILL TIMING	
	"During"	34%
	"Post"	58%
	"Stopped"	08%
	SKILL DELIVERY	
	"Demonstration"	18%
	SKILL EMPHASIS	
	"Key Factors"	72%
	NON-SKILL FOCUS	
	"Non-Specific"	05%
	"Effort"	03%
	"Behaviour"	00%
	"Organization"	08%
	APPROPRIATENESS	
	"Inappropriate"	04%

"EXPERT" INFORMATION

Organization		
A	Correct Area/Groupings	Incorrect
B	Activity Level High	Low
C	Realistic Practice	Unrealistic
D	Simple & Clear	Unclear
Instruction		
E	Key Factors Identified	Not Identified
F	Individual Faults Identified	Not Identified
G	Communication Clear/Constructive	Not Clear/Negative
H	Demonstration Simple/Correct	Complicated Incorrect
I	Key Factors/Coached	Not Coached
J	Individual Factors Coached	Not Coached
K	Looks the Part	Poor Impression
L	Demanding & Purposeful	Low Key
M	Voice Inspiring	Dull
N	Practice Enjoyable	Not Enjoyable

Good quick organization & reorganization when practice progressed.

Tends to get stuck in middle of 3 practice groups - position on outside & look over all groups

Frequent stops to show players demonstrating or taking position himself

some technical errors in instruction - but focused on individuals

APPENDIX G**(Reactions to CAI (II) Intervention Strategy)**

REACTIONS - COACH A

The study and intervention sessions with (the researcher) provided me an excellent opportunity to improve my coaching methods in several areas and were well worth the time and effort involved. The objectives of the course were clearly outlined from the beginning, the training drills were all appropriate for the age-group involved, while the verbal and video feedback all reflected a genuine pattern or trend evident in my coaching style.

Throughout the course I found myself mentally preparing for the coming sessions far more than I had in the past. As a result of focussing on identifiable goals or objectives I paid greater attention to key coaching points while letting non instructional details go by. My post session analysis improved as again I went over what worked and what didn't, which allowed me greater insight into my coaching methods.

One suggestion might be to reduce the amount of sessions (in the study) by one from (each phase), a total of 12 to 9.

If this type of session were to be part of a program for developing coaches I would highly recommend it for identifying and correcting strengths and weaknesses, while providing an exciting and challenging opportunity for improvement. I would like to add that (the researcher's) love of the game added greatly to my enjoyment of being involved with this study and I found his communication skills to be top notch, even for a fellow such as myself who may have taken too many headed balls during his younger playing days!

REACTIONS - COACH B

I believe that this program I've been doing for the last 12 weeks has been a tremendous boost to my coaching. It has opened my eyes to one of the key factors in coaching : "Communication".

By being able to break down skills and drills into factors, learning when to coach, what to say, and when to speak, has enabled me to get my ideas to the players faster, and bring home the point more strongly.

For all the coaching programs offered this is one program that is sadly missing. No matter how much knowledge a coach possesses, if he is unable to communicate it to his players he is not doing his job. Until a program of this type is open to coaches we, as coaches, will never be able to do our job correctly. The merits of the program (the researcher) put together are tremendous, and I feel proud to be part of this experiment. I know I will benefit tremendously from this experiment.

REACTIONS - COACH C

When I was approached by (the researcher) to be part of this study I welcomed the chance to learn about my strengths and weaknesses.

Coaching is a deliberate act of intervention in practice with the intention of improving an athletes' performance. Yes this study does this and more. It makes coaches sit back and take a look at themselves, the way others see them, the way they coach and get their point across to the players.

The purpose of the study was to improve coaching effectiveness. On a personal level I feel there was some degree of effectiveness but still room for further improvement. The video and data analysis was a very useful tool in order to see first hand how I put the drills into action. During these playbacks one can see the results, as well as failures. This is when you really get a good look at yourself, as you have never seen before. Shows your manner of coaching, and how you relay the information to others so that they have a complete understanding of what is required of them. This is when you have to be objective and not take things personally.

I think of coaching as being a "hands on" approach to the game. But having gone through this study I now realize that there is more to coaching than just knowing the game, although I must admit knowledge and gut feelings are a big part of the overall picture.

In summary, I would like to thank U.B.C. and, in particular, (the researcher) for inviting me to be part of this study. I feel that this study could be invaluable to coaches throughout soccer, at all levels, and am grateful to have been asked to participate.