
Title	Examining the ecological validity of the Coaching Behavior Scale (Sports) for basketball
Author(s)	Koon Teck Koh, Clifford Mallett and C.K. John Wang
Source	<i>International Journal of Sports Science & Coaching</i> , 4(2), 261-272
Published by	Multi-Science Publishing Co Ltd

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

Copyright © 2009 Multi-Science Publishing Co Ltd

Archived with permission of the publisher.

Examining the Ecological Validity of the Coaching Behavior Scale (Sports) for Basketball

Koon Teck Koh^{1,2}, Clifford Mallett² and C.K. John Wang¹

¹Physical Education and Sports Science, National Institute of Education,
Nanyang Technological University, Blk 5 #03-20, 1 Nanyang Walk,
Singapore 637616

E-mail: koonteck.koh@nie.edu.sg

²School of Human Movement Studies, The University of Queensland,
St Lucia, Queensland, Australia 4072

ABSTRACT

This study examined the key tasks of high-performance basketball coaches in Singapore using the Coach Behavior Scale for Sports (CBS-S). Seventeen participants (national coaches, team managers, players and other experts) took part in the study in which quantitative (CBS-S) and qualitative (semi-structured interviews) data were collected. The quantitative data were analysed using SPSS (Version 15.0) and the qualitative data were content analysed by three experienced researchers in sport psychology and coaching. The dimensions and items from the CBS-S were considered mostly relevant in evaluating the work of Singapore high-performance basketball coaches. However, some modifications were made to the CBS-S to make it more specific to the basketball context in Singapore based on conceptual, theoretical and empirical considerations. The final version of the Singapore CBS-S (Basketball) has 9 dimensions with 96 items as opposed to the original CBS-S with 7 dimensions and 70 items. Overall, the findings from this study were consistent with the literature on coaches' work.

Key words: Basketball Coaches, Coaching Behavior Scale for Sports

INTRODUCTION

Mallett [1] described high-performance coaching as “a complex, social, and dynamic activity that is not easily represented as a set of tangible and predictable processes ... and might be considered within a broader set of relations: the interdependence between (a) the coaching tasks undertaken by coaches, (b) coaches' relations with other people (e.g., athletes, other coaches, parents), and (c) the coaching situation and context in which they operate” (p. 419). The complexity of high-performance coaching necessitates ongoing cycles of planning, monitoring, implementing, and reviewing to respond to the dynamic characteristics of coaching [2]. Therefore, the work demands for high-performance coaches are significant [3].

Hence, assessing their work should be done using a multi-dimensional behavioral framework to better reflect their performance. Unfortunately, despite these difficult and complex challenges in high performance coaching, evaluation of sports coaches' effectiveness is mainly focused on performance outcomes such as win-loss records [4]. They are rarely assessed on the quality of their own practice and improvements made. The reliance on outcome-based criteria for assessing coaches' work has raised concerns by some coaching scholars [3, 4] as it may not be a true reflection of the quality of coaches' work. This is the case in Singapore.

In recent times, the Singapore government has promoted the importance of successful (winning) results at regional and international competitions. This emphasis on success is exemplified by the introduction of an "outcome-based funding model" by the Singapore Sports Council in 2006. Under this funding model, National Sports Associations with the potential to win medals will receive more financial support than those less likely to win medals. Some National Sports Associations with a good track (successful) record such as sailing, table tennis and swimming can receive higher levels of funding compared to less successful sporting associations. The Singapore government also launched the "Project 0812" in 2006, with the aim of fast tracking Singapore's Olympic medal hopes. Under this project, niche sports such as table tennis, swimming, sailing and shooting received additional resources (financial and manpower) in preparation for the Beijing and London Olympic Games. This increased funding might have contributed to the improvement in success for Singapore's sporting teams and perhaps affirmation of the systems and policies put in place by the government.

The Chairman of the Singapore Sports Council, Alex Chan at a press conference held on 2 October 2006 revealed that:

"Four years ago (2001), we began laying the fundamental building blocks for a thriving, sustainable sports culture in Singapore. We have witnessed high level breakthrough in policies, mindset changes.....key areas of government support for sports [5]."

He further elaborated the outstanding performances made by the Singapore athletes:

"Singapore's performances at major games such as Asian Games, Commonwealth Games and South East Asian Games have shown promising results, indicating Singapore is on track to be one of Asia's top 10 sporting nations by the 2010 Asian Games [5]."

