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# Coaching performance and leadership behaviours in team sports

Focussing on team sports research and the complex question of leadership in teams, we usually realise the following situation: there are either individual experiences by successful coaches of how a team works (e.g., Jackson & Delehanty, 1995), or theories and models on behavioural factors of coaching performance (e.g., Carron & Hausenblas, 1998). The first group usually lacks a scientific fundament, whereas the second one cannot influence training and competition directly, because it usually covers only a limited aspect of leadership. Thus, the first approach tends to be copied unreflecting and uncritically, whereas the latter is regarded as sceptical among coaches due to its distance to practice.

Consequently, the reprocessing of an issue like team leading needs an approach that has sound theoretical and research foundations (Vickers et al., 2004), tackles the problem as a whole (Potrac et al., 2000), and has practical implications (Feltz et al., 1999); additionally, the approach should be transferable across different situations and contexts (Abrahams, Collins & Martindale, 2006, p. 549), i.e., across different team sports. As a consequence this paper suggests approaching the question of coaching performance with reference to team building by exploring experts' subjective theories in a first step, and confirming them in a second one, a research design, which on one hand corresponds with the idea of the chain of reasoning (Krathwohl, 2004) or the research wheel (Johnson & Christensen, 2004), and has successfully been applied in several sports scientific studies focussing coaching strategies on the other side (e.g. Roth, 1996). To do so, (1) the first section presents a model of coach-

ing performance which is differentiated by integrating the concept of hierarchical planning. (2) Secondly, a mixed methods study is presented which introduces the idea of a sequential and concurrent interlinking of concepts, data analysis, and inference. (3) Finally, the paper tries to give some advice on coach education, thus following recent research activities of leadership capacity (Burke et al., 2006).

## Theoretical framing of coaching performance

Looking at the occupational field of a coach, a multitude of tasks can be detected which more or less contribute to the success of a team. In the foreground, high performance coaching can be described as involving the highest levels of athlete and coach commitment, public performance, the developing and implementing of programmes, highly structured competitions with enormous pressure on decision, as well as demanding and restrictive athlete selection criteria (cf. Bowes & Jones, 2006; Lyle, 2002; Trudel & Gilbert, 2006). In fact, there is a range of models conceptualising coaching in general (e.g. Cotê et al., 1995; Cushion, Armour & Jones, 2006; Feltz et al., 1999; MacLean & Chelladurai, 1995; Smoll & Smith, 1989) from which MacLean's and Chelladurai's (1995) literature-based model (cf. ■ Fig. 1) is probably the most comprehensible and convertible with reference to finding a sound theoretical framework for further specification based on empirical analyses (Lyle, 2002).

The model by MacLean and Chelladurai has been discussed and acknowledged as providing useful ideas to describe product and process factors as well as specific

direct and indirect behaviours (Cushion et al., 2006; Lyle, 2002). Potential limitations have been identified (cf. Lyle, 2002), but despite these it adopts an occupational and organisational approach towards coaching (Cushion et al., 2006). As a result, the decision to work with MacLean and Chelladurai's dimensions of coaching as theoretical framework can be justified as follows:

■ As to the textual perspective the model shows three strong points:

1. It provides a job task analysis of coaching, which is regarded as a fairly new idea (Trudel & Gilbert, 2006, p. 518), thus being holistic with reference to what coaches have to do and distancing from models concentrating on one dimension of coaching, e.g. self-efficacy (Feltz et al., 1999), or from models being used in general leadership behaviour (Burke et al., 2006).
2. Differentiating between products and processes the model allows to analyse coaches' work in terms of their actual behaviour thus avoiding to evaluate their performance on the basis of a team's win or loss record, an approach seen critically in the science of training (cf. Lames, 1998).
3. Finally, it allows drawing practical implications—a fact that may influence coach education on different levels.

■ The model has been developed on the basis of an extensive review of specific literature being evaluated by a panel of experts (MacLean & Chelladurai, 1995, p. 199), thus satisfying the enormous

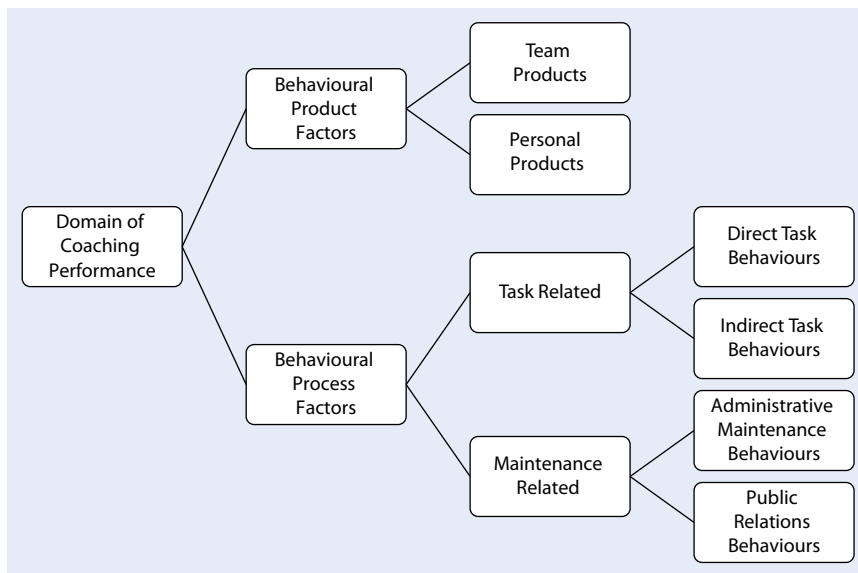


Fig. 1 ▲ The dimensions of coaching performance. (MacLean & Chelladurai, 1995)

amount of information being published about coaching and coach education.

- Methodologically the items and dimensions have been confirmed on a sound statistical basis using LISREL factor analysis showing significance values of  $p < 0,001$  for all loadings (MacLean & Chelladurai, 1995, p. 203).
- Finally, it must be established that the model also shows limitations (cf. Lyle, 2002), from which its abstractness and its estimated universality must be mentioned in particular. But it has to be emphasised at the same time that these limitations simultaneously indicate the necessity for further theoretical analyses of specific perspectives and issues, e.g. coach-athlete relationship or coaches' leading capacities, which are still a desideratum for research (cf. Feltz et al., 1999; Jowett & Cockerill, 2002).

