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Perceived Leadership Behavior and Motivational Climate as Antecedents of Adolescent Athletes' Skill Development

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ABSTRACT

In two studies, the relationship between adolescent athletes' skill development and perceived coach behavior as well as motivation climate was investigated. In Study 1, 119 (61 male, 58 female) competitive swimmers from various clubs with a mean age of 12.5 years responded twice with a one year interval to the Leadership Scale for Sports and the Perceived Motivational Climate in Sport Questionnaire. Skill level was estimated from performance criteria like level of competition, and years of practice. In Study 2, 212 junior athletes (136 male, 76 female) of individual and team sports with a mean age of 15 years completed the same questionnaires twice within 4 months. Skill level was estimated by the coaches on several rating scales. Contrary to expectations and research, coach behavior in Study 1 was perceived similarly across varying skill levels. Longitudinal data showed a positive relationship between perceived coach behavior (instruction and positive feedback) and swimmers' skill development. In Study 2, opposite patterns of relationships for individual and team sports were found. Skill development of team sport athletes was predicted by higher perceived social support and less instruction, whereby individual sport athletes' skill development was predicted by less perceived social support, more

instruction, and higher mastery climate. Both studies point to the importance of coach behavior for skill development of athletes, but the type of sport may modify the relationship.

Introduction

Numerous youngsters are enrolled in recreational or competitive sport programs under the supervision of a coach. Though coaches may vary in qualification, personality, and leadership behavior there is no doubt that coaches have an enormous impact on athletes' physical and psychological welfare (Chelladurai, 1990; Reinboth, Duda, & Ntoumanis; Serpa, 1999; Smith & Smoll, 1996), and their motivation (Mageau & Vallerand, 2003). Coaches have been shown to influence young people's sport involvement, enjoyment and withdrawal (Barnett, Smoll, & Smith, 1992; Liukkonen, 1999), athletes' perceived competence and skills (Balaguer, Duda, Atienza, & Mayo, 2002; Black & Weiss, 1992; Horn, 1985; Sarrazin, Guillet, & Cury, 2001), motivation (Amorose & Horn, 2000; 2001; Hollebeak & Amorose, 2005; Mageau & Vallerand, 2003) and self-esteem (Smith & Smoll, 1990; Smoll, Smith, Barnett, & Everett, 1993). Interviews with elite level athletes, such as female gymnasts and figure skaters (Donnelly, 1993), or Olympic medallists (Jowett & Cockerill, 2003) reveal the tremendously positive, but sometimes even destructive influence coaches may have on the athletes' sport career and their physical and psychological welfare.

The last two decades, two theoretical models of coach effectiveness have received the most attention. One is the behaviorally-oriented approach of Frank Smoll and Ronald Smith (Smoll & Smith, 1984, 1989), developed in youth sport. The other is the multidimensional model of leadership of Chelladurai (1990).

Using behavior observation, Smith, Smoll, and Hunt (1977) identified 12 behavioral categories with the Coaching Behavior Assessment System (CBAS). In a number of field studies, Smith and Smoll (1996) tested the relationship between coaches' behaviors and athletes' reactions; additionally the CBAS has been utilized to evaluate their Coach Effectiveness Training (CET) program which provided evidence for a causal relationship between coach behaviors and athlete development. In a comprehensive program of research and intervention the authors found that coaches with the most positive impact on athletes' development typically follow four behavioral guidelines providing a high degree of positive reinforcement, mistake-contingent encouragement, corrective instruction, and technical instruction (Smith & Smoll, 1996).

According to Chelladurai's Multidimensional Model of Leadership (1990, 1993), leadership effectiveness is a function of three interacting aspects of leader behavior: actual, preferred, and required behavior. When these aspects are congruent, it should result in desirable performance outcomes and athletes' satisfaction. Empirical studies were primarily concerned with the relationship of leadership behavior and athletes' satisfaction. Athletes seem to be satisfied when coaches emphasize training and instruction as well as positive feedback (Chelladurai, 1993).

In order to measure the coaches' leadership behavior, the Leadership Scale for Sports (LSS) was developed by Chelladurai and Saleh (1980). The instrument consists of five subscales measuring the coach's decision making style (Democratic and Autocratic Style), the coach's motivational tendencies (Social Support and Positive Feedback), and the coach's instructional

behavior (Training and Instruction). Recently, a thorough investigation of the scales with intercollegiate athletes and coaches indicated that the autocratic style dimension lacks reliability and should be omitted (Salminen & Liukkonen, 1996; Sullivan & Kent, 2003; Zhang, Jensen, & Mann, 1997). Chelladurai and Riemer (1998) raised some concerns as well and made suggestions for future instrument revision.

Most research conducted with the LSS has focused on the relationship between *satisfaction* and leadership behavior, and it has provided general support for Chelladurai's model (Chelladurai, 1984; Chelladurai, Imamura, Yamaguchi, Oinuma, & Miyauchi, 1988; Horne & Carron, 1985; Riemer & Chelladurai, 1995; Schliesman, 1987). More particularly, it appears that the leadership behaviors associated with training and instruction, positive feedback, and social support are most highly correlated with athletes' satisfaction (Horn, 2002) and intrinsic motivation (Amorose & Horn, 2000; 2001). Recently, Hollembeak and Amorose (2005) reported a positive indirect effect of democratic behavior on intrinsic motivation in college team and individual athletes.

Compared to satisfaction, there have been considerably less attempts to measure *performance* as a possible outcome of effective leadership behavior, with inconsistent results. Whereas athletes' satisfaction and motivation seem to correlate with perceived leadership, the relationship between coach behavior and athletes' performance has been found to be quite weak or inconsistent (Chelladurai, 1993; Chelladurai & Riemer, 1998). For example, Weiss and Friedrichs (1986) report a negative correlation between the coach's social support and the team record of the basketball team. Serpa, Pataco, and Santos (1991) likewise found a negative correlation in handball teams. Thus, less social support was related to better performance. Other studies report positive correlations between coach behavior and performance. Athletes perceived more competence when the coaches gave positive feedback (Horne & Carron, 1985), and football players' competence status correlated with the coaches' attention and support (Garland & Barry, 1988).

In an extensive research review, Chelladurai and Riemer (1998) criticize the "lack of valid and reliable measures of the outcome variables of performance and satisfaction" in the past (p. 242). Performance typically has been measured through either team win-loss percentages (Weiss & Friedrichs, 1986) or perceived relative performance, which refers to perceptions of performance relative to what was expected (Chelladurai et al., 1988; Horne & Carron, 1985). Both measures, however, are affected by many factors other than the coaches' or the athletes' behaviors (Chelladurai, 1984; Horne & Carron). This lack of construct validity of performance measures may help to explain the nonsignificant relationship between coach behavior and athletes' performance that is reported in the literature to date.