In fact, the number of medals won by the Singapore athletes has increased and the ranking at the major games such as Asian Games and Commonwealth Games has improved since 2002.

To reshape Singapore's future sporting landscape, a Sporting Culture Committee chaired by Mr Teo Ser Luck, Parliamentary Secretary for Community Development, Youth and Sports has also made several recommendations. One of the recommendations is to build up systems for sustained success in sports excellence, including developing a conducive environment to support athletes and coaches [6]. This emphasis on sporting success will indirectly add pressure on the high-performance coaches.

Currently, Singapore's high-performance coaches from all sports are assessed based on identified Key Performance Indicators (KPIs) such as winning medals at regional or international competitions. Singaporean coaches are more likely to get their coaching contract

renewed if KPIs are met; however, if KPIs are not met, coaches' contracts are likely to be terminated. This has been the usual practice for local as well as foreign coaches employed by the National Sports Associations, as they are accountable for the public funding provided by the Singapore Sports Council. National Sports Associations such as the Basketball Association of Singapore has recognized the limitations of outcome-based criteria for assessing coaches' work (Hoo, Personal communication, 26 June 2006). Furthermore, Lyle [3] questioned such an approach of evaluating high-performance coaches and suggested alternatives beyond outcome-based criteria (e.g., win-loss records), such as examining the quality of coach-athlete relationships [7, 8]. This contention is consistent with an understanding of the interdependence of the coach-athlete-performance relationship in elite sport [3].

Côté et al. [9] have developed the Coach Behaviors Scale for Sport (CBS-S) as a tool for measuring the quality of high-performance coaches' behaviors. It aims to collect quantitative data on coaches' behaviors, providing feedback to them and guiding their personal development. It has been used in countries like Canada, the USA and Australia and found to be useful [4]. The preliminary findings conducted by Haslam and Smith [10] using Singapore coaches and athletes also supported the validity of the CBS-S in evaluating coaches' behaviors. The strength of the CBS-S is its ability to measure the quality of coach behaviors (as perceived by athletes/players) in training, organisation, and competition settings [4].

High-performance coaching is a highly complex vocation and is bounded by context and culture [3]. Research findings from the CBS-S conducted in Canada, Australia and the USA cannot be generalised to the Asian context. Furthermore, Côté et al. recommended that "cross cultural validation studies of the CBS-S should be carried out" [9, p. 91] to better understand and evaluate the work of high-performance coaches. Therefore, a study was conducted in Singapore to examine the ecological validity of the CBS-S in the Singapore context. For a research study to possess 'ecological validity', the methods, materials and setting of the study must approximate the real-life situation that is under investigation [11]. Therefore, the purpose of this study was to examine the behaviors of high-performance basketball coaches using the existing CBS-S with the national team coaches, players and team managers in the Singaporean context.

The study comprised two phases. The first phase consisted of a quantitative assessment of the important coaching behaviors perceived by the team managers, players and coaches. Phase two of the study aimed to seek basketball experts' opinions on the important coaching behaviors suggested by the participants in phase one of the study. The basketball experts were also required to suggest additional coaching behaviors which they deemed important in high-performance coaching.

PHASE 1: TEAM MEMBERS' PERCEPTIONS OF COACHES' WORK

PARTICIPANTS

The Honorary Secretary of the Basketball Association of Singapore granted approval to the first author to recruit participants from the national basketball program for the study. Seventeen participants, who gave informed consent, were briefed about the study via telephone or e-mail. They were advised that their participation in the study was voluntary and were assured that their responses would be kept confidential.

Specifically, four head coaches (75% male), three assistant coaches (66% female), four team managers (75% male), and six players (50% male) were involved in this stage of the study. The age of coaches, including the assistants, ranged from 28 to 46 years old ($M = 38.3$ years, $SD = 10.1$). Coaches had collectively coached at the national team level on average

for 13 years (Range = 3 to 23 years; SD = 8.44). All seven coaches (head coach and assistants) who were involved in this study had at least a Basketball Coaching Certificate (Technical Level 2) jointly issued by the Singapore Sports Council and the Basketball Association of Singapore. In terms of educational qualifications, six participants held a high school qualification; one held a college qualification; four held a bachelor's degree, and six were undergraduate students.