Taking these arguments into consideration it is particularly the last idea that has to be implemented on a team sports level to be able to take specific job tasks into account. Referring once more to MacLean and Chelladurai (1995, p. 197f.), coaches' performances are to be analysed against the quality of behavioural products, for example a team's wins or losses, as well as the quality of behavioural process factors, such as the managing of practice sessions or interactions with athletes; espe-

cially the latter idea is often regarded as a specific key to success, because it is known from leadership research that particularly person-focussed leadership is a correlate of team performance outcomes (Burke et al., 2006, p. 303). However, it needs modification and substantiation with a view to everyday tasks and situations in team sports, because it is there, where behavioural processes lead to the desired products in specific settings.

Thus, differentiation as well as specification is needed to find out more about the leading behaviours of successful coaches in team sports. Research on expert coaches has shown that coaching efficacy leads to greater player satisfaction and motivation (Feltz et al., 1999, p. 775). Consequently, this paper concentrates on the question of person- and group-focussed team leadership.

### Core dimensions of coaching performance

Orientating oneself both by the results of team sports research (Brack, 2002; Lames, 1998) as well as by specific coaching schematics (Feltz et al., 1999; König, 2008) two important approaches have to be taken into consideration and interlinked for further analyses. First, the complex structure of team performance and the possibilities of developing it by means of coaches' actions and interventions is to be seen as

the springboard (cf. Brack, 2008, p. 51f.). Secondly, the coaching schematic developed by Abrahams, Collins and Martindale (2006, p. 555) shows that coaching performance takes place in different environments, e.g. in competition or training sessions, and is based on concepts and declarative. Connecting these two ideas coaching performance in team sports must focus four core factors having a direct effect on the team as a unity (Brack, 2002; König, 2008):

- *Selecting and engaging adequate players.* who bring along a specific ability of game performance as well as other desirable traits for a successful team (e.g. Conzelmann & Gabler, 2005). This refers to abilities like collecting information about players systematically as well as selecting, persuading and engaging players to play for one's own team.
- *Forming and leading individual players and a team.* This factor encompasses the competencies of handling motivation and character building of single players (Feltz et al., 1999), performance-enhancing and retarding group structures, such as cohesion (e.g. Carron, 1984; Wilhelm, 2001), hierarchy, and status (e.g. Carron & Hausenblas, 1998; Lüschen, 1984) as well as the capability of managing conflicts, crises, or success in the coach-athlete relationship (Jowett & Cockerill, 2002).
- *Planning and regulation of training.* This coincides with improving the individual as well as the complex game ability in a fixed period of time (e.g. one season) and consequently refers to an adequate planning, diagnosing, and intervening of the training process, thus relating to factors like stamina, skills, and tactics (Abraham, Collins & Martindale, 2006, p. 555; Feltz et al., 1999, p. 766). Additionally, specific profiles have to be implemented in order to govern the complex process of training in accordance with the specific demands of the competition (Hohmann, 1994). All in all the setting process and outcome goals as well as goal development through performance analysis are in the focus (Abrahams, Collins & Martindale, 2006, p. 557f.).

■ *Game strategy and match governance.* The basic idea is that delivering an optimum performance requires specific strategies and measures, e.g. making coaching decisions during competition (e.g. changing of players) or the utilization of tactics and strategies (MacLean & Chelladurai, 1995, p. 202; Feltz et al., 1999, p. 766; Strean et al., 1997, pp 244 ff.). Thus, research is needed that analyses the match, starting from the period of preparation, across the governing of the match, to its evaluation in between and afterwards.

Interlinking MacLean and Chelladurai's (1995) model of coaching performance with the dimensions of coaching performance, one should acknowledge that they have to be realised on different time levels. Insofar a distinction between strategic, tactical, and operational duties—a hierarchical pattern having been successfully implemented in managerial economics (cf. Bea & Haas, 1997; Pfohl & Stölzle, 1997)—should be transformed to the issue at hand (Abrahams et al., 2006, p. 557). Additionally and due to the complexity of team leading, the conception of hierarchical planning is necessary because varying coach tasks differ in aspects such as complexity, structure, revisability, and freedom of choice; thus it could already be demonstrated that it may help to come to grips with this task (König, 2007, p. 27–30).

Seizing on the main idea of the paper, person- and group-focussed leadership in team sports, this hierarchical structure can be explained with a view to concrete tasks in team building and team leading (cf. ■ Tab. 1).

In summary, it can be asserted that coaches have to master task related domains, referring to the team as a group and, simultaneously, individual objectives—a structure which provokes conflicts between players having contrary interests as well as between players and coaches because of different perceptions of each other (cf. Jowett & Cockerill, 2002, p. 25). Therefore, it seems to be of outstanding interest to analyse strategies and methods which coaches use in the situations described above. This, however, re-

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### Abstract

The aim of this study was to investigate coaching performance in team sports taking leadership behaviours into focus. To do so, coaching performance was put in a literature-based frame and analysed with reference to a task structure based on the idea of hierarchical planning. The focus of the paper is on a mixed methods multi-strand study using qualitative as well as quantitative threads to develop and verify a set of coaching strategies focussing on teambuilding and team leadership. Qualitative analyses showed that coaches do have a clear understanding of forming and leading a team, which could be

shown by a specific set of strategies being used by high performance coaches from different team sports (basketball, football, handball, and volleyball). These strategies could be confirmed in a sequential quantitative study analysing coaches' and players' attitudes towards the previously analysed schemes. The results of this study are discussed in terms of methodical and practical implications.

