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# Identifying important practice behaviors for the development of high-level youth athletes: Exploring the perspectives of elite coaches

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ABSTRACT

*Objective:* Given a lack of consensus within the literature regarding which specific training behaviors are important for athlete development, and whether these behaviors are relevant across a range of sports, the main purpose of the present study was to explore training behaviors perceived to be important by coaches from team sports.
*Method:* Focus groups were conducted with thirty high-level coaches to determine their perceptions of effective athlete behaviors within the practice (training) environment. Sessions were transcribed verbatim, then analysed using inductive content analysis.
*Results:* 34 first level clusters of raw themes were identified, which were then grouped into eight general dimensions labelled; (a) professionalism, (b) motivation, (c) coping, (d) committed, (e) effort, (f) seeking information to improve, (g) concentration, and (h) negative behaviors.
*Conclusions:* A detailed range of important practice behaviors and attributes emerged, providing a framework for identifying productive versus ineffective approaches to training among athletes. It is suggested that the framework developed could be used to design interventions aimed at enhancing the progression of youth team sport athletes, as well as a way of monitoring the efficacy of interventions targeted at increasing positive training behaviors.



The importance of training is highlighted by evidence showing that at least ten years of preparation, or 10,000 h of training, are required to reach expert performance levels (Ericsson & Charness, 1994), and that for the majority of sports time spent training considerably outweighs time spent competing (e.g., see McCann, 1995). Research examining the quality and quantity of training has indicated that both elements are crucial predictors of attainment (Baker, Horton, Robertson-Wilson, & Wall, 2003). However, given the proportion of time athletes spend training, there is a lack of research studying athletes' behaviors within the non-competitive environment. This lack of research is perhaps due to an applied priority of maximising athletes' performance in competition, rather than in practice. In light of the importance of training for athlete development and performance attainment (Galton, 1979), in the present study we investigated coaches' perceptions of effective athlete behaviors within this context.

Thus far, psychological research examining training of athletes has been relatively restricted in its scope. Contrary to the proposition of Galton (1979), who argued that performance increases monotonically as a function of practice, Ericsson, Krampe, and Tesch-Roemer (1993) suggested that the quality of training is also important, and that elements such as well-defined tasks at an appropriate difficulty level, informative feedback, and opportunities for repetition and error correction all lead to enhanced progression. As such, researchers within the sporting domain have attempted to differentiate between functional and maladaptive training strategies, and to identify training types and structures that maximally enhance skill learning and development (e.g., Holliday et al., 2008). However, it has been noted that the extensive and repetitive deliberate practice required by elite performers is not necessarily inherently motivating, requires high levels of effort and attention, and does not lead to immediate social or monetary reward (Ericsson et al., 1993). Consequently, researchers have identified strategies aimed at enhancing interest and motivation during training. For example, Green-Demers, Pelletier, Stewart, and Gushue (1998) found that creating challenges, adding variety to the task, providing self-relevant rationales for task performance, and exploiting stimulation from sources other than the task itself, were

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associated with enhanced interest during training, and with more adaptive forms of motivation.

It is plausible that within the training environment, athletes may present a variety of behaviors that reflect their differing levels of motivation. For example, they may be enthusiastic, encourage teammates, and consistently try their hardest; conversely, they may be disengaged, fail to fully concentrate on instructions, and put only minimal effort into drills or exercises. In addition, it is possible that changes in both internal (e.g., mood) and external factors (e.g., coach behaviors) may result in intrapersonal variation in practice behaviors from session to session. This latter hypothesis is somewhat aligned with changes in follower engagement, behavior, and performance observed as a result of changes in leader behavior in an organisational setting (e.g., Barling, Webber, & Kelloway, 1996).

Research examining employee engagement suggests that those high in engagement invest large amounts of visible attention and muscular effort (Goffman, 1961). Additional behaviors associated with engagement include organisational citizenship behaviors such as prosocial behaviors, helping others, innovation, and volunteering (Turnipseed & Rassuli, 2005). Drawing from this literature, Lonsdale, Hodge, and Raedeke (2007) interviewed fifteen athletes regarding their perceptions of athlete engagement. Lonsdale et al. concluded that athlete engagement could be defined as a persistent, positive cognitive-affective experience in sport characterised predominantly by confidence, dedication, and vigour. In later measurement development, Lonsdale, Hodge, and Jackson (2007) found that a four-factor model including confidence, dedication, vigour, and enthusiasm was the best fit to their data. In line with the organisational literature, Lonsdale et al.'s conceptualisation focuses on the cognitions and affective elements of athletes' experiences of their sport. It is likely that in sport, as in business, engagement may be a precursor to adaptive behaviors. For example, dedication, defined by Lonsdale et al. as "a *desire* to invest effort and time towards achieving goals one views as important" (p. 472; emphasis added) is likely to precede actual investment of effort in practice. Equally, the presence of vigour, defined as "physical, mental, and emotional energy or liveliness" (p. 472), would seem to be important or even necessary for athletes to train most effectively.

The majority of previous research has tended to conceptualise training behavior in terms of attendance or adherence to sessions or workouts (e.g., Palmer, Burwitz, Smith, & Collins, 1999), as performance on specific skills (e.g., football scrimmaging; Smith & Ward, 2006), or as the volume of work completed (e.g., Tharion, Harman, Kraemer, & Rauch, 1991). Some studies have attempted to differentiate between the types of behaviors exhibited by athletes during practice sessions. For example, Young and Starkes (2006a) presented a series of studies which examined behaviors coaches felt were indicative of swimmers' self-regulation during training. They identified a list of seven non-regulated training habits, and conversely, corresponding but semantically opposite behaviors were identified as representing effective self-regulation (e.g., 'perfect attendance' corresponded with 'does not attend all practices'). In a follow-up study, Young and Starkes (2006b) reported that coaches' ratings of swimmers' behaviors were associated with actual behavior, in that swimmers who were rated low in self-regulation completed less of the prescribed swim volumes.