METHOD

Coaching Behavior Scale for Sport (CBS-S). The CBS-S developed by Côté et al. [9] to measure the behaviors of coaches was used for the first phase of this study. The CBS-S consists of 70 items measuring seven broad dimensions of coaching behaviors: (a) Physical Training and Conditioning (9 items), e.g., “my coach provides me with a challenging conditioning program”; (b) Technical Skills (9 items), e.g., “my coach provides me with advice while I’m performing a skill”; (c) Mental Preparation (6 items), e.g., “my coach prepares me on how to perform under pressure”; (d) Goal Setting (10 items), e.g., “my coach helps me identify strategies to achieve my goals”; (e) Competition Strategies (10 items), e.g., “my coach keeps me focused in competitions”; (f) Personal Rapport (14 items), e.g., “my coach is easily approachable about personal problems I might have”; and (g) Use of Assistant (12 items), e.g., “the assistant helps with my technique”. Typically, athletes rate their coach(es) on each of the items on a 7-point Likert scale ranging from 1 (never) to 7 (always). However, for this study, the participants were requested to rate each dimension and item according to their perceived importance of behaviors in high-performance basketball coaching using a 7-point Likert scale: 1 (least important), 2 (fairly less important), 3 (less important), 4 (neutral), 5 (important), 6 (fairly important), and 7 (most important).

A University ethics committee approved the study. The participants were asked to rate the important coaching behaviors of the high-performance basketball coaches in Singapore, using the original CBS-S [9] as a reference. They were requested to add other dimensions and items that they deemed important to describe the behaviors of high-performance basketball coaches that were not included in the CBS-S. Participants completed the questionnaire within half an hour.

RESULTS

The data were analysed using SPSS (Version 15.0) producing basic descriptive statistics – rankings, means and standard deviations. The dimensions and items were ranked and arranged from the most important to least important (see Table 1). All “negative” items within each coaching behavior dimension were reverse scored to better reflect the accurate mean scores.

Table 1. Descriptive Statistics for CBS-S Dimensions

Dimensions	Rank	Mean	SD
Technical Skills	1	6.59	0.62
Competition Strategies	2	6.49	0.72
Mental Preparation	3	6.35	0.79
Physical Training and Conditioning	4	6.18	1.07
Goal Setting	5	6.06	0.99
Personal Rapport	6	6.00	0.87
Use of Assistant Coaches	7	5.53	0.94

Almost all items from the original CBS-S were included in the Singapore CBS-S (Basketball). In addition, the participants ($n = 17$) proposed one new dimension (5 items) and 35 new items to be included in the original CBS-S. Some of the new items suggested included: the coach “seeks alternative methods to demonstrate or teach technical skills to help athletes learn faster”, “scouts and analyses opponent’s strength and weakness before game and convey information to the team”, “is able to identify the optimum arousal states for each player/team and intervene accordingly”, “plans regular fitness tests and monitor players’ progress”, “works with the team to set short-term goals”, and “aligns players’ goals with team/organisation’s goals”.

The proposed new dimension and items were content analysed [12]. The frequencies of agreement among the participants were summarised. If five or more participants agreed on a dimension or an item, it was added to the instrument. In addition, the three authors, who were experienced in qualitative research, reviewed the additional dimensions and items. Items measuring the same / similar behaviors as those found in the original CBS-S were dropped. There was some deliberation on only a few items, which were resolved after some further discussion among the authors. As a result of this process, two new dimensions – “Team Goals Setting (10 items)” and “Team Competition Strategies (10 items)” were created. In addition, three new items were added to the existing CBS-S dimensions. Of these three items, two items were added in the “Physical Training and Conditioning”, and one was in the “Technical Skills” dimension (see Table 2).

Table 2. Modifications of the CBS-S Through 2 Phases of Study

Original CBS-S Dimensions (Côté et al., 1999)	Phase 1 (Coaches, Team Managers & Players)	Phase 2 (Experts)
Physical Training and Conditioning (9 items)	Add 2 items	11 items
Technical Skills (9 items)	Add 1 item	Add 2 items
Mental Preparation (6 items)	Same	Same
Goal Setting (10 items)	Same	Same
Competition Strategies (10 items)	Same	Same
Personal Rapport (14 items)	Same	Same
Use of Assistant (12 items)	Same	Same
	Team Goals Setting (10 items)	Same
	Team Competition Strategies (10 items)	Add 3 items; Delete 1 item

The Singapore CBS-S (Basketball – Version 1) at the end of this review process has nine dimensions and 93 items.