### Keywords

Team sports research · Coaching performance · Team leadership · Leadership behaviour · Mixed methods research

## Führungsverhalten von TrainerInnen im Mannschaftssport

### Zusammenfassung

Ziel des Beitrages ist eine Analyse von Trainerverhalten im Mannschaftssport, wobei der Schwerpunkt auf der Untersuchung von Führungsverhalten liegt. Hierzu wird die Tätigkeit von Trainern in einem theoretischen Rahmen abgebildet und auf der Basis einer Aufgabenstruktur analysiert, die auf dem Theorem der hierarchischen Planung basiert. Im Mittelpunkt der Untersuchung steht eine dreistufige Studie, die sowohl qualitative wie quantitative Verfahren nutzt, um Trainerstrategien zur Mannschaftsbildung und -führung zu entwickeln und zu überprüfen. Hierbei zeigen qualitative Analysen, dass Trainer aus verschiedenen Sportspielen über deklarati-

ves Wissen und erprobte Strategien verfügen, wie Mannschaften zu formen und zu führen sind. Diese Führungsstrategien können in einer zweiten, quantitativen Studie bestätigt werden, indem sowohl Trainer- als auch Spielermeinungen über die explorierten Theoriebausteine erhoben werden. Die Ergebnisse der Studie werden abschließend bezüglich möglicher methodologischer und praktischer Auswirkungen diskutiert.

### Schlüsselwörter

Sportspießforschung · Trainerverhalten · Mannschaftsführung · Führungsverhalten · Triangulation

quires specific methodological and methodical procedures.

## Methodological framing

The issue of team leading is an example of a research problem with an overhang of complexity as could be explained in the introduction of this paper. To cope with this difficulty an approach is required that follows the inductive-deductive logic in a distinctive research cycle (Krathwohl, 2004). This rather abstract idea is to be explained on three levels:

1. On the *stage of conceptualisation* (Teddle & Tashakkori, 2009, p. 144) the issue at focus requires a compromise consisting of firstly analysing experts' knowledge to develop theoretic-

cal modules of team leading (inductive proceeding); this corresponds with the strategy of beginning with the particular in the field and working through inductive inference to the general. Secondly, deductive logic should be employed by validating the systematically gathered and inductively analysed data, thus arguing from the general to the particular (Haag, 2010, p. 111; Teddle & Tashakkori, 2009, p. 26).

2. On the *experiential or empirical stage* what was said leads to the idea that in a first step a qualitative analysis of experts' subjective theories of team leading has to be accomplished to get a deeper understanding of the issue outlined earlier in this text. In this context, experts' subjective theories are

**Table 1** Job tasks of coaches

Time axis for job tasks	Definition	Exemplary tasks
Strategic tasks	Tasks referring to the complete time-frame of one season	Selection of players Formation of a team Attribution of special functions within the team
Tactical tasks	Tasks referring to one macro- or micro-cycle, thus embracing a period of time lasting from one to several weeks	Norming of the team, i.e. developing group structures Developing rivalry
Operational tasks	Tasks referring to one training session or to one competition thus being the focus of everyday work	Motivation Solving conflicts Feed-forward and feedback

defined as “knowledge being built up by personal experiences and practical instruction” (Beck & Krapp, 2006, p. 55 ff.). They have to be analysed, confirmed by means of communicative validation (cf. Roth, 1996, p. 27) and then condensed for further studies. In a second step, these exploratory and qualitatively generated principles and assumptions have to be confirmed quantitatively, using standardised interrogation and statistical analyses, thus realising the second link in the chain (cf. Krathwohl, 2004).

- Proceeding *on the inferential stage*, it is possible to interlink the advantages of qualitative and quantitative research (Creswell, 2009), thus creating the basic methodological structures of a holistic understanding of the coaching process (Potrac et al., 2000). This finally leads to the opportunity of emerging a theoretical framework providing results which have been analysed in an iterative manner (Ridenour & Newmann, 2008) and being of relevance for both scientists as well as practitioners.

The complete design with further details is explained in the next section.

## Method

A mixed method study was developed focussing on the analysis of strategic planning processes of high performance coaches. As already explained and justified, it focussed on person- and group-related issues like cohesion, hierarchy, communication, integration, etc., thus referring to team formation, team leadership, and coach-athlete relationship. This corresponds with the levels of strategic and

tactical threads (cf. ■ **Tab. 1**). According to Teddlie and Tashakkori (2009, p. 145f.), the study is to be characterised by a multi-strand design, combining the ideas of sequential and parallel structures; it is displayed in ■ **Fig. 2**.

The fundamental ideas of the research design are explained below:

- As to timing, a sequential QUAL → QUAN design (Teddlie & Tashakkori, 2009, p. 94) is based on a mixture of the exploration of experts' knowledge using text-based data and its confirmation through numeric data being collected from a larger number of people (Creswell, 2009, p. 206).
- Additionally, two different perspectives of team leading representing the coach-athlete paradigm are to be considered; this approach can be illustrated with the idea that leading teams requires the integration of coaches' and players' attitudes (Jowett & Cockerill, 2002). Textually, this can be justified with reference to Chelladurai's multi-dimensional model of coaching performance (1980) which explicitly explains that team members' contentedness is increased when their favoured leading behaviours comply with the actual behaviours of the coach. Consequently, a parallel QUAN + QUAN strand (cf. Creswell et al., 2003, p. 215f.) was integrated on the second level to get a deeper understanding of the issue as well as an integration of leading behaviours and players' expectations and attitudes (cf. Burke et al., 2006). The two threads of the second study were characterised by equal weighting, a decision depending on the genuine research interests (Creswell, 2009, p. 207).