In addition, Chelladurai and Riemer (1998) emphasize the impact of moderator variables, such as athletes' skill level, coaches' personality, or situational characteristics like group size or the task, that may influence the coach-athlete relationship. In their mediational model of leadership behavior in sport, Smoll and Smith (1984) suggest that the behavior of the coach is mainly influenced by three sets of variables. These are, first, the coach's individual difference variables, such as gender, goals and education; second, the athletes' individual difference variables such as skill level; and third, situational factors, such as level of competition, type of

sport (e.g. individual or team sports) and group size. In a similar vein, Mageau and Vallerand (2003) emphasize the coaches' personal orientation, his/her impression of the athlete and the coaching context as determinants of the coach's behavior.

Little is known about the relationship between perceived leadership behavior and skill level of the athletes. Previous research examining the relationship between perceived coach behavior, measured by the LSS, and skill level, has suggested that athletes' perceptions of leadership behavior differ by ability level, but the results lack consistency (Garland & Barry, 1988; Liukkonen & Salminen, 1990; Robinson & Carron, 1982). According to Salmela (1994), the coach-athlete relationship should change over time. With increasing performance level, coaches become the most important mentors, emphasize mainly performance enhancement, but are also regarded as socialization agents who are caring and who give social support.

The two leadership approaches presented have dominated the field of coach-athlete research to date. A more recent approach is directed toward the motivational impact of a coach and was derived from goal perspective theory (Duda & Hall, 2001). Achievement goal theory hypothesizes that in achievement settings different goal orientations can be fostered by different motivational contexts. Stated by Ames (1992) „the structure and demands of a learning environment can evoke different goal orientations, and as a result, different motivational patterns” (p. 163). This learning environment is referred to in the sport research literature as the motivational climate. Considering the fact that – unlike school or work place – sport is a voluntary activity, and participants in organized sports can choose to drop out at any time, the motivational climate is of central importance.

Studies have shown that those children who tend to stay in sport and enjoy sport are predominantly task- and less ego-oriented (Duda & Whitehead, 1998). When task-involved, a person is trying to master the task, show high effort and thus show ability through learning and effort. When ego-involved, a person is less intrinsically motivated but is more interested in the task in order to demonstrate his or her superiority. An overemphasis on ego goals (also referred to as performance goals, Dweck, 1999, p. 15) makes children vulnerable to fear of failure and quitting the task (Duda & Hall, 2001). In a recent review of research, Biddle, Wang, Kavussanu, and Spray (2003) summarize the existent literature showing that task orientation in physical activity is associated with motives of skill development, perceptions of competence, and positive affect, whereby ego orientation correlates with motives of competition, unsportsmanlike attitudes, and the display of aggressive behaviors in sport..

The motivational climate in a learning group can consist of a mastery or performance-oriented climate, or a combination of the two. A mastery climate in sport specific settings is characterized by athletes' perceptions that great effort will be rewarded and that all athletes are treated in the same way by their coach, which corresponds to a learning environment that emphasizes individual progress and skill development. In contrast, a performance climate is characterized by perceptions among athletes that teammates try to outperform one another, that they are punished for their mistakes, and that individual recognition is limited to only a few stars (Seifriz, Duda, & Chi, 1992). It has been shown that a mastery climate is more efficient in encouraging learners to develop a task orientation and intrinsic motivation, to invest effort and time into sport activity and skill development than a performance climate (Ames, 1992).

Additionally, Theeboom, de Knop, and Weiss (1995) indicated that a mastery climate contributes to faster learning progress and more enjoyment among youngsters. Conversely, a learning environment that emphasizes competition and social comparison between the group members facilitates the development of ego orientation and can have detrimental effects on the enjoyment and performance of certain groups of learners, like students with low ability self-concept (Liukkonen, 1999), and students who suffer from fear of failure (Dweck, 1999). Recent work in the sport domain has supported the assumptions of goal perspective theory and the consequences of the motivational climate on motivation, enjoyment, and satisfaction of athletes (Balaguer et al., 2002; Duda & Hall, 2001; Sarrazin et al., 2001; Weigand & Burton, 2002).

Seifriz, Duda and Chi (1992) developed an instrument to measure the type of climate coaches create during practice and games. The Perceived Motivational Climate in Sport Questionnaire (PMCSQ) taps the two motivational climates, with two scales assessing separately a mastery climate and a performance climate. Studies using the PMCSQ have typically examined the relationship between athletes' perceptions of the motivational climate and measures of the athletes' self-perceptions, attitudes, beliefs, values, and behaviors (e.g. Balaguer et al., 2002; Boyd, Yin, Ellis, & French, 1995; Ebbeck & Becker, 1994; Ommundsen, Roberts, & Kavussanu, 1998). These studies consistently found that a mastery climate is significantly and positively related to athletes' level of enjoyment, satisfaction, interest in sport, intrinsic motivation and a task goal orientation. In contrast, a performance climate appears to be positively related to perceptions of tension, pressure, and performance anxiety.

A correlation between motivational climate and skill level of the group can also be assumed. More specifically, at lower skill levels the emphasis is presumably on fun and skill improvement, whereas at higher levels the focus should be more and more on performance outcome. Studies that examined this relationship, however, did not demonstrate consistent results. Chaumeton and Duda (1988) found in a study with 124 young male basketball players that athletes at higher skill levels (high school level) perceived the climate to be more performance-oriented than athletes competing at lower skill levels (elementary, and junior high school level). But in a recent study by Halliburton and Weiss (2002), no significant differences emerged in perceptions of the motivational climate among gymnasts competing at various skill levels. In addition to the perceived motivational climate measured by the PMCSQ, Pensgaard and Roberts (2002) conducted in-depth interviews with seven Norwegian elite athletes (international and world class level) in order to obtain a deeper understanding of the role of the coach, and the motivational climate. Results of this study reveal, that even top-level athletes place greater emphasis on a mastery, rather than a performance climate.