PHASE 2: BASKETBALL EXPERTS’ PERCEPTIONS OF COACHES’ WORK PARTICIPANTS

An Expert Review Committee ($n = 5$) was formed in this phase of the study. The basketball experts in the Review Committee further reviewed the Singapore CBS-S (Basketball – V1) instrument developed in the first phase of the study to provide an additional step in the validation process (content and ecological validity).

METHOD

Members in the Expert Review Committee comprised one representative each from the Singapore Sports Council High Performance Group, Coaching and Technical Development Group, the only Singapore professional basketball team – the Slingers, Coaching and Development Committee member, and a Federation International Basketball Association expert instructor. There were experts from basketball coaching, basketball team management, and basketball coach education. The five participants were briefed about the study and all of them gave consent to be involved in this study.

INSTRUMENT

Singapore CBS-S (Basketball – Version 1). The first version of the Singapore CBS-S (Basketball) developed in phase one, had nine dimensions and 93 items. The nine dimensions of coaching behaviors are: (a) Physical Training and Conditioning (11 items), (b) Technical Skills (10 items), (c) Mental Preparation (6 items), (d) Goal Setting (10 items), (e) Competition Strategies (10 items), (f) Personal Rapport (14 items), (g) Use of Assistant (12 items), (h) Team Goals Setting (10 items), and (i) Team Competition Strategies (10 items). Members from the Experts Review Committee were asked to rate each dimension and item according to their perceived importance of high-performance basketball coaching using a 7-point Likert scale: 1 (least important), 2 (fairly important), 3 (less important), 4 (neutral), 5 (important), 6 (fairly important), and 7 (most important). In addition, they were requested to consider other dimensions and items they deem important in capturing the work of high-performance basketball coaches in Singapore.

The first version of Singapore CBS-S (Basketball) questionnaire was sent to the experts for review at least two days prior to the scheduled meeting. On the day of the meeting, the first author interviewed the experts individually for about 1 to 1.5 hours. Semi-structured questions such as the following were asked during the interviews: “Do you think the instrument is able to capture the major work / task of high performance basketball coaches? If not, what should be included?” and “Do you think the items within each dimension are able to draw sufficient information on the leadership of the coach and the program he/she has planned for? If not, which items should be removed / included?”. These questions were designed following the guidelines on research interviews that explore the dimensions of ‘why’ and ‘how’ [11, 13]. The use of probes [14] was also employed to fully involve the experts in in-depth discussions on the relevance of all dimensions and items in Singapore CBS-S (Basketball – Version1). For example, the basketball experts were probed to provide reasons for the inclusion of new dimensions or items and vice versa. With permission from the experts, all responses were audio-taped and subsequently transcribed for data analysis.

DATA ANALYSIS

Only the most frequently cited suggestions were considered in the Singapore CBS-S (Basketball – Version 2) after experts’ feedback. The three authors reviewed and accepted the additional dimensions and items recommended by the experts. The interview transcripts and a second version of Singapore CBS-S (Basketball) questionnaire were sent to each expert within a week after the interview for verification. This member checking was considered important to ensure that members’ views were accurately reported [11, 14]. The questionnaire was also sent to the coaches, team managers and players, who were involved in this study subsequently for review. No further changes were made to the instrument.

RESULTS

The frequencies of agreement among the members were summarised. If two or more experts agreed on a dimension or an item, it was added to the instrument. The Expert Review Committee accepted all dimensions and items proposed with minor amendments to some of the wordings in order to improve clarity and specificity to Basketball. For example, on items like “the coach prepares the team to face a variety of situations in competition”, the experts suggested elaboration like “sideline and baseline plays, press offence/defence etc.”, and on items like “the coach has a consistent routine at competition”, they suggested “warm up, pre-game briefing, etc.”