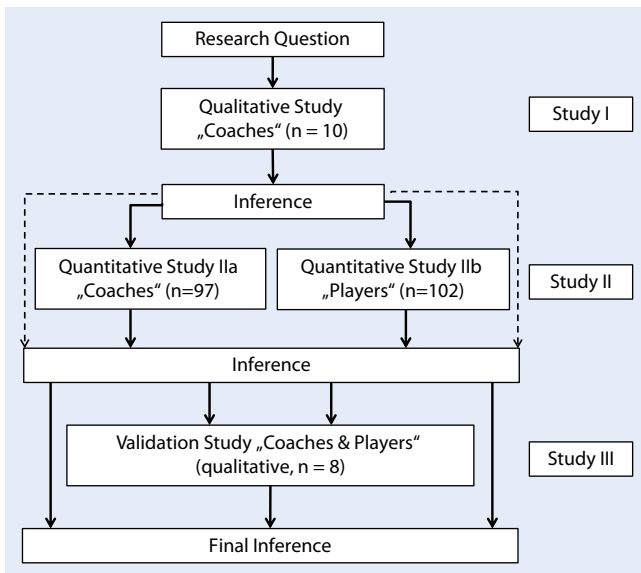
- Associating players' and coaches' perspectives may lead to contradictions because of conflicting interests. To find out if this is in the nature of regarding leadership behaviours in teams (cf. Day, Gronn & Salas, 2004) or a consequence of the specific research design, a third phase has been integrated, although not having been planned beforehand; its aim was to find out more about expected differences as well as about surprising contradictions (Morse, 1991).

When summarising and integrating the different strands, a connection of a sequential exploratory and a sequential explanatory strategy is on hand (Creswell, 2009, p. 211); it can be displayed as QUAL → QUAN + QUAN → QUAL-Design (cf. Creswell et al., 2003) and was carried out in accordance with the Helsinki Declaration of 1975.

## Study I

(1) To generate a theoretical conception about team leading within the dimensions of coaching, a qualitative study was conducted first, using guideline-based interviews with ten high performance coaches from basketball (3), football (2), handball (3), and volleyball (2); in doing so, a good tradition of research in coaching development was followed (Côté et al., 1995; Gilbert & Trudel, 2004; Jones, Armour & Potrac, 2003; Roth, 1996). According to Abrahams, Collins, and Martindale (2006), it was ensured that the quality of coaches involved in this study remained high. Therefore, the requirements included that the coaches had been coaching first or second division for at least 5 years and were in possession of the highest national coach certification or an international equivalent. Consequently, we followed the procedure of purposeful sampling (Creswell, 2009, p. 217; Teddlie & Yu, 2007, p. 79f.), trying to ensure maximum variation by having coaches from the most famous team sports (Creswell & Plano Clark, 2007, p. 112).

The interviews were approximately 40–50 min long on average and took place in a time and location convenient to the interviewee. Additionally, each coach



**Fig. 2** ◀ The mixed method study

received a questionnaire containing questions about his personal and professional career to be filled out beforehand. The interviews consisted of questions referring to the attitudes towards compiling a team, structuring a team as to hierarchy and cohesion as well as personal opinions about handling conflicts and integrating players into the management of a team. The interviews were recorded, transcribed, and analysed by means of MAXQDA, a specific QDA software package for analysing and interpreting textual data. The basic procedure of the analysis encompassed three steps, namely defining categories, finding anchor examples to explain the single categories, and shaping coding rules to enable obvious assignments (cf. Mayring, 2000, 2002).

Intra-coder-reliability was achieved by exact documentation of analysis, argumentative covering of interpretation, rule-governed proceeding and communicative validation (Mayring, 2002, p. 144–146); additionally, a second and subsequent coding supported the first analysis to a considerable extent. Inter-coder-reliability was accomplished by means of a second and independent analysis of the material; following Krippendorff (2004, p. 241 f.) the value of  $\alpha=0.873$  can be interpreted as high coincidence. ◼ **Tab. 2** illustrates one example taken from the guideline for coding providing proof for the trustworthiness of the results.

Theoretical saturation was achieved when a further differentiation of a given

category (cf. ◼ **Tab. 2**) was no longer possible. At this point repeated evidence has been provided for a single conceptual category. Additionally, the idea of theoretical saturation is associated with the procedure of theoretical sampling that is, a selection of cases that are most likely to produce the most relevant data; insofar a confirmation of the sample size was brought forth afterwards, although the inductive method of theoretical development suggests that each new case has the potential to offer a slightly alternative insight (Bloor & Wood, 2006).

(2) Study I showed that expert coaches have clear insight into what teams need, how teams can be built up to achieve the greatest success, and how they have to be managed; thus the coaching schematic mentioned earlier (cf. ◼ **Fig. 1**) can be particularised with specific concepts. ◼ **Fig. 3** gives an overview of the analysed categories and subcategories.

In detail, the following strategies for leading a team emerged and are discussed alongside ◼ **Fig. 3**:

— *Voice opportunity of the team*: Eight of ten experts claimed that the aims of a season are to be laid on the table and arranged with the team although a rough frame is usually predetermined by the management. In this context it is very important for coaches to find out which players are willing to become involved in these aims: “I have discussed my aims with the team, before we started preparing. They could

contribute their ideas via their representatives” (Team handball coach, 2nd division). To realise the idea of integrating players into the process of planning, coaches use specific methods, e.g. workshops, letters to the coach, or one-to-one-conversations.

— *Team compilation*: All high performance coaches show clear strategies as to compiling their teams: they relate to qualitative aspects which comprise individual game ability, interpersonal skills (“For me it is important how the new arrivals fit into the team”—Handball coach, 2nd division) and tactical matching with the team’s concept (“... and because of that we have specialists for tactical tasks, ...”—Basketball coach, 1st division), as well as character traits of the players, which are shown in statements like “...it is very important that everybody is very ambitious” (Volleyball coach, 1st division). These strategies are endorsed by quantitative aspects which relate to the number of players for each position (“It is an ideal situation if I have filled each position twice”—Volleyball coach, 1st division) and the size of the team in general.