In the two studies to be presented here, we combined Chelladurai's approach with goal perspective theory and looked for the impact of both groups of variables, coaches' leadership behavior and the motivational climate, on athletes' skill development. As Chelladurai and Riemer (1998) stated, little is known so far about the relationship between coach behavior and performance. Likewise, research on motivational climate has focused more on the relationship of motivation and satisfaction than of performance. The main aim of our studies was therefore to look for the impact of coach behavior and motivational climate on skill development of the athletes. In Study 1, leadership behavior and the motivational climate were rated twice with a one year-interval by adolescent swimmers who were in different phases of their sport career. The

aims of the study were (a) to look for the relationship between coaches' leadership behavior and motivational climate in youth sport, (b) to test, in a cross-sectional design, the assumption of Salmela (1994) that coaches show increasing involvement the higher the athletes' skill level, and (c) to investigate the impact of coaches' behavior on skill development of their athletes in a longitudinal design. Hence, based on the assumptions of Salmela (1994), it was hypothesized that athletes with an increase in skill level perceive their coaches as providing more training and instruction, more positive feedback and social support, and emphasizing a mastery climate more than coaches of athletes with no increase in skill level.

In Study 2, this approach was extended from individual to team sports. Adolescent athletes who were in a similar phase of their career but participated in either individual or team sports rated their coaches' leadership behavior and the motivational climate twice within a four month interval. The aims of that study were (a) to look for possible differences between team and individual sports, and (b) to estimate the impact of coach behavior and motivational climate on skill development, similar to the first study.

Study 1

Method

Design. Data were collected twice with one year apart. Data was examined via a cross-sectional, test-retest with a one-year time lapse.

Participants. Participants at Time 1 were 119 (58 female, 61 male) young swimmers aged 10 to 18 years ($M = 12.52$ yrs, $SD = 2.28$). The volunteer participants were members of sport clubs and of varying degree of competence and experience in competitions. Depending on their skill level, athletes were classified into one of three career phases. These phases were derived from Salmela (1994) who suggested that "there were three distinct career phases for the initiation, development and mastery of the talent of all performers" (p. 15). In the early years (initiation phase), children are becoming involved in sport. They are allowed to play, have fun and develop proficiency in a task-oriented climate. The developmental phase is characterized by more serious training on an intermediate skill level. Athletes are "detected as a potential highly successful candidate" (p. 18), do rigorous training, and take part in state level competitions. When the athlete moves to the mastery phase (final phase), he or she has reached a high skill level, and takes part in national or/and international competitions. Performers in the mastery phase devote most of their time and effort to the refinement of their skills.

In correspondence with the typical characteristics of a swimmers' career phase, a system was developed that allowed athletes to be categorized into the appropriate career phase (Table 1). Skill level and age should not be confounded when examining the relationship between perceived leadership behavior and skill level. To address this issue, competition level and experience, years of practice as well as age and gender were integrated in this system. In our sample, 45 athletes were in the initiation phase, 54 in the developmental phase, and 20 in the mastery phase.

Table 1. System to Classify Swimmers Into the Appropriate Career Phase

Criteria	Career Phases		
	Initiation	Development	Mastery
Age and Gender	F: ≤10 yrs	F: 11-15 yrs	F: ≥16 yrs
	M: ≤11 yrs	M: 12-16 yrs	M: ≥17 yrs
Years of practice	<3 yrs	3-10 yrs	>10 yrs
Competition level	Local Level (e.g. county)	State Level	National and International Level
Competition participation	Rarely	Sometimes	Regularly

Athletes were trained by seven coaches (5 women, 2 men) aged 24 to 38 years ($M = 30.0$, $SD = 5.48$) who all had earned a university master degree in physical education and additional coaching licenses in swimming which are offered by the German Swimming Federation. Their experience in coaching ranged from 5 to 20 years ($M = 11.86$, $SD = 4.98$).

About one year later, the clubs and the training groups were contacted again. Due to attrition of whole groups or of individual athletes, the athletes' sample size at Time 2 was reduced to 76 athletes (32 females, 44 males). Of these, 32 athletes had moved from a lower to a higher career phase (cf. Table 1) due to an increase in skill level during the one year period (i.e. taking part in higher level competitions), while 44 athletes had remained in the same phase. According to Salmela (1994), the former were categorized as a "transition" group, the latter as a "no transition" group (Table 3).

Materials. The German version of the LSS for children and adolescents (LSS-D) measures four of the five dimensions of the original LSS, the exception being Autocratic Style. This scale was omitted due to its low reliability in previous studies. The German version of the LSS was pretested with a sample of 78 adolescent athletes of both genders and a sample of 154 male and female students of physical education and showed a four-factor structure with satisfactory scale reliabilities (Cronbach alpha coefficients $> .8$). This German version of the LSS was administered to the athletes of the study reported herein. The 21-item questionnaire measures four dimensions of leadership behaviors in sport. The dimensions reflect Explanation and Instruction (Instruction; 7 items), Democratic Style (Democratic; 5 items), Positive Feedback (Feedback; 5 items), and Social Support (Support; 4 items). The items are rated on 5-point, Likert-type scales ranging from never (1) to always (5). All scales are scored as mean scale values ranging from 1 to 5.

The motivational climate was assessed with a German version of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ) by Seifriz et al. (1992). It was preferred to the PMCSQ2 for reasons of comparability with the literature to date. As with the LSS, this questionnaire was first pretested and then administered to the participants of Study 1. The 15 item version measures two dimensions, Mastery (6 items, $\alpha = .64$) and Performance Climate (9 items, $\alpha = .80$). The items are rated on 4-point, Likert-type scales ranging from *not true* (1) to *true* (4). All scales are scored as mean scale values ranging from 1 to 4.

Procedure. With permission of the coaches, the athletes were contacted in their training groups and were given information about the study. Voluntary participation and confidentiality were assured. Athletes' data were collected with their informed consent and with consent and written permission of their parents. Testing occurred twice at yearly intervals in the period October/November.

Results

The relationship between coaches' leadership behavior and motivational climate. An inspection of the means and standard deviations for the sample reveals that the coaches are rated quite positively. Mean scores on LSS and motivational climate scales suggest that coaches typically are perceived as providing instruction, positive feedback, and social support, emphasizing mastery climate and democratic style, and downplaying performance climate. The lower overall mean scores for performance than for mastery climate corroborate earlier findings (Boyd et al., 1996).

Pearson correlations between the four subscales of the LSS and the two subscales of the PMCSQ were calculated for both points of measurement (Table 2). Correlation coefficients showed that all four leadership scales and the Mastery Climate scale were interrelated. Correlations ranged from .40 to .69 and were similar for both data assessments. Though each of these five scales measures some specific aspect of coach behavior, at the same time they share a common aspect, namely positive and encouraging coach behavior. Only performance climate is seen as completely independent from the other dimensions.