The Expert Review Committee recommended three new items to be included in the “Team Competition Strategies” dimension. The items were: “the coach has a team structure and creates effective system of offensive and defensive plays”, “the coach shows confidence in bench coaching (e.g., use of time-out, substitution), and “the coach has established a system of offence and defence”. In addition, two new items – “the coach encourages me when I’m having problems learning new skill/concept” and “the coach praises me when I execute skill/concept correctly” suggested by the experts were added to the “Technical Skills” dimension subsequently.

The only item that was deemed not relevant by the experts is “the coach ensures that training facilities and equipment are organised for competition” under “Team Competition Strategies”. This item was subsequently removed from the Singapore CBS-S (Basketball – Version 2). As a result of this review by the experts, five additional items have been created and one item from the original CBS-S was removed (see Table 1).

The Singapore CBS-S (Basketball – Version 2) was then sent to the coaches ($n = 7$), team managers ($n = 4$) and players ($n = 6$) who were involved in this final phase of the study for further comments. They were asked to review the questionnaire endorsed by the Expert Review Committee. No additional information was received from them through this final validation process. The final version of the Singapore CBS-S (Basketball) has nine dimensions and 96 items. They are: (a) Physical Training and Conditioning (11 items), (b) Technical Skills (12 items), (c) Individual Goal Setting (10 items), (d) Team Goal Setting (10 items), (e) Mental Preparation (6 items), (f) Competition Strategies (9 items), (g) Team’s Competition Strategies (12 items), (h) Personal Rapport (14 items) and (i) Use of Assistant (12 items).

DISCUSSION

The purpose of this study was to examine the ecological validity of the CBS-S using high performance basketball coaches, assistant coaches, players, team managers, and basketball experts in Singapore. It was envisaged that through this validation process, a sport- and culture-specific instrument could be developed in order to fully capture the behaviors of Singapore high-performance basketball coaches. The discussion is divided into four segments, namely: (a) relevance of the CBS-S dimensions and items, (b) additional dimensions, (c) additional items, and (d) removed item.

RELEVANCE OF THE CBS-S DIMENSIONS AND ITEMS

All dimensions and items in the CBS-S, except the negative behaviors items, were rated very high with a mean score ranging from 5.53 to 6.59. The results suggest that the work of high-performance basketball coaches in Singapore could be evaluated using the dimensions and items found in the CBS-S. Of these, Technical Skills ($M = 6.59$, $SD = 0.62$) and Competition Strategies ($M = 6.49$, $SD = 0.72$) were ranked the most important behaviors of the Singapore high-

performance basketball coaches. The results were consistent with the sports coaching literature that one of the major responsibilities of a coach is to develop athletes' potential and enhance their performance [15], and performance enhancement is typically done through technical skills development and competition strategies preparation. Goal Setting was ranked fifth in position with a mean score of 6.06 and was still deemed important by the respondents because it is an important process that guides the coaches and players toward achieving their goals.

Overall, the results of this study confirmed the findings in the literature [9, 16, 17] that the seven dimensions identified in the CBS-S are important in describing the behaviors of Singapore high-performance basketball coaches. Among the coaches' behaviors identified, there was some difference in perceived importance as reported by the coaches, players and team managers.

ADDITIONAL DIMENSIONS

Two additional dimensions – “Team Goal Setting” and “Team Competition Strategies” – were created after the three authors reviewed input from coaches, team managers, players, and experts. Items measuring team goal needs (and the subsequent dimension) were deemed necessary because the existing dimensions within the CBS-S mainly deal with individual goal setting as the instrument was originally developed from expert Canadian Gymnastic coaches, who coached individual sport athletes. Team goal setting was considered important and appropriate for team sports like basketball. Individual goals may be different from that of the team goals, but have the potential to complement team goals. An expert in basketball coaching, who was involved in this study, explained the importance of having individual and team goal setting and how these two areas might complement each other:

“In basketball, there are outcome and performance goals, which are referred to as subject goal (individual) and group goal (team). For example, a player sets his personal goal of scoring 30 points in a game and the team set its goal to achieve 70 points with specific number of rebounds, steals, assists etc. In this case, the coach's job is to help and convince this player to work toward his/her individual goal, cooperate with his/her team-mates and achieve the team goal.” (Expert E)

The coach has the responsibility of monitoring and regulating the goals for both the athletes and the team according to the situational changes and the environment that s/he is working in. There may be occasions when the coach ignores the team or individual athletes' goals because of personal agendas (e.g., outcome goal, contract and salary). Hence, it is important to capture this important coaching behavior.