The checklist developed by Young and Starkes (2006a) could prove useful to swim coaches when seeking to identify swimmers who may be able to train more effectively. However, the behaviors highlighted are specific to swimming. Hence it is unclear whether the types of behaviors identified (e.g., inaccurate recall of pace times) may be applicable to other sports, and critically, whether the behaviors identified are actually perceived as important by the coaches in terms of their athletes' progression. In addition, by focusing specifically on behaviors symptomatic of active or absent self-regulation, other important athlete behaviors evident during training may not have been considered (e.g., athletes' responses to criticism during the session).

Previous research has also examined individual characteristics or traits and environmental influences that are related to the progression of youth athletes. In a qualitative study of academy soccer players, Holt and Dunn (2004) reported that commitment, resilience (confidence and coping), discipline, and social support were perceived by youth players and coaches as important determinants of elite players' development. Holt and Dunn reported some specific behavioral subcategories of the main psychosocial competencies, including obeying orders, and reacting appropriately to mistakes. More recently, Harwood (2008) reported the findings of an intervention study targeting coaches' efficacy for enhancing soccer players' psychological and interpersonal skills in training. The skills targeted were the '5Cs' designated as desirable skills – commitment, communication, concentration, control, and confidence. Harwood highlighted three behaviors associated with each of the five targeted skills, including elevated levels of effort (commitment), asking questions of a coach (communication), listening attentively to instructions (concentration), maintaining positive body language (control), and having a presence during training that exudes confidence (confidence). Harwood suggests that the development of these interpersonal, intrapersonal, self-regulatory and esteem-based competencies is likely to assist player development. However, it is unclear how universally applicable these skills are across youth sports. Clarifying which training behaviors are symptomatic of developed psychosocial competencies, and subsequently also linked to progression, may have important implications for monitoring and targeting interventions with athletes.

Taken together, previous studies suggest that a number of attributes and training behaviors are considered important by coaches, and that in turn these may be linked to important outcomes including performance. However, these findings lack breadth due to the limited number of variables previously examined. In addition, the use of homogenous samples with respect to sport type has precluded the integration and comparison of findings from a wider range of sports. From a theoretical perspective, exploring desirable practice behaviors may identify consequences of athletes' engagement or motivation which have yet to be examined.

Given limited previous study, and a lack of consensus within the literature regarding which specific training behaviors are important for athlete development, the main purpose of the present study was to examine in-depth training behaviors perceived to be important by coaches from team sports. That is, behaviors considered either beneficial or detrimental to athletes' progression, in that their presence or absence will impact upon progression. It is worth noting that the present study focused on the perceptions of individuals sharing a common role or background (i.e., they were all coaches). This approach follows the concept of Foucauldian discourse (Foucault, 1972), in that the conversations held by such groups are likely to not only reflect the ideas of those present, but are in themselves "practices that systematically form the objects [and subjects] of which they speak" (p. 49). From this perspective, the discourse of coaches' may reveal ways in which the training environment, and athletes' subsequent behaviors are actively shaped and influenced.

As the intention of the study was to focus on identifying training behaviors that were perceived as important for athlete development, coaches of youth athletes were sampled. It was felt that athletes at this stage of their career could be classified as still developing (in the sports selected), whereas senior athletes might not be. It was anticipated that clearer differentiation of important training behaviors would enable both researchers and consultants to gain a more refined understanding of effective training behaviors

and, importantly, allow the development and implementation of targeted interventions.

## Method

### *Participants*

Participants in the present investigation were 30 male high-level coaches currently working in the United Kingdom ($M_{age} = 36.55$, $SD = 8.99$). High-level coaches were sampled as it was felt they would possess sufficient knowledge and experience on which to base their perceptions of important behaviors. In order to be classed as high-level, coaches had to be currently coaching at or above the level of a professional club, regional development squad, or for a team currently competing in the highest national relevant age group division for that sport. Participants were currently involved in coaching team sports including rugby union ($n = 6$), soccer ($n = 12$), and rugby league ($n = 12$), for athletes under the age of 18, and were recruited via email and telephone requests. Participants currently worked at professional clubs ($n = 21$), regional ($n = 6$), and international ($n = 3$) levels, and coached predominantly male teams (76.6%), however some coached females (3.3%), mixed teams (10%), or both males and females separately (10%). The coaches sampled had an average of 9.37 years coaching experience ($SD = 5.55$), and had spent on average 35.55 months ($SD = 32.14$) with their current teams.

### *Data collection techniques*

Data were collected through a series of four focus group interviews. It was felt that focus groups rather than one-on-one interviews would provide more in-depth discussion of the topic, and allow participants to debate various personal preferences to produce some form of consensus regarding important or desired behaviors. Each focus group was lead by a moderator and an assistant moderator, who both held recognised coaching qualifications and had experience coaching recreational and lower level club junior teams. This background knowledge may have enhanced their ability to interact with participants, obtaining a deeper level of understanding and more easily facilitating discussion than would have been possible with researchers unfamiliar with the process and demands of training youth athletes. In order to reduce the possibility of these prior experiences biasing the direction and focus of the group interviews, an interview guide was developed prior to conducting the focus groups, with input and feedback from additional researchers. In line with the recommendations of Morgan and Krueger (1998), and in a similar fashion to Bloom, Stevens, and Wickwire (2003), the pre-determined semi-structured interview guide was followed for each focus group. As far as possible the moderators adopted a non-interventionist stance during the sessions, allowing coaches to direct the discussion themselves. Both moderators had previous experience conducting qualitative research in exercise and sport contexts. To augment their qualitative experience, a number of key texts and studies regarding theoretical and methodological approaches were studied prior to designing the present study (e.g., Denzin & Lincoln, 2000) supplemented by discussion with suitably experienced peers. Prior to conducting the main focus groups, a pilot focus group interview was held using five university-level coaches. This was in order to test the efficacy and relevance of the interview guide, to highlight any ambiguous or unclear questions, and to identify any topics or questions that coaches felt were important and might have been missed.

Based on the aims of the study and the pilot interview, a final interview guide was developed which consisted of six sections. The first of these were opening questions, which required participants to introduce themselves, and to talk about their coaching background. The second section included questions in which coaches were asked to briefly describe what a typical training session involved for them. The aim of these questions was to focus coaches' attention on their own training sessions in order to enhance their recall of athlete behaviors in such contexts. Asking questions about the details of situations has been shown to enhance the accuracy of the reporting of behaviors (e.g., Menon, 1997).