Table 2. Pearson Correlations of the Leadership Scales and the Motivational Climate Scales (Study 1)

	Instruction	Democratic	Feedback	Support	Mastery	Performance
Instruction		.58**	.54**	.60**	.48**	.00
Democratic	.62**		.47**	.71**	.41**	-.18*
Feedback	.67**	.62**		.61**	.44**	.04
Support	.64**	.69**	.58**		.40**	-.13
Mastery	.49**	.62**	.44**	.56**		-.15
Performance	.03	-.04	.06	.08	-.04	

Notes. Correlations above the diagonal correspond to Time 1 ($n = 119$), below the diagonal to Time 2 ($n = 76$). * $p < .05$, ** $p < .01$

Dropout and gender variables at Time 1. Given the number of participants who had dropped considerably between Time 1 and Time 2, we first ran a multivariate analysis of variance with dropout ($n = 40$) vs. non-dropout ($n = 78$) as independent variable and the scores of the four leadership scales and the two motivational climate scales at Time 1 as dependent variables. No significant main effect emerged, $mF(6, 102) = .85, p = .53$. A multivariate analysis of variance with gender as independent variable and the six scales as dependent variables showed no significant gender differences, $mF(6, 112) = 1.17, p = .34$. Hence dropouts and non-dropouts as well as males and females did not perceive coach behavior and motivational climate differently.

Skill level at Time 1. A MANOVA with career phase (3 categories) as independent factor and the six dependent variables reveals a significant main effect of career phase, $mF(12, 224) = 2.16, p < .05, \eta^2 = .10$. Univariate ANOVAs show that this effect is quite small and due to the democratic behavior scale only, $F(2, 117) = 4.40, p < .05, \eta^2 = .07$. Only the means between athletes of the initiation phase ($M = 3.65, SD = 0.79$) and the mastery phase ($M = 3.16, SD = 0.88$) were significantly different from each other. Apart from this small effect for democratic behavior, the results showed that, across the phases, the athletes perceived coach behavior and motivational climate similarly.

The relationship between coaches' behavior and athletes' skill development. In order to test for perceived changes over time, a multivariate 2 (transition) x 2 (time) analysis of variance was conducted, with the LSS scales and the motivational climate scales as dependent variables. The between-subjects factor "transition" (cf. Salmela, 1994) differentiates between athletes who improved in skill level (coded "transition"), or remained stable over the one year period (coded "no transition"), respectively (Table 3). A successful transition was defined by reaching a higher level of competition. The within-subjects factor (time) is represented by the two points of measurement, being one year apart. Based on Salmela's observations (1994), athletes who made a

successful career transition should attribute to their coaches a higher involvement and more support than athletes with no transition. This should result in a significant interaction effect of Time x Transition.

Table 3. Means and Standard Deviations for the Leadership Scale for Sports and the Motivational Climate Scales for a One-Year Interval as a Function of Time and Transition (Study 1)

	Transition (<i>n</i> = 32)				No Transition (<i>n</i> = 44)			
	Time 1		Time 2		Time 1		Time 2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Leadership Scale for Sports								
Instruction	3.91	0.69	4.11	0.54	4.03	0.53	3.91	0.50
Democratic	3.45	0.87	3.43	0.98	3.42	0.78	3.22	0.81
Feedback	3.82	0.72	4.11	0.70	4.02	0.66	3.83	0.78
Social Support	3.55	0.88	3.39	0.89	3.46	0.77	3.24	0.88
Perceived Motivational Climate								
Mastery	3.37	0.44	3.37	0.43	3.34	0.40	3.20	0.49
Performance	2.10	0.55	2.20	0.68	2.00	0.62	2.20	0.69

The main effect of time, $mF(6, 65) = 2.39, p < .05, \eta^2 = .18$, and the interaction effect Time x Transition were significant, $mF(6, 65) = 2.20, p = .05, \eta^2 = .17$. The main effect of transition, $mF(6, 65) = 0.30, p = .93$ failed to reach significance. No significant univariate effects of time occurred for any of the six dependent variables. Univariate analyses of variance revealed two significant interaction effects of Time x Transition, one for Instruction, $F(1, 70) = 5.08, p < .05, \eta^2 = .07$, and the other one for Feedback, $F(1, 70) = 6.97, p = .01, \eta^2 = .09$.

The means shown in Table 3 suggest that athletes who made a successful transition perceive increasing positive feedback and instruction of their coach during the one-year period, whereas

athletes who made no transition perceive decreasing positive feedback and instruction of their coach. This means overall that athletes who stayed in the same career phase during the one-year period perceive decreasing attention of their coach whereas athletes who made a successful transition report increasing coach attention over the one year period.

Discussion

The purposes of this study were threefold and are discussed in the following section. The first purpose was to examine the relationship between two approaches of coach-athlete-interaction, namely the leadership behavior and the motivational climate. The leadership scales scores and the mastery climate scale scores were found to be positively interrelated and seem to reflect behaviors characterized as a 'good' coach. Conversely, performance climate was not seen in opposite, but as an independent dimension.

The second purpose of our study was to examine whether or not the swimmers' perceptions of their coaches' behavior differ across varying skill levels. It was hypothesized that athletes competing at higher skill levels would perceive more coach attention (more positive feedback, more instruction as measured by the LSS). This hypothesis was not supported. Athletes varying in skill level perceive coach behavior and motivational climate similarly. Obviously, athletes feel highly acknowledged by their coach at any phase of their career. One possible explanation is that the perceived coach behavior and motivational climate are influenced by frame of reference effects. In research concerning self-concept, Marsh (1998), for example, emphasized that "...how favorably individuals perceive themselves not only depends on their objective accomplishments, but also on how these accomplishments compare with frames of reference established by the expectations and performances of significant others" (p. 242). It could be argued that the coach behavior and the perceived motivational climate not only depended on the real situation, but also on how athletes compared their perceptions to the specific reference group, namely that if their own skill level. This may have resulted in athletes perceiving a high mastery climate, regardless of their skill level. But if they were instructed to compare the motivational climate in their skill level to that in other skill levels, it could be expected that quite different results would emerge.

The third purpose of this study was to examine the relationship of swimmers' perceptions of the coaches' leadership and motivational behaviors with their skill improvement. It was hypothesized that athletes with an increase in skill level would perceive their coaches as giving more training and instruction, positive feedback, and social support and emphasizing a mastery climate more than coaches of athletes with no increase in proficiency level. The results of this study provided partial support for this hypothesis. Whereas motivational climate is unrelated to skill improvement, coaches' leadership behavior does appear to have an effect. Swimmers with performance increments perceived increasing positive feedback and instruction of their coach during the one year period. In contrast, athletes who made no skill improvement, perceived decreasing positive feedback and instruction.