Items in the Team Goal Setting dimension were adapted from the individual goal setting items in the CBS-S. Modifications to the items were made mainly by changing the word “me” to “team”. In addition, some sentences were changed to make it easy to read and understand. For example, an item such as “monitors my progress towards my goal” was changed to “monitors team progress towards achieving team goal/s”, “sets my goals for me without consultation” was changed to “sets goals for the team without consultation”, and “provides an environment that is motivating” to “provides an environment that is motivating for the team”. The adaptation of items for team goal setting from the original CBS-S was deemed appropriate on the basis that the original scale has satisfactory psychometric properties [9, 16, 17].

The Team Competition Strategies dimension was created to evaluate the “team dimension” of Basketball, especially on how coaches prepare the team, and deal with the

opponents during competitive tournaments. Members of the Expert Review Committee felt that strategies in preparing the team before and during competition are important to the team's success. High-performance coaches are expected to analyse opponents' strengths and weaknesses prior to competition; and prepare his/her team adequately to deal with different situations [3]. In addition, they are expected to "read the game" critically and make sound decisions and strategies during competition in order to outperform the opponents [3]. This second additional dimension was created to measure these aspects of high-performance coaches' behaviors.

Nine items from the original dimension (i.e., Competition Strategies) were retained in the adapted scale. The change involved replacing the word "me" to "the team". In addition, examples were given for two items to make them more specific to this dimension of work – "prepares the team to face a variety of situations in competition (e.g., sideline and baseline plays, press offence/defence), and "has a consistent routine at competition (e.g., warm up, pre-game briefing).

ADDITIONAL ITEMS

Nine new items were created through the validation process. Of these, three items were included in the Technical Skills dimension. For example, the item – "identify key skills for each player depending on his/her position/physical attribute" was included on the basis that coaches, in addition to teaching and correcting players' technical skills, have a responsibility to identify and determine relevant skills that are needed for various positions in order to develop players' potential that would contribute to a team's overall performance. In addition, some skills required for a player playing for centre position are different from the guard or forward positions. Specifically, the shooting range for the centre player will be short/closed (2-point), whereas a guard will have to practice long-range shooting, including a 3-point shot. Coaches must be able to give appropriate advice and work with individual players to maximise their potential so that they are able to subsequently contribute to the team; therefore, it was considered logical that this item should be included and evaluated by the players.

Motivation and encouragement from the coach play an important role in skill acquisition and development, especially when the players are learning new skills/concepts [18]. The use of encouragement and motivation fosters an adaptive learning environment, and appropriate use of praise would help to reinforce the skills/concepts to be learned. The two items "encourage me when I am having problems learning a new skill/concept", and "praise me/give positive reinforcement when I execute the skill/concept correctly" were created in the Technical Skills dimension for these purposes.

Physical Training and Conditioning is one of the most important factors for basketball in producing optimal performances at elite level if the athletes want to do well [19]. Although this dimension was ranked fourth by the participants, it was still considered important, as the mean score was 6.19 with a standard deviation (SD) of 1.07. From the participants' responses, there was a strong call for the coach to monitor the program regularly and track the players' progress. In addition, basketball is a contact sport with a high possibility of injuries; therefore, there is a need to vary training programs according to changes in players' conditions, especially those who have just recovered from injuries. Hence, two items – "monitors physical conditioning program and my progress" and "regulates training according to my health (e.g., injury)" – were included to evaluate these coaching behaviors.

High-performance coaches often face external demands and pressures [3, 20]. They are required to perform different duties and tasks independently. Nevertheless, to prepare high-performance teams to compete at the elite level, it is probably implausible to expect head

coaches to be good at all coaching tasks (such as a psychologist, strength and conditioning trainer) and in fact to undertake all duties themselves. Hence, there is a need for head coaches to make use of other forms of assistance in getting their work/task completed. The original CBS-S [9] items are mainly focused on evaluating the use of assistant coach(es) or personnel. There may be other important areas that would complement head coaches' training programs to improve individual players and teams' performances; e.g., the use of sports science services. As such, a new item "use of other professional services when appropriate (i.e., psychologist, nutritionist)" was included as it was deemed important by the participants and supported by all the basketball experts.