Following opening and focusing questions, transition questions were used to clarify coaches' understanding of the terminology used (e.g., when you hear the term 'training behaviors', what comes to mind?), and to lead into the key questions. In the present study, three key questions were asked. The first, 'how do you like your athletes to behave during training?' was designed to elicit both positive and negative behaviors that coaches either desired or did not like during their sessions. The second key question, 'what behaviors and/or attributes do you think are necessary for an athlete to train effectively?' was designed to focus on training behaviors that might be more or less important in terms of athlete development. It was of interest to find out, for example, whether coaches felt that an athlete who frequently lost concentration during a session would be impeded in his/her development. For the final key question, a list of behaviors derived from previous studies (e.g., Harwood, 2008) was handed out to participants. Behaviors generated from the earlier focus groups were added to the list for later groups to enable the development of ideas from session to session, in a similar manner to Hendry, Williams, Markland, Wilkinson, and Maddison (2006). Coaches were told that these were behaviors that other coaches had felt were important, and asked to consider how relevant they felt the behaviors were. Finally, participants were asked to try to form a consensus regarding the top five behaviors they felt were most important. This request was designed to stimulate additional discussion between participants and to clarify the group's position regarding any debatable or controversial behaviors, rather than to allow researchers to derive conclusions regarding the relative importance of different training behaviors.

To bring the session to a conclusion participants were asked whether they felt that the behaviors they mentioned were specific to their own sport or could be generalised more widely (each group was homogenous regarding sport coached). Following discussion of coaches' opinions, the assistant moderator read out a short summary of the focus group, including a list of desired and important behaviors. Coaches were asked whether they felt the summary was an accurate reflection of the discussion, and whether anything had been missed or misinterpreted.

### *Data analysis*

All four focus groups were digitally audio-recorded and transcribed verbatim, resulting in 106 pages of double-spaced text. A hierarchical content analysis was conducted to organise the raw data into interpretable and meaningful themes and categories (see Scanlan, Stein, & Ravizza, 1989, for an example). An inductive approach was used, in which themes and categorisations are developed from the data rather than from pre-determined categories or theoretical constraints (e.g., Côté, Salmela, Baria, & Russell, 1993). This process was conducted in the manner described by Patton (2002), with raw themes clustered by internal homogeneity and external heterogeneity.

To ensure familiarity with the data, audio files were listened to and transcripts read several times prior to analysis by the moderator. Relevant quotes, or text units, were extracted from the transcripts to form meaningful units of analysis, resulting in twenty-nine pages of double-spaced text. Text units were then given a label or coding based on their content. Similar units were then clustered based on internal homogeneity and external heterogeneity to identify raw data

themes. Finally, the raw data themes were clustered into higher-order themes and their internal and external integrity examined. Towards the end of from the analysis of the fourth focus group's data it was felt that theoretical saturation had been reached, as the categorisation of the behaviors and ideas emerging could be fitted into an existing framework developed from previous groups' data (Miles & Hubermann, 1994).

Given previous criticisms of the susceptibility of content analyses to researcher bias (see Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001) a number of steps were taken to minimise such effects. First, the assistant moderator was asked to match the lower-order themes into higher-order categories. The agreement rate was 84.6%, with a Cohen's kappa of 0.82. Cohen's kappa is used to measure classifiers' accuracy, or the likelihood that agreement is due to chance, and ranges from −1 to 1 (Ben-David, 2008). A score of 0.82 represents an excellent agreement beyond chance (Fleiss, 1981). Any divergence was discussed until consensus was reached. This approach was implemented as it allowed a more thoughtful conceptualisation of the resulting clusters than more nomothetic agreement methods (Hill, Thompson, & Williams, 1997). In addition, an independent person (who had not attended any focus groups nor had any prior knowledge of the study) also completed the matching process to assess whether the higher-order classification was logical and transparent. Seventy one per cent of the lower-order themes were correctly matched with their higher-order category. Differences emerged between similar higher-order themes, such as motivation, committed, and professionalism. These conceptual overlaps are considered in discussion of the themes below.

Member checking was also used, first through the oral summaries given during each session, after which group members could respond regarding the accuracy and completeness of the moderator's synopsis. In addition, two coaches from different focus groups in the original sample were given finalised versions of the content analysis, and asked if it fully encapsulated the topics covered in their respective focus groups, and whether anything was irrelevant or had been missed out. The two coaches were selected from those who had expressed an interest in and a willingness to review the completed analysis framework. Coaches from different sports and different focus groups were purposely sampled to reduce the possibility of potential bias towards the content of one focus group session. Both coaches indicated that they were satisfied with the content analysis. However, one of the coaches felt that although representative, as a stand-alone tool some of the category names might need to be expanded, as someone who had not participated in one of the groups may not fully comprehend what was meant by 'respect', for example. An elaboration and discussion of the categories that emerged is presented below. Quotations are presented to illustrate the emergent themes, and to allow readers further insight into the data (Sparkes, 1998).

## Results and discussion

Following the content analysis, 34 first level clusters of raw themes were identified which were then grouped into eight general dimensions labelled; (a) professionalism, (b) motivation, (c) coping, (d) committed, (e) effort, (f) seeking information to improve, (g) concentration, and (h) negative behaviors (refer to Fig. 1 for a summary of the data analysis). It is worth noting at this point that the dimensions identified included both those that appear to encompass or reflect more latent, intrapersonal dispositions or attributes (e.g., drive to succeed), whereas others are more clearly overtly behavioral, referring to explicit, visible actions (e.g., asks questions). During the focus groups moderators used prompts and directive questions to attempt to retain a focus on observable actions, however, coaches frequently mentioned attributes. The transcripts clearly show that these variables were considered to be highly important predictors of progress. Additionally, when asked as to how they could identify athletes with, for example, a drive to succeed, coaches reported that "sometimes you can just tell", or "you can see it in them [the athletes]". It is possible that in some cases, the behaviors reported may be symptomatic of attributes, for example working hard may be a behavioral consequence of motivation or a professional attitude. However, the data available in the present study are insufficient to substantiate such speculation, especially as these causal links were not highlighted by the coaches. Each higher-order category is discussed in turn below.