These findings support the view of Chelladurai (1990) that coaches' behavior has an impact on performance. In our study, coaches who provided a positive and encouraging atmosphere were more successful with regard to the athletes' career development (i.e. progressing to a higher proficiency level) than those who did not. Coaches' behavior and athletes' career development

were interdependent. It appeared that the motivational climate, however, did neither change over time nor did it contribute to an increase in skill level. The motivational climate proved to be a stable group environment with a higher emphasis on mastery than on performance climate.

The present study is not without limitations. One limitation results from conducting skill-related research. As Halliburton and Weiss (2002) have noted, with this kind of research there is an inherent confounding effect of age and skill level (see Horn & Harris, 1996). At lower skill levels, athletes tend to be younger than at higher skill levels. In this study, we tried to neutralize this confounding by integrating both age and skill level in the assessment of the career phase. Nevertheless, as with any study that attempts to examine skill-related differences, the study findings may be influenced by a confounding of age and skill level.

A second limitation of our study may be seen in the attrition rate of about 35% which means that more than every third participant did not show after one year. Though this may be nothing unusual in the field of voluntary sport, particularly in youth sport, the attrition rate nevertheless narrows the scope of our study.

The third and probably biggest limitation of the present study is the criterion of skill development. It was derived from information about the athletes' competition level and changes in performance within the one year period of our study and resulted in a categorization of athletes who either moved up from a lower career phase to a higher one or not. Of course it can be argued that athletes who stay in the same phase over a year nevertheless may experience improvements in skill level. And in absolute terms their performance measures may have been even better than those of the successful transition group. The problems with the criterion of skill development results among others from the fact, that our sample was a relatively heterogeneous group in skill level from the start and therefore the categorization of our sample into a transition and no transition group was intended to make participants comparable with regard to skill development. But this may be regarded as quite a rough categorization.

Due to these limitations of Study 1, especially with regard to the criterion of skill development, we conducted a second study with a more specific and differentiated measure of skill level and development.

Study 2

In this study, skill level was assessed individually on a multi-item scale. This enabled us to use a quantitative, interval scale measure of skill development which could be used as criterion variable in regression analyses. In addition, we shortened the time period of the follow up measurement, and we expanded the external validity of the study by including individual and team sports. The skill level of the athletes was held similar (developmental phase).

Method

Design. Data were collected twice with four months apart. This interval was shorter than in Study 1 and was primarily chosen because we expected a lower attrition rate. At both points of measurement, the leadership and the motivational climate scales were administered to the

athletes. In addition, both times the coaches were asked to rate their athletes' skills on several scales individually. This procedure allowed to measure performance development over the four month period.

Participants. Participants at Time 1 were 212 junior athletes (76 females, 136 males) with a mean age of 15.01 years ($SD = 2.5$). The athletes belonged to one of 19 training groups from different sports clubs. The sample consisted of individual sports (diving, swimming, judo, $n = 106$) and team sports (hockey, volleyball, water polo, handball, $n = 106$). The 18 coaches (5 women, 13 men) had a mean age of 37.8 years ($SD = 9.51$, range 25 – 56) and a mean coaching experience of 15.3 years ($SD = 9.12$, range 2 – 32). All coaches had at least one coaching license in their respective field, eight coaches had a university master degree in physical education.

At the second data assessment, the sample size had decreased to 115 (48 females, 67 males) with a mean age of 14.5 years ($SD = 2.13$). The attrition rate of 46% was due to attrition of athletes or/and coaches. Fifty-one athletes belonged to team sports, and 64 to individual sports.

Materials. As in Study 1, the athletes completed the LSS-D and the PMCSQ. All items were rated on 5-point, Likert-type scales ranging from *never* (1) to *always* (5). All scales were scored as mean scale values ranging from 1 to 5.

In addition, the coaches rated each athlete's skill level on 10 to 13 rating scales with each scale ranging from *very low* (1) to *very high* (5). The difference between the coach's ratings at Time 1 and Time 2 revealed the skill development of the athletes which could vary from minus-scores (decrease) to scores about zero (stable) to plus-scores (increase). In effect, only one athlete was rated as decreasing in performance. Therefore his data was omitted from further analysis.

Procedure. With permission of the coaches, the athletes were contacted in their training groups and were given information about the study. Voluntary participation and confidentiality were assured. Athletes' data were collected with their informed consent and – in case of underage participants – with consent and written permission of their parents. Testing occurred twice at a four month interval.

Results

Controlling for dropout and gender at Time 1. Two separate multivariate analyses with the scores of the six subscales at Time 1 as dependent variables and dropout/non-dropout as well as gender as independent variables revealed significant effects of dropout and gender respectively; $mF(6, 205) = 3.05, p < .01, \eta^2 = .08$ for dropout; $mF(6, 205) = 3.76, p = .001, \eta^2 = .10$ for gender. Univariate analyses of variance showed significant differences for dropouts on five of the six scales (with the exception of feedback), but with very small effect sizes, ranging from $\eta^2 = .02$ to $.04$. Gender differences were found for instruction and for democratic style, but also with very small effect sizes ($\eta^2 = .04$ and $.02$ respectively). Thus, though gender and dropout contributed to differences in perceived coach behavior these differences were very small (Table 4) and therefore were not considered in further analyses.

Table 4. Means and Standard Deviations for the Leadership Scale for Sports and the Motivational Climate Scales at Time 1 as a Function of Gender and Dropout (Study 2)

	Gender				Dropout							
	Females (n = 76)		Males (n = 136)		Main Effect Gender		Non-Dropout (n = 115)		Dropout (n = 97)		Main Effect Dropout	
	M	SD	M	SD	F (1, 210)	η^2	M	SD	M	SD	F(1, 210)	η^2
Leadership Behavior												
Instruction	3.90	0.64	4.14	0.49	8.44**	.04	4.13	0.59	3.96	0.52	4.42*	.02
Democratic	3.09	0.85	3.32	0.77	4.30*	.02	3.34	0.82	3.12	0.77	3.99*	.02
Feedback	3.87	0.71	3.86	0.62	.03	.00	3.93	0.62	3.80	0.68	2.02	.01
Social Support	3.43	0.94	3.44	0.86	.00	.00	3.57	0.90	3.27	0.84	6.01*	.03
Perceived Motivational Climate												
Mastery	3.95	0.63	3.98	0.58	.09	.00	4.05	0.61	3.87	0.57	4.98*	.02
Performance	2.74	0.71	2.69	0.74	.21	.00	2.83	0.68	2.55	0.76	8.10**	.04

Notes. * $p < .05$, ** $p < .01$

The relationship between coaches' behavior and athletes' skill development. With skill development as a continuous variable, it was possible to use regression analyses with perceived leadership behavior and motivational climate at Time 1 as predictors and skill development as criterion. Stepwise regression analyses were run separately for individual and for team sports. The results showed opposite patterns of relationships. Whereas skill development of team sport athletes was predicted by higher perceived social support and less instruction ($R^2 = .20$, Table 5), individual sport athletes' skill development was predicted by less perceived social support and more instruction. In addition, mastery climate contributed to increments in skill level of individual sport athletes ($R^2 = .55$, Table 6). Thus, compared to team sport athletes, skill development in individual sports could be much better predicted by perceived coach behavior and the motivational climate.