Basketball is a fast game. The demands from coaches during matches and in competitive tournaments are much higher than normal training sessions. One of the basketball experts in the Review Committee shared his personal experience:

"Unlike individual sports, which involve closed skills and [where] minimum feedback could be given during competition by coaches, basketball is an open skill sport and involves a lot of decision making during the game. For example, reading own players' and opponents' performance, coming out with strategies to counter opponents, calling time-out to rectify a problem, giving specific instructions to counter opponents' attack, making substitutions etc. This decision-making process is complex and critical to coaching." (Expert A)

Therefore, the inclusion of a comprehensive list of items reflecting competition demands was warranted. Three additional items were created within the Team Competition Strategies dimension to evaluate the strategies employed by coaches during competition. The new items were: (a) "establishes a system of offence and defence for the team," (b) "knows the team structure, and creates effective system of offensive and defensive plays," and (c) "shows confidence in bench coaching."

REMOVED ITEM

With regard to the relevance of items in reflecting each dimension, all members highlighted the need to make the items more "team-oriented" as basketball is a team sport. They perceived the need to make the items more specific and relevant to basketball. For example, one member recommended removing the item "ensure that facilities and equipment are organised for competition" under Competitions Strategies. He elaborated on this point:

"This strategy is crucial in gymnastics, but not basketball. In gymnastics, the coach could ensure that the equipment/apparatus was organised. However, the facilities and equipment during basketball competition will be set up by the organiser in accordance to the standard guidelines set by FIBA." (Expert B)

The reason to exclude the item was because the organiser at the competition site undertakes the responsibility of organizing the facilities and equipment and not the coach. Basketball coaches are not permitted to interfere with the facilities and equipment.

CONCLUSION

The purpose of the present study was to examine the ecological validity of an instrument for measuring coaches' behaviors based on the CBS-S and specific to a team sport (Basketball) in the Singapore context. Overall, the findings from this study were consistent with the

literature [9, 16, 17]. The dimensions and items from the original CBS-S [9] are relevant in evaluating the work of Singapore high-performance basketball coaches. Nevertheless, some modifications to the dimensions and items were made to make the questionnaire more specific to the basketball context in Singapore.

The additional dimensions and items were generated through a rigorous process of analysing data collected from Singapore high-performance coaches, players, team managers and experts in basketball. The final version of the Singapore CBS-S (Basketball) has nine dimensions with 96 items as opposed to the original CBS-S with seven dimensions and 70 items [9]. It has gone through content and ecological validity checks to ensure that the questionnaire is reliable and valid in evaluating the behaviors of high-performance basketball coaches in Singapore.

This study has shed some light in terms of evaluating the behaviors of high-performance basketball coaches using a sport-specific instrument in an Asian context. The evaluation process aims to provide high-performance coaches an account of how their behaviors were perceived and evaluated by the athletes under their charge rather than competition results. This process focuses on giving coaches continuous feedback with the aim of achieving quality training and enhances personal development.

To avoid the potential bias against the coach's performance, three members of the Expert Review Committee suggested having an independent assessor to be involved in the evaluation process. This was consistent with the recommendations of Mallett and Côté [4]. Moreover, players must be briefed and provided with an explanation of the items (and the purpose of the feedback) to promote a clearer understanding of the aims of the strategy and the process involved.

Another valuable contribution of this study to the literature is the timing of administering the questionnaire. The Expert Review Committee recommended that the Singapore CBS-S (Basketball – V2) should be administered according to the team's preparation phases; e.g., during each of the three phases of training – off-season, pre-season, and in-season – as the focus of team and individual work will be different at each phase. For the first two phases, it was recommended that the timing for administering the questionnaire should be at the middle of each phase so that the coach has sufficient time to reflect and make changes, if necessary. The last phase of data collection (in-season) should be immediately after the season, preferably within a week, to promote players' recall of coaches' behaviors.