### *Professionalism*

Coaches discussed six behaviors that were categorised under the dimension of professionalism, defined as an approach to training that demonstrates the behavioral and moral standards expected of high-level athletes. These behaviors were a correct appearance, arriving prepared, being punctual, being honest, and showing respect for both coaches and teammates. Coaches from all focus groups highlighted the necessity of good organisational skills in their players, of arriving at practice "on time, or even early" and being well prepared with "the correct kit for training" and "looking the part". Time-management was perceived as particularly important for youth athletes when combining the demands of their sport and school work, and in some cases balancing the demands of both regional and club training sessions. One coach noted the following:

> "they've got to fit in two or three conditioning sessions during the week and on top of this the best players have to go down to Cardiff once a week to train. At the top it's a huge commitment and it's a very busy time for them as well at an academic level".

In addition, coaches felt that it was important for athletes to behave in both an honest and a respectful manner at training, and to "show a professional attitude and show respect". Although quite abstract constructs, coaches felt that there were a number of ways in which athletes could demonstrate respectfulness or honesty. For example, one coach noted that "it's about respect, I used to get sick of giving letters out to kids, and then they'd be in changing rooms, on the floor, left – and it used to really wind me up". It was stated that respect should be evident towards coaching staff, teammates and club facilities and equipment. Generally, it was felt that athletes who were respectful were more rewarding to coach, and were those who were likely to benefit the most from training sessions. In addition, coaches described how athletes might demonstrate honesty through admitting to errors, with one coach noting that " in the younger age groups they're too quick to say – he missed a tackle", whereas the better players "put [their] hand up and say – it's my fault I messed up here".

Although it appears self-evident why a respectful and honest athlete would be preferable from a coach's perspective, it is worth noting that coaches felt that possessing these qualities actually contributed to players' progression. This was predominantly because they felt that such athletes were more able to develop effective relationships with coaching staff and teammates, and were subsequently more likely to access coaches' support and knowledge. Alternatively, this perception may be a 'coach fulfilling prophecy' (cf. Horn & Lox, 1993). That is, coaches may not be as forthcoming with their expertise for those they perceive to be less likely to succeed, or less deserving of their efforts, and as a result, this impacts detrimentally on progress. The potential associations between behaving in an honest and respectful manner, and career progression in elite sport, as well as the precise mechanism through which this may occur, require further investigation. The emergence of professionalism may be related to the findings of previous

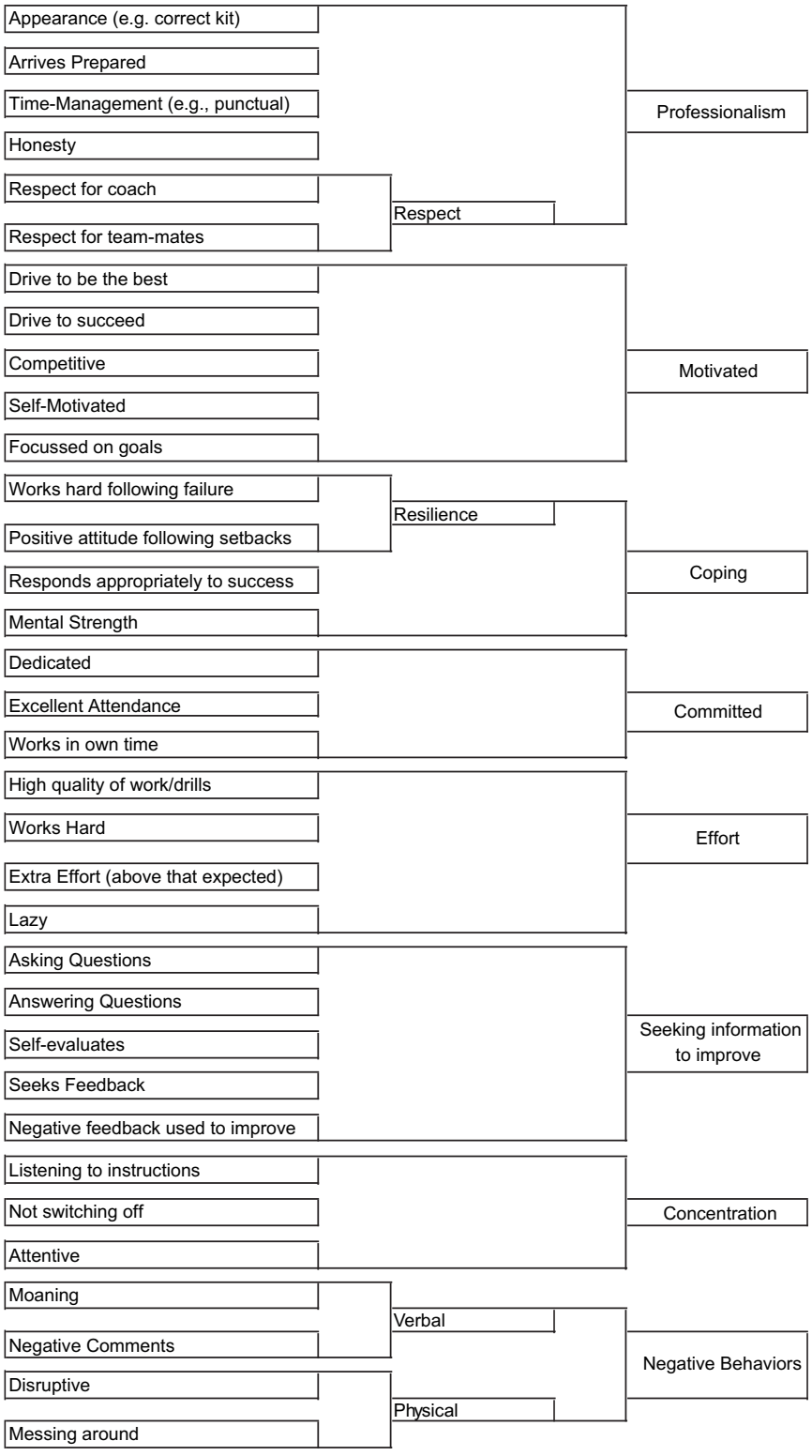


**Fig. 1.** Hierarchical content analysis of important training attributes and behaviors.

studies which report that discipline and dedication are key competencies for young athletes (e.g., Holt & Dunn, 2004). It is possible that behaving in a professional manner is an outcome of being a disciplined and/or dedicated athlete. This is aligned with the earlier proposition that engagement may be a predictor of positive training behaviors.