Table 5. Summary of Stepwise Regression Analysis for Variables Predicting Performance Development in Team Sports ($n = 43$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Instruction	-.28	.11	-.37**
Step 2			
Instruction	-.39	.11	-.53***
Social Support	.17	.07	.36**

Note. $R^2 = .14$ for Step 1; $\Delta R^2 = .06$ for Step 2; ** $p < .01$, *** $p < .001$.

Table 6. Summary of Stepwise Regression Analysis for Variables Predicting Performance Development in Individual Sports ($n = 49$)

Variable	<i>B</i>	<i>SE B</i>	β
Step 1			
Social Support	.06	.06	-.40**
Step 2			
Social Support	-.48	.07	-1.16***
Instruction	.64	.11	.96***
Step 3			
Social Support	-.49	.07	-1.20***
Instruction	.49	.13	.74***
Mastery Climate	.10	.10	.32*

Note. $R^2 = .16$ for Step 1; $\Delta R^2 = .35$ for Step 2; $\Delta R^2 = .04$ for Step 3; * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

Similar to Study 1, coach behavior is related to athletes' skill development, but differences emerged between individual and team sport athletes. This corroborates the assumptions of social psychological models, like Chelladurai and Riemer (1998), Smoll and Smith (1989), Horn (2002), or Mageau and Vallerand (2003), that contextual variables would moderate coach behavior and coach effectiveness. And the type of sport clearly is one example of such a contextual variable. Differences in coach effectiveness between individual and team sports may be explained by differences in the social structure of both types of sport. Team sports require group-oriented behavior of the coach, individual sports require coach behaviors that focus on the individual athlete. For example, in team sports, coaches' instructions may be more directed toward the whole team or the group and less so to the individual, whereas in individual sports coaches may direct their comments and instructions more to the individual athlete and less so to the group. Therefore a greater amount of instructions may help to improve athletes' skills in individual sports, as was shown in this study. In contrast, in team sports social psychological variables may be more important than individual instruction. Coaches who give social support, are interested in the personal welfare of their athletes, and show an interest in their life outside of sport may contribute to skill development of team sport athletes but less in the case of individual athletes. In essence, our results show that coaches who emphasize individual skill development, either by instruction or by mastery climate, are better suited for individual sports. On the other hand, coaches in team sports should lay special emphasis on social support and personal development of their athletes.

Clearly, our results show that situational variables like the structure of the task/sport may contribute to differences in the relationship between coach behavior and skill development. But it should be kept in mind that we did not assess actual coach behavior, but how it was *perceived* by the athletes. Actual coach behavior and athletes' perceptions may deviate from each other. So what we found are differences in the relationship between perceived, not actual, coach behavior and skill development of individual and team sport athletes. More studies are needed to give further insight into this relationship.

General Discussion

Both studies followed a longitudinal design which proved to be not without limitation. The main limitation of the design of our studies lies in the loss of subjects during the data collections period. This is quite common in youth sport where children, and even more so adolescents, may start and stop their commitment to sport just as they like. A statistical dropout analysis showed no differences between dropouts and non-dropouts at Time 1 in Study 1 and only minor differences in Study 2. Nevertheless, the attrition rate limits the conclusions to those who did not drop out but continued in sport. Although it is doubtful if any longitudinal study could avoid a high attrition rate among voluntary sport club participants, in order to leave more subjects in the longitudinal data analysis further research, therefore, should try to collect data from a much larger sample of athletes from the start. This strategy may ensure that the longitudinal data of more subjects can be analyzed over time.

Both studies presented herein did show a relationship between coach behavior and athlete

skill development in youth sport, but differently for team and individual sports. Both studies show that individual sport athletes who improve over time perceived more coach instruction. Study 1 in particular, indicated that positive feedback contributed to skill development in individual sports. Both dimensions, instruction and feedback, are regarded as important coach behaviors which positively impact athletes and their preferences. With this regard, our findings corroborate the assumptions of Chelladurai and Riemer (1998) as well as those of Smith and Smoll (1996).

Results from Study 2 indicated that mastery climate played an additional positive role for athletes' skill development in individual sports. Whereas in former studies these variables were shown to be related to satisfaction (Chelladurai & Riemer, 1998; Horn, 2002) or motivation (Amorose & Horn, 2000; 2001; Duda & Hall, 2001; Mageau & Vallerand, 2003; Sarrazin et al. 2001), we can find in our studies that they are related to skill development as well – at least in individual sports. Beauchamp, Halliwell, Fournier, & Koestner (1996) found better performance of golfers after a skill training that emphasized individual skill comparisons rather than social comparisons, or in terms of motivational climate mastery instead of performance climate. Other authors report increases in perceived performance and competence of team athletes as well. Balaguer et al. (2002) could attribute an increase in self-perceived performance of Spanish elite female handball players to perceived mastery climate. Likewise, Sarrazin et al. (2001) found a positive relationship of mastery climate and perceived competence in French adolescent female handball players.

In Study 2 reported herein, the pattern of results is different for team and individual sports. Though this context variable was only utilized in Study 2, it is important to note that it obviously contributed to significant differences in the relationship of coach behavior and athletes' skill development. It could be shown that coaches' high social support in conjunction with low instruction correlated with team athletes' skill development.

Why did we find a different pattern of results for individual and team sports? One reason might be due to the fact that the number of athletes practicing in the same team is smaller in individual sports than in team sports. Thus, coaches can spend more time in instructing and teaching each athlete individually, and they can give detailed feedback on each individual athlete's performance (e.g. swimming techniques). Consequently, athletes benefit from the intensive support of their coaches, particularly, when coaches provide a motivational climate that emphasizes individual progress. In line with the literature, it can thus be concluded that in individual sports good coaches should give instructions, positive feedback and emphasize a mastery climate.

Compared to individual sports, coaches in team sports may have to deal with a great many athletes during training sessions. In addition, instructions of the coach may be rather directed to the whole team than to the individual athlete. If the LSS scores reflect the individual athlete's perceived coach behavior this may result in less perceived instruction and feedback in the case of team athletes.