— *Team structure*: Basically, nine of ten interviewees try to establish cohesion and hierarchy in their team with the belief that both elements lead to increased efficiency, an assumption that is explained by statements like “...the importance of cohesion is very high for a team” (Team Handball coach, 1st division) or “... if this [hierarchy] does not work, it is always decreasing team performance” (Volleyball coach, 1st division). These subjective notions are implemented into everyday praxis by using specific methods to foster cohesion and hierarchy. Whereas team cohesion is developed by a variety of methods reaching from traditional to innovative measures (e.g. common leisure activities, workshops, special training camps, integration of professional support), hierarchy is explicitly influenced by measures connected with game governance, e.g. the initial line-up, the extent of playing periods, the centering of tactical measures on individual players (“It must be visible

**Table 2** Excerpt from the analysis of qualitative data

Item-no	Manifestation	Definition	Example	Coding
20	Hierarchy	A strict distribution of roles and “pecking order” in the team	“I think that a clear pecking order is of decisive importance for a team”	Depends on refusing or accepting team hierarchy or on the position of situational dependence
	Depending on the situation	Depending on the team and the situation the team is in	“If it is a team being used to that, then it is very difficult to dissolve it. If it is a team, in which hierarchy does not play such an important role, it is difficult to introduce one”	
	No hierarchy	All players obtain the same status	No example found	

for every player that there are players who are closer to the coach than others”—Handball coach, 2nd division), and the selection of the team captain and the team council (“The captain and players’ council are appointed by myself”—Football coach, 1st division).

- **Risk planning:** Anticipating possible risks encompasses three different aspects in the strategic planning, namely injuries, conflicts, and a series of failures. Whereas the first problem is approached by an adequate qualitative and quantitative team compilation as well as cooperation with the reserve team (“... to calculate every risk of injuries, each position should be cast at least twice”—Basketball coach, 1st division), problems 2 and 3 are only outguessed by few coaches. Nevertheless, these aspects should be kept in mind, because they represent regular disturbances. Therefore, experts are used to discuss failures and disturbances with the team as a whole as well as with single players trying to enhance the players’ identification with the team. This strategy highly corresponds with the idea of hierarchy because such discussions are primarily led by players in the upper positions of team hierarchy.

In conclusion, it can be said that (1) high performance coaches have subjective theories and declarative of team leading, that (2) these theories could have been analysed and cumulated on the basis of a qualitative approach using content analysis (Mayring, 2000), and that (3) this procedure has led to a specific theoretical frame-

work for group-related leadership behaviours. Following the basic principles and procedures of mixed methods designs, the categories and subcategories displayed in **Fig. 3** have to be closely linked for confirmation with the next thread.

## Study II

(1) As the results and hypotheses of study I are explorative and inductive (Creswell, 2009, p. 195), a second and quantitative study was conducted on the basis of two questionnaires aiming at coaches’ and players’ attitudes. This can be justified with reference to both Chelladurai’s multidimensional model of coaching performance (1980) and Jowett and Cockerill’s (2002) approach towards the incompatibilities in the coach—athlete relationship as well as with leadership behaviours from general leadership theories (Burke et al., 2006, p. 303 f.). They explain unanimously that team members’ contentedness is increased when their favoured leading behaviours comply with the actual behaviours of the coach. Consequently, a better understanding of the categories and subcategories from study I was to be accomplished from both perspectives, thus allowing to detect differences or similarities on a sound statistical basis. To guarantee a close interlinking of the two strands the questionnaires were constructed on the basis of the categories and subcategories developed in study I (cf. **Fig. 3**). As a consequence, all the items detected in study I were transformed into statements such as, “how far do you agree with the statement that ...,” and had to be rated on a scale from 1 to 4, with 1 meaning full agreement. The idea was to

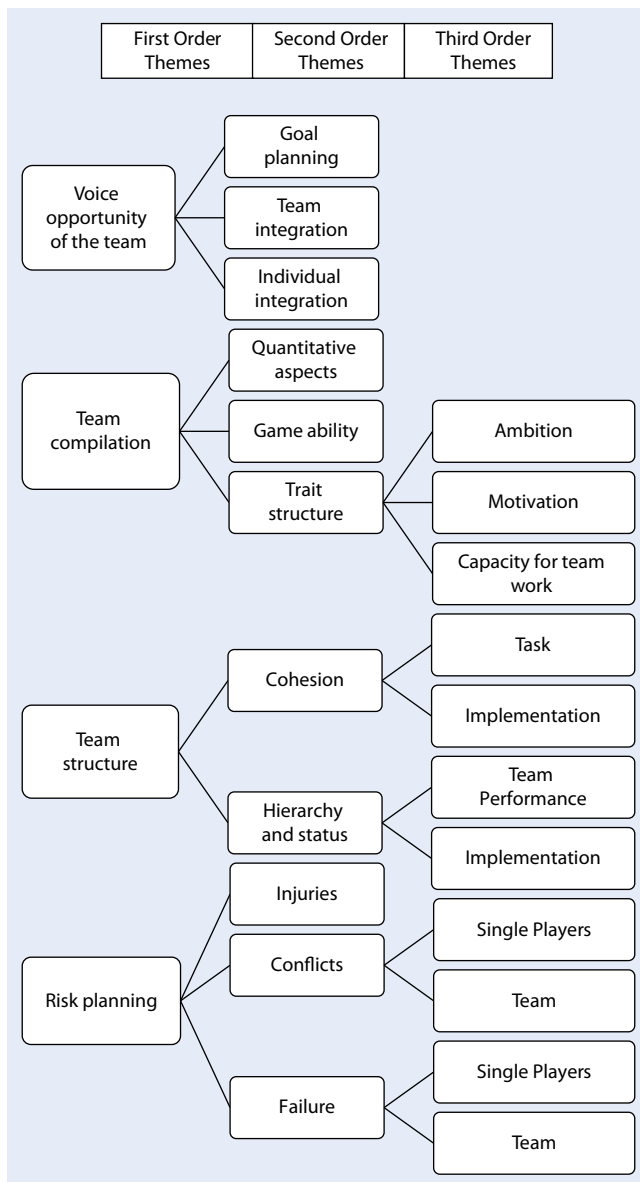
find out the factors of compliance or refusal regarding averages up to 2.0 as approval and those being 3.0 and higher as disapproval. Values between 2.1 and 2.9 were considered as neutral; additionally, only one decimal place was considered.