*Motivation*

The higher-order theme, motivation, consisted of five subcategories including a drive to be the best, a drive to succeed, being competitive, self-motivated, and focussed on one's goals. Training attributes grouped within this category were those which referred to

an athlete's drive towards or pursuit of a goal. Coaches felt that players who were driven to succeed and to be the best were the most likely to succeed, and that this attitude was evident in training sessions. For example, coaches referred to players with "inner drive" or "hunger", with one coach describing how a player had "turned round and said, 'look I know now that I've got to be better than my team-mates and I've got to do whatever I can to make sure I can be'". When categorising the data, a semantic distinction was made between quotes reflecting a desire to succeed in the long-term (i.e., to have a successful career in the sport), as opposed to a current desire to be the best player in the squad, for example. Being competitive in terms of training and progression, as well as during games, was also an important attribute, with one coach reporting that his players "will climb over each other to get them slots [in the team]".

Self-motivation was also highlighted within this dimension as a "vitally important" attribute in elite athletes. Coaches felt that an athlete who was self-motivated would be more likely to progress as they were interested in learning and developing. One coach described their ideal athlete as somebody "who is quite self-motivated and who has got the will to learn". Another stated that "there's got to be an inherent self-motivation, they've got to be able to motivate themselves so the onus isn't on the coach". In addition, the need for players to be "single minded" in terms of their goals and ambition within the sport, and "focussed on where they want to get to eventually" was frequently advocated by coaches.

Motivation has been previously cited as a key requirement for success in sport by international and Olympic level athletes (e.g., Durand-Bush & Salmela, 2002). Research with collegiate coaches has also shown that athletes who made substantial progress whilst under their supervision were perceived as being competitive, motivated and receptive to coaches' instructions (Giacobbi, Roper, Whitney, & Butryn, 2002), qualities which are similar to those highlighted by the present sample. Theory-based research has also identified links between the *quality* of athletes' motivation and their participation in sport. For example, in a longitudinal study, Sarrazin, Vallerand, Guillet, Pelletier, and Cury (2002) reported that athletes with high levels of intrinsic motivation to know, to accomplish and to experience stimulation, were significantly less likely to drop out of than those with low levels of these self-determined motives. In essence, Sarrazin et al. argued that athletes who are engaged in sport for the pleasure inherent in taking part are more likely to continue in their chosen sport. Although not highlighted by coaches in the present study, it would be of interest for future investigations to examine whether those athletes perceived as exhibiting more positive training behaviors were those who possessed more self-determined regulations for their sport.

Coaches repeatedly emphasised the perceived importance of competitiveness and its links with development. It is possible that being competitive during training may be linked with athletes' long-term motivation and persistence, as well as progress. For example, McCarthy, Jones, and Clark-Carter (2008) have shown that competitive excitement is positively related to enjoyment in youth sport, and in turn enjoyment has been shown to predict enhanced persistence and decreased withdrawal (e.g., Ommundsen & Vaglum, 1992).

### *Coping*

Four lower-order categories, relating to the way in which players deal with the demands of their sport, were clustered under the theme coping. These were working hard following failure, and having a positive attitude following setbacks (which were grouped under the broader sub-dimension of resilience), as well as responding appropriately to success, and mental strength. Coaches were explicit that they desired players who would display resilience through both a positive attitude, and behaviorally through working hard following failure or a setback (e.g., not being selected for a squad). Coping was conceived as responding appropriately to a positive or negative experience, rather than just coping with the negative emotions associated with failure. For example, one coach argued that players who are able to "cope with disappointment with losing – I don't think those are the best players, I think the best players are the ones who won't accept it, they absolutely hate it – they will fight to do everything to avoid that situation". The potential impact of resilience on a players' development was highlighted in the following quote in which a soccer coach discussed the many hurdles or barriers a player may face during their career. He argued that players need to consider:

> "how can you cope with hurdles? Can you jump over them or do you stand behind the hurdles? It determines you. If you're able to jump all these hurdles on your way, then you have a chance to become a football player. Otherwise, no way".

Coaches also mentioned the importance of players being able to cope with success, which was perceived as a different skill to being able to cope with setbacks, and focused on a player being able to keep on working hard and not to get distracted by previous achievements. This was summarised as being able to "cope with success and most importantly to remain realistic". The importance of coping with success for continued progression in youth sport has perhaps been somewhat overlooked, with previous research tending to focus on athletes' abilities to cope with negative events such as performance failures, mistakes, setbacks, injuries, and pain (e.g., Buman, Omli, Giacobbi, & Brewer, 2008; Nicholls, Holt, Polman, & James, 2005). For young athletes who experience early success, re-adjusting their goals, maintaining focus and commitment, and potentially dealing with the media and interest from professional clubs may be problematic. Recognition of the potential for success to interfere with development, the provision of relevant support following success, and training athletes in effective coping skills might assist in minimising any negative effects of success.

Finally, as well as being able to cope with certain situations, coaches felt that it was important that players possessed mental toughness or mental strength. When asked to elaborate on what precisely they meant by this quality, coaches described this as a general attribute that enabled players to respond positively in the face of adversity and to deal with the demands of high-level sport. It differed from having a positive attitude after setbacks in that coaches felt players could demonstrate mental strength *during* on-going pressure or demands. For example, one coach discussed how he felt that "the mental side is asking for that bit of allowance for the body and brain to go through the pain barrier". This mental toughness or ability to persist even under difficult conditions is summed up in the following quote:

> "when you get to the elite level there's such a fine line between winning and losing or being the best or just coming second, and I think a big thing is – not getting beat up upstairs… you've got to be really strong upstairs".