The conclusions from Study 1 and 2 highlight the differences in social climate and group dynamics between individual and team sports. Specifically, not only the individual goal

orientation or perceived motivational climate might play a crucial role in skill development, but also the team climate or team cohesion of a team. A great body of empirical studies reveals that within team sports task and social cohesion contributes to better performance (Carron, Colman, Wheeler, & Stevens, 2002) and vice versa. In a recent study, Chul and Howe (2001) found significant correlations between leadership behavior of coaches and team cohesion among field hockey and rugby players. Athletes who were classified as highly cohesive perceived their coach to display more instruction, more democratic behavior, more social support, and less autocratic behavior than athletes with low cohesion scores. Furthermore, Pensgaard and Roberts (2002, p. 58) clearly point out that even within individual sports “it is reasonable to assume that there will be competition among the participants who are part of the same team... The role of the team mates may play a more influential role than we have so far assumed”. Hence, future research should focus more systematically on this context variable that may modify the coach-athlete relationship and its influence on skill level.

The results of our studies point to important implications for coach education. First and foremost it should be emphasized that the relationship between perceived coach behavior and skill development showed a clearer picture in individual than in team sports. In consequence, recommendations have to consider this social context variable. In individual sports, athletes with higher skill level and a positive skill development perceive more instruction, feedback and mastery climate than athletes with lower skill level. This means that coaches in individual sports should be trained to give instructions, positive feedback, and emphasize individual progress in order to improve athletes’ skills. In line with other research reported above, these coach behaviors are likewise essential to foster satisfaction, intrinsic motivation and autonomy.

The pattern of results is less clear cut for team sports and thus makes it more difficult to give unequivocal recommendations. Though contextual and situational constraints, like the team in this study, or a stress inducing environment in the review of Mageau and Vallerand (2003), are likely to influence coach behavior and coach effectiveness, evidence-based conclusions for coach education lack consistency. For example, whereas Balaguer et al. (2002) and Sarrazin et al. (2001) both point to the positive impact of a mastery climate in handball teams on perceived performance improvement and competence respectively, our study unfortunately failed to find such a relationship. Instead, social support could be identified as a source of skill improvement. The LSS subscale of social support includes a coach’s concern for a positive group atmosphere and warm interpersonal relations with team members. As cooperation and cohesion are essential ingredients of team sports it is not surprising that social support proved to be of significant influence on skill development in team sports. Coach education in team sports thus should lay special emphasis on social skills, namely providing social support to the athletes and fostering social (and task) cohesion in the team.

References

- Ames, C. (1992). Achievement goals, motivational climate, and motivational processes. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 161-176). Champaign, IL: Human Kinetics.
- Amorose, A. J., & Horn, T. S. (2000). Intrinsic motivation: Relationships with collegiate athletes gender, scholarship status and perceptions of their coaches' behavior. *Journal of Sport & Exercise Psychology, 22*, 63-84.
- Amorose, A. J., & Horn, T. S. (2001). Pre- to post-season changes in the intrinsic motivation of first-year college athletes: Relationships with coaching behavior and scholarship status. *Journal of Applied Sport Psychology, 13*, 355-373.
- Balaguer, I., Duda, J. L., Atienza, F. L., & Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise, 3*, 293-308.
- Barnett, N. P., Smoll, F. L., & Smith, R. E. (1992). Effects of enhancing coach-athlete relationships on youth sport attrition. *The Sport Psychologist, 6*, 111-127.
- Beauchamp, P. H., Halliwell, W. R., Fournier, J. F., & Koestner, R. (1996). Effects of cognitive-behavioral psychological skills training on the motivation, preparation, and putting performance of novice golfers. *The Sport Psychologist, 10*, 157-170.
- Black, S. J., & Weiss, M. R. (1992). The relationship among perceived coaching behaviors, perceptions of ability, and motivation in competitive age-group swimmers. *Journal of Sport & Exercise Psychology, 14*, 309-325.
- Boyd, M. P., Yin, Z., Ellis, D., & French, K. (1996). *Motivational team climate and corresponding socialization influences among young athletes*. Unpublished manuscript. University of Texas at San Antonio, San Antonio, TX, USA.
- Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3* (5), 1-20. Retrieved March 2, 2004, from <http://www.humankinetics.com/ejss>
- Carron, A. V., Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta analysis. *Journal of Sport and Exercise Psychology, 24*, 168-188.
- Chaumeton, N., & Duda, J. (1988). Is it how you play the game or whether you win or lose? The effect of competitive level and situation on coaching behaviors. *Journal of Sport Behavior, 11*, 157-174.

Chelladurai, P. (1984). Discrepancy between preferences and perceptions of leadership behavior and satisfaction of athletes in varying sports. *Journal of Sport Psychology*, 6, 27-41.

Chelladurai, P. (1990). Leadership in sports: A review. *International Journal of Sport Psychology*, 21, 328-354.

Chelladurai, P. (1993). Leadership. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 647-671). New York: Macmillan.

Chelladurai, P., Imamura, H., Yamaguchi, Y., Oinuma, Y., & Miyauchi, T. (1988). Sport leadership in a cross-national setting: The case of Japanese and Canadian university athletes. *Journal of Sport & Exercise Psychology*, 10, 374-389.

Chelladurai, P., & Riemer, H. A. (1998). Measurement of leadership in sport. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 227-253). Morgantown, WV: Fitness Information Technology.

Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behavior in sports: Development of a leadership scale. *Journal of Sport Psychology*, 2, 34-54.

Chul, M., & Howe, B. (2001). Leadership and cohesion in varsity sport teams. In S. L. Gibbons & W. W. Liedtke (Eds.), *Connections 2001* [On-line]. Retrieved March 10, 2005, from http://www.educ.uvic.ca/connections/Conn01/Chu_and_Howe.html

Donnelly, P. (1993). Problems associated with youth involvement in high-performance sport. In B. R. Cahill & A. J. Pearl (Eds.), *Intensive participation in children's sports* (pp. 95-126). Champaign, IL: Human Kinetics.

Duda, J. L., & Hall, H. (2001). Achievement goal theory in sport: Recent extensions and future directions. In R. N. Singer, H. A. Hausenblas & C. M. Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 417-443). New York: Wiley.

Duda, J. L., & Whitehead, J. (1998). Measurement of goal perspectives in the physical domain. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 21-48). Morgantown, WV: Fitness Information Technology.

Dweck, C. S. (1999). *Self-theories. Their role in motivation, personality and development*. Philadelphia, PA: Psychology Press.