This instrument was developed both for coaches and players to analyse particular perspectives; nevertheless, the two tools for data collection were not identical. This was accounted for the fact that deeper insight was expected by adding specific questions for the particular groups. All in all, the questionnaires consisted of questions aiming at the person itself (age, gender, education, sport, occupational biography) and of 18 identical items which had to be scored. The inquiry was conducted with  $n=97$  coaches during several courses of coach education and  $n=102$  players before or after practice sessions. It was ensured that coaches and players could be labelled as experts due to the fact that everybody coached or played in the 1st or 2nd league for 5 or more years. Furthermore, coaches had to be in possession of the highest national coach certification or were in the training for it. We followed the sampling procedures for mixed methods designs which recommend that the individuals of the first stage are not the same as those in the second, and that the quantitative data collection were from a much larger sample (Creswell & Plano Clark, 2007, p. 123). This again corresponds with the idea of purposive sampling, because specific cases were selected for a specific purpose (Tashakkori & Teddlie, 2003, p. 713).

**Fig. 4** displays a few examples which show the transformation of one category and its subcategories, i.e. hierarchy, from study I to statements of study II.

(2) Analysis of data was accomplished using SPSS 21. Consequently, ANOVA for single factors with posthoc-tests and generalised linear models were used for inferential inferences. Due to regulations in the social sciences alpha-level was set on 0.05, thus determining the confidence interval with 95%. Cumulation of alpha-error was not regarded because of the relative autonomy of the tests.

Descriptive and inferential data analyses have led to the following results (cf. **Tab. 3**):



**Fig. 3** ◀ Results of qualitative analysis of interviews ( $n=10$ ) displaying hierarchical themes developed through categories

Analysing and comparing coaches' and players' measures of approval, the following results could be revealed:

- In general, the majority of the categories could be confirmed. This means that coaches and players share comparable ideas of planning a season, team compilation and structuring, as well as communication. This could be proven in the planning of season aims with the team (Item 14), the selection of players (Items 1–4), the relevance of cohesion (Items 5, 6), and communication processes (Items 15–18).
- Secondly and despite confirmation, **Tab. 3** also shows differing attitudes

towards some items making a more detailed analysis indispensable:

- *Voice opportunity of the team*: While there is a high coincidence as to a common planning of the season, players do not accept an exclusive determination of season goals between the coach and the management (Item 13;  $F(1, 199) = 23,306, p = 0,000^*$ ). Players want to take part in these considerations, at least by their representatives (captain, council). Specific results from the players' questionnaire show that players want a guarantee that every team member is informed about the goals for the season ( $\text{Mean}_{\text{item}_{17\text{Sp}}} = 1,3$ )

and that everyone should understand, accept, and back them ( $\text{Mean}_{\text{item}_{18\text{Sp}}} = 1,3$ ).

- *Team compilation*: Although there is a significant difference ( $F(1, 195) = 10,231, p = 0,002^*$ ) between coaches and players as to item 1 (“Every position should be filled twice”), it must be emphasised that both values show approval. A comparable situation was found for the intentional integration of mavericks (item 5), players who “are different in certain domains” (football coach, 1st division). Although the results are inconclusive, coaches tend to want them more than players, an idea that can only be understood when we realise the fact that coaches sometimes tend to disturb harmony on a team, a process that shall upset players and provoke higher performance.

- Thirdly, there are differing views as described in the following, initially taking descriptive data into account, a result that needs further analysis:

- *Cohesion in a team*: Although both coaches and players believe in cohesion as a positive and performance-enhancing factor, there is a significant difference as to responsibility for it; whereas coaches believe that cohesion should be developed by coaches ( $\text{Mean}_{\text{item}_{8}} = 1,4$ ), it is the contrary with players ( $\text{Mean}_{\text{item}_{9}} = 1,1$ ). Additionally, every partner denies the other party the responsibility for cohesion (cf. **Tab. 3**, item 8 and 9;  $F_8(1, 199) = 627,200, p = 0,000^*, \eta^2 = 0,761$ ;  $F_9(1, 199) = 627,200, p = 0,000^*, \eta^2 = 0,774$ ); rather high effect sizes support the significance of this incompatibility (cf. Cohen, 1988).
- *Hierarchy* in a team seems to be the most critical issue. Regarding this construct, players are undecided towards an efficiency-enhancing effect of hierarchy ( $\text{Mean}_{\text{item}_{10}} = 2,4$ ), whereas coaches barely believe in this ( $\text{Mean}_{\text{item}_{10}} = 2,0$ ); the difference is statistically significant, but only shows a small effect

**Table 3** Approval of coaches (in bold) and players to leading strategies (1 = complete approval, 4 = complete disapproval)