The emergence of coping is consistent with previous research highlighting the importance of effective coping strategies for elite athletes (e.g., Nicholls & Polman, 2007), and these findings mirror those of Holt and Dunn (2004), who reported that elite youth soccer players employed coping strategies to respond positively to mistakes or criticism. It is possible that the development or use of effective coping strategies differentiates successful and non-successful athletes, although thus far only limited research has examined such differences. For example, Anshel and Kaissidis (1997) reported that less skilled female athletes used more avoidance coping than elite male or female athletes. In addition, Gould, Dieffenbach, and Moffett

(2002) identified mental toughness, which encompassed being resilient, persevering, and persisting in the face of setbacks, as a psychological characteristic of Olympic champions. In the present sample, coaches advocated a behavioral response to setbacks (e.g., investing greater effort, learning new skills) which is somewhat aligned with coping literature which identifies active or problem-focused coping strategies as most beneficial in terms of adaptation (e.g., Carver, Scheier, & Weintraub, 1989). This might suggest that coaches perceive problem-focused coping to be an effective strategy, providing greater support for its use over emotion-focused coping.

*Committed*

The theme committed was comprised of attributes and behaviors perceived by coaches to indicate a player who was committed to his/her sport. Sport commitment has previously been defined as "a psychological construct representing the desire and resolve to continue sport participation" (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993, p. 7). The raw themes in the present model reflected behaviors that indicated a desire or resolve by an athlete to continue with their sport, therefore were typically expressed over a longer duration (e.g., regular attendance) as compared to shorter duration indicators of effort (e.g., effort invested into a specific training session). The higher-order theme 'committed' was comprised of three sub-dimensions; dedication, excellent attendance, and working in your own time.

In general coaches felt that succeeding in youth sport required "a huge commitment", and one way in which coaches felt that this could be demonstrated was by a consistent attendance at practices. One coach stated that although "at a club level, you just want them to turn up", at an elite level the expectations for players were much higher. For example, coaches felt that it was important for players to be willing to undertake extra training if required, both of a formal nature (e.g., weight-training or scheduled fitness work), or more informal development work (e.g., practising a skill, ball work). Coaches felt that they could recognise players who completed extra work, with one rugby league coach stating that "in terms of their physique – the extra training you can tell, you can tell in training which kids have been doing extra sprinting, you can tell which ones go out and do their own running". In addition, a soccer coach reported that "you can tell sometimes, well a lot of time, those that have gone off and actually focused on doing some one-on-one work with themselves, actually done some ball work, actually practiced an activity themselves". This dedication to their sport and their practice was consistently highlighted as an important attribute for progression.

*Effort*

This dimension contained four subcategories which reflected athletes' physical investment of effort and time into their sport; a high quality of work or drills, working hard, putting effort into training drills over and above that which would be expected, and avoiding laziness. It was noteworthy that coaches recognised the importance of players completing drills to a high standard, with one noting that this "attention to detail and being consistent in practice efforts" was indicative of a 'good' trainer. Working hard was consistently emphasised, and coaches spoke of trying to develop a hardworking ethos among squad members (e.g., "we're all here to work hard so let's be honest about it"). It was felt that demonstrating extra effort, over and above the high levels expected, was illustrated by those athletes who were willing and able to push themselves harder than others, as "you know you are asking huge demands out of your body at that time, and the ones who are prepared to put their bodies through that will progress further and quicker than the ones who give in".

Finally, laziness emerged as an undesirable behavior. Coaches described having athletes who were "always trying to take the easy option with it", and who "made errors in the game because of [their] laid back lazy attitude". Coaches felt that laziness inevitably "reduces the amount that you are getting out of each session", and so would be likely to impede progress. The focus on effort-based behaviors as representative of productive training is similar to previous findings (e.g., Morgan, 2004), and can be assimilated with proposals that investing effort and going the extra mile may be a consequence of engagement and commitment to an activity (e.g., Lonsdale et al., 2007).

*Seeking information to improve*

Seeking information to improve consisted of five sub-dimensions: asking questions, answering questions, self-evaluating, seeking feedback, and using negative feedback to improve. These behaviors were perceived to possess common characteristics in that they all involved the attainment or use of information to allow athletes to improve performance. It was universally agreed that asking questions was a positive behavior, with one coach explaining that "the main reason I want to be asked questions or have questions in the session is that I know then – I have a better idea then whether they've taken on board what I've put across". As well as providing coaches with feedback regarding the understanding of information given, it was frequently stated that asking and answering questions was important for the athletes' own development. For example, it was stated that asking and responding to questions "increases the knowledge base of the team, stimulates self learning, and shows they [the athletes] are actively engaged in the session". Coaches indicated that they would ask questions at strategic points, (e.g., the end of a drill), to check players' understanding, and that the key learning points had been conveyed. Players who responded to these questions were perceived as more engaged, and more likely to retain the information.

Another key sub-dimension of this category was self-evaluation, with one coach noting that "assessing good performance after a good training session is important". It was seen as important for athletes to assess their own performances and the way in which they trained, to highlight their own opportunities for improvements and "to learn from your mistakes". Furthermore, self-evaluation following an exceptional performance was promoted as a way in which to "condition yourself to repeat excellent performance". Some of the coaches interviewed described introducing training diaries or self-evaluation forms for athletes to complete in the hope of stimulating greater self-awareness and self-regulation.

In addition to self-evaluation, seeking feedback from others was also perceived as a desirable training behavior. Coaches felt that the best players were those who would still be looking for advice or guidance on how to improve following a good performance, those who "wouldn't just accept the positive comments and say, yes, and stick their chests out and say haven't I done well; they'd still want to push themselves". It is worthwhile noting that coaches felt that although they would frequently offer feedback to players both during and after sessions, it was the responsibility of the player to seek extra help or comments, particularly if they were struggling or were unsure about something. The importance of players behaving in this way is highlighted by the following quote, that "if they approach us then they will get the help – and if they don't, well it's kind of ammunition for when you do release them". These behaviors differed from the more general dimension of asking questions, as this category focused specifically on players obtaining information about their own performance, as opposed to asking questions about aspects of a drill, for example.