Ebbeck, V., & Becker, S. L. (1994). Psychological predictors of goal orientations in youth soccer. *Research Quarterly for Exercise and Sport*, 65, 355-362.

Garland, D., & Barry, J. (1988). The effects of personality and perceived leadership behaviors on performance in collegiate football. *Psychological Record, 38*, 237-247.

Halliburton, A. L., & Weiss, M. R. (2002). Sources of competence information and perceived motivational climate among adolescent female gymnasts varying in skill level. *Journal of Sport and Exercise Psychology, 24*, 396-419.

Hollebeak, J., & Amorose, A. J. (2005). Perceived coaching behaviors and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology, 17*, 20-36.

Horn, T. S. (1985). Coaches' feedback and changes in children's perceptions of their physical competence. *Journal of Educational Psychology, 77*, 174-186

Horn, T. S. (2002). Coaching effectiveness in the sport domain. In T. S. Horn (Ed.), *Advances in Sport Psychology* (2nd ed.) (pp. 309-354). Champaign, IL: Human Kinetics.

Horn, T. S., & Harris, A. (1996). Perceived competence in young athletes: Research findings and recommendations for coaches and parents. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 309-329). Dubuque, IA: Brown & Benchmark.

Horne, T., & Carron, A. V. (1985). Compatibility in coach-athlete relationships. *Journal of Sport Psychology, 7*, 137-149.

Jowett, S., & Cockerill, I. M. (2003). Olympic medallists' perspective of the athlete-coach relationship. *Psychology of Sport and Exercise, 4*, 313-331.

Liukkonen, J. (1999). Coach's influence in young athletes' personality development. *Portuguese Journal of Human Performance Studies, 12*, 35-52.

Liukkonen, J., & Salminen, S. (1990). *The athletes' perception of leader behavior of Finnish coaches*. Paper presented at the World Congress on Sport for All, Tampere, Finland, June 3-7, 1990.

Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Sciences, 21*, 883-904.

Marsh, H. W. (1998). Age and gender effects in physical self-concepts for adolescent elite athletes and nonathletes: A multicohort-multioccasion design. *Journal of Sport and Exercise Psychology, 20*, 237-259.

Ommundsen, Y., Roberts, G. C., & Kavussanu, M. (1998). Perceived motivational climate and cognitive and affective correlates among Norwegian athletes. *Journal of Sports Sciences, 16*, 153-164.

Pensgaard, A. M., & Roberts, G. C. (2002). Elite athletes' experiences of the motivational climate: The coach matters. *Scandinavian Journal of Medicine and Science in Sports*, *12*, 54-59.

Reinboth, M., Duda, J. L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, *28*, 297-313.

Riemer, H. A., & Chelladurai, P. (1995). Leadership and satisfaction in athletes. *Journal of Sport and Exercise Psychology*, *17*, 276-293.

Robinson, T. T., & Carron, A. V. (1982). Personal and situational factors associated with dropping out versus maintaining participation in competitive sport. *Journal of Sport Psychology*, *4*, 364-378.

Salmela, J. H. (1994). Phases and transitions among sport careers. In D. Hackfort (Ed.), *Psycho-social issues and interventions in elite sport* (pp. 11-28). Frankfurt: Lang.

Salminen, S., & Liukkonen, J. (1996). Coach-athlete relationship and coaching behavior in training sessions. *International Journal of Sport Psychology*, *27*, 59-65.

Sarrazin, P., Guillet, E., & Cury, F. (2001). The effect of coach's task- and ego-involving climate on the changes in perceived competence, relatedness, and autonomy among girl handballers. *European Journal of Sport Science*, *1*(4), 1-9. Retrieved March 2, 2004, from <http://www.humankinetics.com/ejss>

Schliesman, E. (1987). Relationship between the congruence of preferred and actual leader behavior and subordinate satisfaction with leadership. *Journal of Sport Behavior*, *10*, 157-166.

Seifriz, J. J., Duda, J. L., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport & Exercise Psychology*, *14*, 375-391.

Serpa, S. (1999). Relationship coach-athlete: Outstanding trends in European Research. *Portuguese Journal of Human Performance Studies*, *12*, 7-19.

Serpa, S., Pataco, V., & Santos, F. (1991). Leadership patterns in handball international competition. *International Journal of Sport Psychology*, *22*, 78-89.

Smith, R. E., & Smoll, F. L. (1990). Self-esteem and children's reactions to youth sport coaching behaviors: A field study of self-enhancement processes. *Developmental Psychology*, *26*, 987-993.

Smith, R. E., & Smoll, F. L. (1996). The coach as a focus of research and intervention in youth sports. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport. A biopsychosocial perspective* (pp. 125-141). Dubuque, IA: Brown & Benchmark.

Smith, R. E., Smoll, F. L., & Hunt, E. (1977). A system for the behavioral assessment of athletic coaches. *Research Quarterly*, *48*, 401-407.

Smoll, F. L., & Smith, R. E. (1984). Leadership research in youth sports. In J. M. Silva III & R. S. Weinberg (Eds.), *Psychological foundations of sport* (pp. 371-386). Champaign, IL: Human Kinetics.

Smoll, F. L., & Smith, R. E. (1989). Leadership behaviors in sport: A theoretical model and research paradigm. *Journal of Applied Social Psychology*, *19*, 1522-1551.

Smoll, F. L., Smith, R. E., Barnett, N. P., & Everett, J. J. (1993). Enhancement of children's self-esteem through social support training for youth sport coaches. *Journal of Applied Psychology*, *78*, 602-610.

Sullivan, P. J., & Kent, A. (2003). Coaching efficacy as a predictor of leadership style in intercollegiate athletics. *Journal of Applied Sport Psychology*, *15*, 1-11.

Theeboom, M., de Knop, P., & Weiss, M. (1995). Motivational climate, psychological responses, and motor skill development in children's sport: A field-based intervention study. *Journal of Sport & Exercise Psychology*, *17*, 294-311.

Weigand, D. A., & Burton, S. (2002). Manipulating achievement motivation in physical education by manipulating the motivational climate. *European Journal of Sport Science*, *2*(1), 1-14. Retrieved March 2, 2004, from <http://www.humankinetics.com/ejss>

Weiss, M. R., & Friedrichs, W. D. (1986). The influence of leader behaviors, coach attributes, and institutional variables on performance and satisfaction of collegiate basketball teams. *Journal of Sport Psychology*, *8*, 332-346.

Zhang, J., Jensen, B., & Mann, B. L. (1997). Modification and revision of the Leadership Scale for Sport. *Journal of Sport Behavior*, *20*, 105-122.