No	Item "In how far do you agree with the statement that ..."	N	Mean	Std	Std. error	ANOVA		
						F	p	$\eta^2$
1	Every position should be filled twice	<b>93</b>	<b>1,78</b>	<b>0,819</b>	<b>0,085</b>	10,231	0,002*	0,050
		102	1,43	0,72	0,072			
2	Players should be signed according to their ambition	<b>96</b>	<b>1,92</b>	<b>0,697</b>	<b>0,071</b>	0,771	0,381	0,004
		102	1,81	0,780	0,077			
3	Players should be signed according to their motivation	<b>96</b>	<b>1,60</b>	<b>0,718</b>	<b>0,073</b>	0,057	0,812	0,000
		102	1,63	0,659	0,065			
4	Players should be signed according to their ability to work in a team	<b>95</b>	<b>1,65</b>	<b>0,815</b>	<b>0,084</b>	0,075	0,784	0,000
		102	1,62	0,704	0,077			
5	A team should also include mavericks	<b>96</b>	<b>2,18</b>	<b>0,754</b>	<b>0,077</b>	3,972	0,048*	0,020
		98	2,44	1,016	0,103			
6	Cohesion leads to a higher performance	<b>97</b>	<b>1,29</b>	<b>0,706</b>	<b>0,072</b>	2,495	0,116	0,013
		102	1,15	0,552	0,055			
7	Cohesion depends on the attractiveness of the aims	<b>96</b>	<b>1,88</b>	<b>0,861</b>	<b>0,088</b>	0,631	0,428	0,003
		98	1,97	0,792	0,080			
8	Cohesion should be developed by the coach	<b>97</b>	<b>1,46</b>	<b>0,778</b>	<b>0,079</b>	627,20	0,000*	0,761
		102	3,82	0,534	0,053			
9	Cohesion should be developed by the players	<b>97</b>	<b>3,54</b>	<b>0,778</b>	<b>0,079</b>	627,20	0,000*	0,774
		102	1,18	0,534	0,053			
10	Hierarchy leads to a higher performance	<b>97</b>	<b>2,08</b>	<b>0,821</b>	<b>0,083</b>	10,929	0,001*	0,055
		94	2,49	0,901	0,093			
11	Hierarchy should be developed by the coach	<b>97</b>	<b>1,93</b>	<b>0,877</b>	<b>0,089</b>	27,178	0,000*	0,123
		99	2,62	0,955	0,096			
12	Hierarchy should be developed by the players	<b>97</b>	<b>3,06</b>	<b>0,888</b>	<b>0,090</b>	135,42	0,000*	0,410
		100	1,68	0,777	0,078			
13	Coaches should determine the aims for a season with the management	<b>97</b>	<b>2,06</b>	<b>1,008</b>	<b>0,102</b>	23,306	0,000*	0,106
		102	2,77	1,071	0,106			
14	Coaches should discuss the aims for a season with the team	<b>97</b>	<b>1,42</b>	<b>0,693</b>	<b>0,070</b>	1,572	0,211	0,008
		101	1,55	0,781	0,078			
15	Coaches should discuss problems first with the leaders of team	<b>97</b>	<b>2,08</b>	<b>1,007</b>	<b>0,102</b>	0,140	0,708	0,001
		101	2,03	0,974	0,097			
16	Coaches should discuss failures with the team	<b>97</b>	<b>1,43</b>	<b>0,706</b>	<b>0,072</b>	1,602	0,207	0,008
		101	1,32	0,582	0,058			
17	Coaches should discuss problems between the team and him	<b>97</b>	<b>1,46</b>	<b>0,662</b>	<b>0,067</b>	1,840	0,177	0,009
		102	1,33	0,694	0,069			
18	Coaches should discuss problems between individual players and himself with these players	<b>97</b>	<b>1,28</b>	<b>0,641</b>	<b>0,065</b>	1,043	0,308	0,005
		102	1,38	0,784	0,078			

\* = significant difference ( $\alpha = .05$ )

( $F(1, 191) = 10,929$ ,  $p = 0,001^*$ ,  $\eta^2 = 0,055$ ). Secondly, coaches believe that they are responsible for developing hierarchy (Mean<sub>item\_11</sub> = 1,9;  $F(1, 196) = 27,178$ ,  $p = 0,000$ ,  $\eta^2 = 0,123$ ) and attempt this by using specific methods (cf. study 1). Players, however, believe that they should develop hierarchy themselves and therefore doubt coaches' positions (Mean<sub>item\_12</sub> = 1,68;  $F(1, 197) = 135,42$ ,  $p = 0,000^*$ ,

$\eta^2 = 0,410$ ). Consequently, the results must be regarded contradictory, thus demanding further analyses, not least because there are middle effect sizes.

■ Going one step further, no differences could be figured out in the different team sports or different age groups, neither for coaches nor players. Unfortunately, there are no results for sex, because very few female coaches

took part in the study ( $n = 3$ ); this may not be interpreted as a weakness of the study, but as a reflection of gender distribution among high performance coaches. In consequence, our results show transferability across different contexts and situations (cf. Abrahams, Collins & Martindale, 2006), an assumption having already been proven in the science of team leadership using a team leadership cycle (Day, Gronn & Salas, 2004, p. 862).



• Statement 10: Hierarchy in a team leads to a higher performance	O - O - O - O 1            4
• Statement 11: Hierarchy should be developed by the coach	O - O - O - O 1            4
• Statement 12: Hierarchy in a team should be developed by the players	O - O - O - O 1            4

**Fig. 4** ▲ Extract from players' questionnaire

Finally, it can be summarised at the end of study II that a greater part of the exploratory strategies of team leading could be confirmed by means of a quantitative study integrating coaches and players. Since a few surprising contradictions came to the surface, further analysis of these inconsistencies was regarded as necessary (Creswell, 2009; Morse, 1991) to find out if they depend on the different positions within a team or if they can be dissolved.

### Study III

(1) Contradictions between coach and player validation required a third study, in which further expert coaches ( $n=4$ ) and players ( $n=4$ ) were confronted with these peculiarities and asked to comment on them. Mixing coaches and players in an additional study can be justified with the idea of interlinking both perspectives and creating a mutual understanding. Consequently, the aim of this study was to find out, if these contradictions are in the nature of team leading or a consequence of the specific research design. Expert status was again ensured by division membership (1st or 2nd division) and coaching certificate. Sampling was again realised by a purposive procedure (Creswell & Plano Clark, 2007, p. 112; Teddlie & Tashakkori, 2009, p. 174). To implement the study, we once more drew on guideline-based interviews which focussed on unsolved and contradictory issues. Data collection and analysis were executed exactly as in study I; additionally, conversion procedures (Teddlie & Tashakkori, 2009, p. 146f.) were used when possible. A content analysis showed the following results:

■ As to *voice opportunity of the team*, the results of study III show a clear

tendency (7 of 8) towards integrating players into the planning processes of a season. This includes the idea of conveying to every player his role and function in these preparations ("I think it is very important that every player knows her position in the team"—handball player, 1st division). Thus, the integration of the players into planning a season seems to be an instrument of leadership ("Common aims are more valuable than aims being imposed by anybody else"—football player, 1st division) and may be interpreted as support of the idea that "just the task specific attractiveness of the team is responsible for performance" (Wilhelm, 2001).

■ As to *cohesion* results were again inconsistent with regard to the persons responsible. Quantitising the qualitative results (Teddlie & Tashakkori, 2009, p. 146) the following figures were brought to light: four experts expected all team members to be responsible for the development of cohesion, two aimed at the leaders, and two at the coach. Thus, the conclusion can be drawn that it is on the team's hands to care for a good social cohesion, because its influence on the team's performance was again supported. Possible procedures for developing cohesion are "common activities, common rules, and common aims" (handball player, 1st division).