Finally, coaches felt that the way in which athletes used any negative feedback or criticism was vitally important for their progression. It was frequently discussed how some players "are quite lackadaisical so if they do make a mistake, they don't seem phased or they don't seem to care", whereas others use negative comments to makes changes and improve. One coach stated that following criticism some of the players "will come and talk to you about it, they want to put right why they were railroaded, they want to know why they were railroaded and they don't shy from the fact – they just want to go on". Alternatively, "if they continually beat themselves up and don't respond from it, you know, you still have a severe problem". The quotations above indicate that coaches perceive individual differences in how athletes respond to criticism, however, it is unclear whether this is an individual trait, a reactionary response to coaching styles, or whether coaches could assist in developing more effective responses to critical feedback in their athletes.

The emergence of the higher-order theme, seeking information to improve, is somewhat consistent with previous research findings. For example, behaviors highlighted such as self-evaluating are fundamental to effective athlete self-regulation as discussed by Young and Starkes (2006a). The most prevalent aspect of seeking information to improve concerned asking and answering questions from coaches, which also forms a key element of Harwood's (2008) 'communication' factor. However, the range of behaviors comprising this category in the present study extends previous findings, particularly with the emphasis on seeking feedback. In addition, coaches emphasised the perceived importance of these behaviors in terms of athlete development.

*Concentration*

It was unanimously agreed that concentration and focus were important training behaviors. Coaches felt that although you could make allowances with some of the younger age groups (e.g., under 12s), at higher levels it was crucial for athletes to pay attention throughout a session, in order to listen and understand the coaches' comments. Behaviors included in this cluster were listening carefully to instructions, so that "if you question them, they're listening", generally being "attentive" to what is happening, and not switching off. Coaches noted that players had a tendency to "switch off if they find something boring or something that isn't entertaining them". The emergence of this category is consistent with previous findings from coach interviews that distractibility is a maladaptive behavior during practice (Morgan, 2004), and that concentration is perceived by coaches and athletes as a desirable quality for elite level athletes (Harwood, 2008). Coaches' perceptions of the importance of concentration for development provide additional support for the continued use of evidence-based interventions targeting enhanced attentional control skills.

*Negative behaviors*

Despite the relatively high performance level of the sample and clear expectations regarding players' conduct, problems with some negative behavior were also discussed. This dimension included both physical negative behavior, through either messing around or being disruptive, and verbal negative behavior, through moaning or making negative comments about the session. The types of behaviors comprising the sub-category 'messing around' included minor behavioral irritants such as playing around with a ball whilst instructions were being given out or "turning round and chatting to mates". In contrast, being disruptive consisted of more intentional negative behavior such as moving equipment. In addition, certain players were highlighted as displaying a negative attitude through making negative comments about the session or the coach, or by moaning after completing drills/exercises. For example, one coach described a player who "you'd make run, and he would run and he'd do it – but then he'd have one hell of a moan about it and he'd try and get everyone else to be moaning about it". Coaches felt that the most annoying aspects of negative behavior, from their perspective, were its effects on other players. For example, coaches stated that "some people want to clown around and it just disrupts everybody else". This was felt to inhibit the development not only of the player concerned, but also of other team members due to decreased productivity during sessions.

When discussing the above themes coaches also recalled specific players who had presented a problem and emphasised how this had interfered with their long-term careers within the sport. Although anecdotal, several cases were discussed in depth and it was apparent that coaches felt that certain players with potential had failed mainly due to behavioral problems. Such negative behavior was evident in all teams discussed, with even international level coaches reporting low-level misbehavior by some players. Negative athlete behavior has received only limited attention in the literature. For example, Rutten et al. (2008) examined pro and antisocial behaviors in adolescent athletes, although this was in off-field and competitive contexts, not during practices. Although difficult to ascertain from the current analysis, it is possible that some of the behaviors described are symptomatic of an *absence* of the desired athlete attributes that have been the focus of previous studies. However, within the focus groups, negative behavior was discussed as an entity in itself, rather than merely as the reverse or lack of more desirable training behaviors. Also, when you consider the raw themes clustered under this category, they do not appear to be semantic opposites of the positive higher-order themes. For example, the opposite of being disruptive or messing around would be along the lines of conforming, rather than investing effort or being committed. Where a negative behavior was either (a) discussed as being the opposite of a desirable training behaviors, or (b) clearly represents the opposite of that behavior, it was included in as an indicator of that positive behavior (e.g., raw theme 'Lazy' in 'Effort').

## General discussion

In this study we sought to examine the perceptions of high-level coaches regarding training behaviors considered important for athlete development. The training behaviors and attributes which were discussed presented similarities with previous findings. In addition, there were some new findings such as the emergence of honesty and respect, self-evaluation, seeking feedback, and completion of drills to a technically high standard. However, there were some attributes previously highlighted in the literature that in the present sample were conspicuous by their absence, namely confidence and communication.

Communication skills did not emerge as a separate category in the current analysis, and although there were communication-related behaviors (e.g., asking and answering questions), coaches tended to emphasise the importance of these for gaining information, and when asked about communication more generally did not agree that it was a critical behavior. Coaches suggested that being a good communicator was "an asset that you value in your periphery players, if they have lackings [*sic*] in other areas, it's something we value if they can actually communicate well with other people on the pitch". However, being a poor communicator was not perceived to be a limiting factor to attainment, with coaches frequently citing examples of successful players with poor communication skills. In one focus group, it was suggested that although communication was not a required competency, it may be more important for certain leadership roles (e.g., captains) or

tactical positions (e.g., fly half in rugby union). It is also possible that communication between players, rather than communication between the player and the coach, is a more important contributor to development, and in this case coaches may not be fully aware of its impact. These speculations require further investigation.