Although this study contributed to the body on literature of high performance coaches' behaviors, there were a number of limitations that warrant caution in generalizing the findings from this study. First, this study focused on a specific sport in a particular context and only a small group of participants were considered. Future studies may include participants from other countries using a larger Asian sample to confirm or challenge the findings in this study. Second, the basketball experts in this study suggested different phases in administering the questionnaire. Future research should examine the appropriateness of the timing suggested using high-performance basketball coaches, players and team manager and document the interventions procedure. This may help us in understanding the feedback and evaluation processes better. Another limitation of the research was an understanding of the work requirement at different performance levels. For example, the work required for coaching the FIBA-Asia Level 1 team may be different from the Level 2 team as the standard differs. Hence, it may be worthwhile for future research to investigate the nature of coaches' work in different performance levels. Furthermore, to enhance our understanding of high-performance coaching, an examination of coaches' work in the same sports but in different cultures (e.g., Western and Asian) should be promoted.

ACKNOWLEDGEMENT

The authors would like to thank Dr. Jean Côté from the Queen's University, Canada, as well as the reviewer Dr. Pierre Trudel, for their valuable comments in writing the revised manuscript.

REFERENCES

1. Mallett, C. J., Modelling the Complexity of the Coaching Process: A Commentary. *International Journal of Sport Science and Coaching*, 2007, 2, 419-421.
2. Bowes, I. and Jones, R. L., Working at the Edge of Chaos: Understanding Coaching as a Complex, Interpersonal System, *The Sport Psychologist*, 2006, 20, 235-245.
3. Lyle, J., *Sports Coaching Concepts: A Framework for Coaches' Behavior*, Routledge, London, 2002.
4. Mallett, C. J. and Côté, J., Beyond Winning and Losing: Guidelines for Evaluating High Performance Coaches, *The Sports Psychologist*, 2006, 20, 213-221.
5. Sports – Singapore's Sports Vision 2010 on Track, *The Straits Times*, 2006, October 2.
6. Sports – Reshaping Singapore's Future Sporting Landscape, *The Straits Times*, 2007, January 26.
7. Côté, J., Salmela, J., Trudel, P., Baria, A. and Russell, S., The Coaching Model: A Grounded Assessment of Expert Gymnastic Coaches' Knowledge, *Journal of Sport and Exercise Psychology*, 1995, 17(1), 1-17.
8. Potrac, P., Brewer, C., Jones, R. L., Armour, K. M. and Hoff, J., Towards An Holistic Understanding of the Coaching Process, *Quest*, 2000, 52, 186-199.
9. Côté, J., Yardley, J., Hay, J., Sedgwick, W. and Baker, J., An Exploratory Examination of the Coaching Behavior Scale for Sport, *Avante*, 1999, 5, 82-92.
10. Haslam, I. R. and Smith, D. E., An Investigation of the Coaching Behaviors Among Singapore Coaches, *Journal of Physical Education and Recreation*, 1997, 7(1), 21-25.
11. Gratton, C. and Jones, I., *Research Methods for Sport Studies*, Routledge, London, 2004.
12. Côté, J., Salmela, J., Baria, A. and Russell, S., Organising and Interpreting Unstructured Qualitative Data, *The Sport Psychologist*, 1993, 7, 127-137.
13. McCall, G. J. and Simmons, J. L., *Issues in Participant Observation: A Text and Reader*, Addison-Wesley Publishing Company, Sydney, 1969.
14. Patton, M. Q., *Qualitative Research and Evaluation Methods*, 3rd edn., Sage Publications, London, 2002.
15. Bloom, B.S., *Developing Talent in Young People*, Ballentine, New York, 1985.
16. Baker, J., Côté, J. and Hawes, R., The Relationship Between Coaching Behaviors and Sport Anxiety in Athletes, *Journal of Science and Medicine in Sport*, 2000, 3, 110-119.
17. Baker, J., Yardley, J. and Côté, J., Coach Behaviors and Athlete Satisfaction in Team and Individual sports, *International Journal of Sport Psychology*, 2003, 34, 226-239.
18. Mallett, C. J., Evidence-Based Coaching Practice: A Case Study Using SDT, *The Sport Psychologist*, 2005, 19, 417-429.
19. Isley, N., Koh, K. T. and Wang, C. K. J., *Basketball Level 3 Coaching Course (Technical Content)*, Basketball Association of Singapore, Singapore, 2008.
20. Rynne, S., Mallett, C. J. and Tinning, R., High Performance Sport Coaching: Institute of Sport as Sites for Learning, *International Journal of Sports Science and Coaching*, 2006, 1(3), 223-233.

Copyright of International Journal of Sports Science & Coaching is the property of Multi-Science Publishing Co Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.