■ As far as *hierarchy* is concerned, seven of eight interviewees regarded the existence of hierarchy in a team as very important and explained that hierarchy is usually headed by players who are highly efficient, experienced, motivated, and take over responsibility. Additionally, they believe that hierarchy develops from players' per-

formance, and coaches can only influence this process to a small extent: "I can influence hierarchy, but I cannot establish it, because hierarchies depend on the players' performance" (football coach, 1st division). As a result, the initial idea of hierarchy being developed by coaches has to be confined to a certain extent ("Hierarchy is important, if it has developed on its own"—football player, 2nd division), although coaches may have the power to support the status of single players ("I have made my leaders strong"—football coach, 1st division).

■ Finally, the idea of *compiling a team* with at least two players for every position is once more confirmed by different arguments, whereby possible injuries ("It is inevitable in our league that each position is staffed with two players at least, because of reasons of injuries"—handball player, 1st division) and the creation of competition are the most powerful ("I think this leads to a competition among the players"—volleyball player, 2nd division).

Summarising study III with reference to the open and partially inconsistent situation, it can be said that nearly all domains of team leading could have been completed; we could show that some contradictions, e.g. cohesion, are in the nature of team leading and therefore, need a discussion in the light of other studies. Thus, the conclusion can be drawn that a deeper understanding needs the integration of the perspectives of coaches and players, which leads to a further confirmation of previously discussed questions.

### Discussion and final interpretation

Referring to the rules of integration in mixed method studies (Creswell & Plano Clark, 2007, p. 142ff.; Erzberger & Kelle, 2003, p. 469ff.) it is indicated that on the inferential stage qualitative and quantitative results may converge, they may be complementary, or they may be contradictory; each of these possibilities requires a specific method of triangulation (Creswell & Plano Clark, 2007, p. 62f.; Erzberger & Kelle, 2003, p. 466; Teddlie & Tashakkori, 2009, p. 145). In this paper tri-

angulation was supported and realised by means of a third study aiming at the contradictory results of thread one and two.

Integrating and triangulating the results on the basis of these strands, the following general strategies of leading high performance teams can be regarded as confirmed and validated on the basis of a mixed methods study:

- Players should be integrated into the process of planning a season, although everyday experience shows that a frame targeted by the management is obligatory, especially in teams with maximum success orientation. Such integration stands for identification, higher motivation, and the knowledge of the individual's specific role. This can be substantiated by former analyses on coaching behaviour in general (Chelladurai, 1980; Feltz et al., 1999) as well as by Jowett and Cockerill's (2002) constructs mirroring the coach-athlete relationship.
- Compiling a team should be based on players' specific game abilities and tactical matching as well as their specific character traits; before this background it became explicit that personal competences and social skills are regarded as important elements for a team; this idea could be carried forward considering these traits as a means to avoid or eliminate incompatibility in the coach-athlete relationship (Jowett & Cockerill, 2002, p. 25 ff.). Additionally, pure quantitative aspects are also important to reduce the risk of being weakened by injuries and creating competition among players aiming at an increase of their performance.
- The structure of a team should be characterised by both cohesion and hierarchy, because both structures are regarded as factors increasing efficiency and performance. But it has to be emphasised that the structure of a team cannot be established technocratically as coaches predominantly tend to believe. It is inevitable to integrate the players, their engagement, and their performance, too (cf. Jowett & Cockerill, 2002); nevertheless cohesion also depends on leadership factors (Carroll & Hausenblas, 1998, p. 244). And

it is also indispensable to do this on the basis of a differentiation between task and social cohesion (Wilhelm, 2001). Nevertheless, it is necessary for coaches to have a set of methods to influence cohesion and hierarchy.

Connecting the textual and the methodological level of the paper finally, the application of a mixed methods study has been rather gainful, because it offered the possibility of integrating individual experts' knowledge in the form of qualitative data with broadly gathered quantitative data to confirm the exploratory strand of the study. Additionally, the second qualitative strand helped clarify contradictions of the quantitative data of coaches and players respectively, thus helping to interpret and deepen quantitative data.

Interlinking the empirical results of the study with the initially conducted theoretical framing of coaching performance, we are now in the know of unique strategies referring to the specific subdomains of task related behavioural process factors which can be summarised under the idea of team leadership (MacLean & Chelladurai, 1995, p. 195). Taking the complete model into consideration the results of the study contribute to improving task related coaching performance in the domain of behavioural process factors (MacLean & Chelladurai, 1995, p. 198); on the contrary they must not be interpreted as a contribution to the most popular approach towards evaluation of coach performance which is on a team's win/loss record (product factors); although being popular this approach has to be regarded as critical due to the non-linearity of a team's game performance (Lames, 1998).

A final evaluation of mixed methods designs for team sports research and sports science in general provides the following ideas: initial attempts of implementing mixed method designs in several sub-disciplines of the social-scientific domain of sport science have taken place, showing that the integration of qualitative and quantitative data may help to avoid the above mentioned problems. Additionally and with a focus on evaluation research (Patton, 2012), the applica-

tion of mixed methods designs supports integrating different perspectives, an idea which has been successfully implemented in game instruction (Memmert & König, 2007) and teacher professionalisation (König, 2004; Miethling, 2007). Further progress, however, needs systematic teaching (Cresswell et al., 2003) and experience by practice.

## Conclusions

**This article aimed at the issue of analysing coaching performance in team sports; therefore, it indicates conclusions on a textual level. With a view to our results and the education of coaches in team sports the following didactical conclusions can be drawn: besides the teaching of professional competence, i.e. knowledge of conditional, technical, and tactical or strategic factors in a specific game, it is indicated that the instruction of leadership skills is becoming more and more important (cf. Abrahams, Collins & Martindale, 2006, p. 555). Thus, issues like team shaping, the handling of conflicts or communication are to be integrated in the education of coaches. This simultaneously boils down to a partial departure from traditional structures of coach education; the instruction of social skills requires different and progressive teaching methods (role plays, communication training, exercises for conflict resolution, etc.). However, this is under the responsibility of the respective associations.**

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