In addition, in the current data set confidence was not cited as an important training behavior or attribute. It is possible that the importance of confidence is more likely to emerge when considering its impact on competitive performance outcomes (e.g., see Holt & Dunn, 2004) rather than progression during training. Alternatively, it may be that in the present sample coaches specified *types* of behaviors they felt a confident athlete would exhibit. For example, previous research has found that confidence or self-efficacy is positively related to an intensification of effort, to accepting challenging goals and persisting with these (e.g., Harwood, 2008), which were both highlighted in the present analysis. Given the pervasive links between confidence and sporting performance (e.g., Woodman & Hardy, 2003), further investigation is required to clarify whether confident athletes behave differently during training to less confident athletes.

When analysing the data it became apparent that the behaviors described contained both trait-like and state-like elements. It is likely that athletes may possess both a tendency to train in a certain way (e.g., some athletes might always be professional and have high levels of motivation), however, some training behaviors or attributes may fluctuate from session to session (e.g., a player may concentrate more during some sessions than others). Furthermore, some behaviors may have *both* trait and state characteristics. For example, an athlete may have a tendency to invest high levels of effort into his training sessions, however, the actual effort invested may vary depending on session-specific variables such as whether it is enjoyable, whether he or she has had a hard day at school, bad weather, and so on. Although not problematic regarding interpretation of important themes in the present focus group data, this issue requires consideration when seeking to apply these findings. Specifically, if developing and utilising a measure of athletes' training behavior, one would need to consider the most accurate way of conceptualising training behaviors. Similarly, from an applied perspective, trait-like behaviors may be less amenable to change as the result of interventions.

It is important to note some of the drawbacks relating to content analyses that may be particularly pertinent when considering the aims of the present study. It is inappropriate to make assumptions regarding the *relative* importance of the behaviors identified to each other. Furthermore, when considering the reflections of the coaches as a form of discourse, it is pertinent to note two points. Although we can conclude that the behaviors identified are considered by coaches in high-level team sports as important for progression, causal relationships between these behaviors and athlete development were not examined. The extent to which the reflections of the current sample accurately represent reality is unclear. It is possible that some of the emergent behaviors are critical in that they will present as limiting factors preventing long-term progression, however, equally some behaviors may be unrelated to the development of high-level players. A longitudinal study monitoring players' behavior during training, and their progression over time, could further develop our understanding of this issue.

In addition to the methodological limitations considered above, the sports and coaches sampled possess common characteristics, which should be considered when generalising findings to other contexts. Although coaches felt that the behaviors identified would have relevance to a number of sports, the behaviors may have greater relevance, or indeed may only be relevant in the team sports examined, and it is possible that certain behaviors (e.g., professionalism) are uniquely important in high-level sport when compared with lower competitive levels. Additionally, it is possible that desirable training behaviors may vary between the youth athletes considered in the present study, and adult participants. For example, coaches may seek increased communication, decision-making or tactical input in training from more experienced players. An additional point worth noting is that the present sample consisted solely of male coaches, and it is possible that female coaches exhibit a preference for different types of athlete behaviors than male coaches. Further research is required to establish whether the training attributes valued by female coaches, and coaches of adult athletes, are congruent with current findings.

Despite these limitations, there are a number of strengths of the present study, not least of which is the detailed range of behaviors identified within each general dimension. Whereas some previous researchers have presented simplified lists of desired characteristics, with few examples of actual behaviors typifying each characteristic, the current analysis provides a guide for identifying productive versus ineffective approaches to training by athletes. This can act as a framework on which to base interventions aimed at enhancing the progression of youth athletes, as well as a way of monitoring the efficacy of interventions targeted at increasing positive training behaviors. Future research could also consider whether coaching behaviors can promote desirable athlete training behaviors. For example, in the present sample coaches reported asking questions to stimulate learning, providing training diaries to encourage self-evaluation, and using critical feedback to enhance players' effort levels. However, actual links between these coach behaviors and athlete responses have not been examined. Research should also focus on examining the antecedents of training behaviors, and whether training behaviors are influenced by coaching behavior, by athletes' use of psychological skills (Woodman, Zourbanos, Hardy, Beattie, & McQuillan, 2010), or by level of engagement. What is clear is that there remain a number of potential research avenues to be explored in the context of athlete training and development. This is particularly salient given the growing profile and resource investment in youth sport in the UK.

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## Appendix 1. Interview guide: coaching and training behaviors focus group

1. Opening questions: Purpose – to make people feel comfortable; fact-based.
   - Please introduce yourselves and tell us what sport you coach, and how long you have been coaching for?
   - What type of players do you typically coach (gender/level)?
   - What size of group/squad do you usually train with?
2. Introductory questions: To encourage conversation and interaction among the participants by introducing topic in open-ended manner. Get participants and researchers to the same understanding of the topic.
   - Could you tell us briefly a bit about what a typical training session involves for you?
     *Prompts: Structure of session, who leads the session, how long spent on each type of activity etc.*
3. Transition questions: To help participants broaden their understanding from the introductory questions. To connect the participant and the topic under investigation.

- When you hear the term 'training behaviors', what comes to mind?
  *Prompts: What different attitudes do athletes show/demonstrate during training?*
  *What different ways do athletes behave during training?*
- In your experience, to what extent/how do you think athletes' training behaviors can influence their performances/their development/their teammates?

4. Key questions: To drive the session, 2–5 questions taking 10–15 min to answer.
   - How do you like your athletes to behave during training?
     *Prompts: What positive behaviors/things do you like your athletes to do?*
     *E.g., pay attention when instructions are given*
     *What negative behaviors/things do you not like your athletes to do?*
     *E.g., put less effort in towards the end of a session*
   - What behaviors/attributes do you think are necessary for an athlete to train effectively/train well?
     *Prompt: For example, do you think certain personality-types make 'better trainers'?*
     *In what ways can players help training sessions flow smoothly?*
     *In what ways can players interrupt training sessions?*
   - *[List distributed to participants]* This list shows behaviors which other coaches have felt were important – how relevant or important do you think these are?
5. Ending Questions: Bring closure to the debate and reflect on previous comments
   - Do you feel that any of the behaviors discussed are specific to your own sport or do you feel they could apply more widely?
   - Is there anything else you would like to add or anything we have missed?
6. Summary questions:
   - *[Assistant Moderator gives summary]* Is this an adequate summary? Does it capture what was said here today?
   - Have I misrepresented/misinterpreted anything?

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