

Exploring Mental Toughness in NCAA Athletes

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The purpose of the current study was to explore National Collegiate Athletic Association (NCAA) Division 1 athletes' perceptions of mental toughness. Specifically, three areas of mental toughness were explored including attributes, the role of significant others, and strategies used to build mental toughness. In-depth interviews were conducted with 15 athletes from a variety of sports. Lower and higher-order themes were developed to capture the main ideas of mental toughness. Various psychological attributes emerged including performing under pressure, being motivated, being a hard worker, and anticipation. In addition, all athletes referred to coaches as being critical in developing mental toughness (i.e., coaches' support, coaches' attributes, coaches' practices). Creating a positive but tough practice environment emerged as a dominant theme to build mental toughness. In addition, the themes of teaching mental toughness and enhancing athletes' psychological skills emerged. Findings offer implications for aspiring collegiate athletes and their coaches, as well as current NCAA athletes and coaches.

The amount of pressure we have for the college player, going to the free throw line and having less than a second on the clock Who do you want up there? It's the kid that's tough (NCAA basketball coach) (Weinberg, Butt, & Culp, 2010, in press).

The above quote is taken from a study that focused on NCAA Division I coaches' views of mental toughness and underscores the importance of athletes having "toughness" to perform in pressure situations in intercollegiate sport. The term mental toughness is not new to college sport and has been considered by coaches to be one of the most significant aspects to performance excellence. Over 25 years ago, in a study with wrestling coaches, mental toughness was rated as the most important psychological attribute in determining successful performance

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(Gould, Hodge, Peterson, & Petlichkoff, 1987). It is becoming well documented that NCAA student-athletes have adopted a more professionalized approach to their sport (e.g., Bowen & Levin, 2003) as they strive to meet the expectations placed on them to produce winning performances. It has been suggested that the increased demands placed upon student-athletes is a result of intercollegiate athletics becoming increasingly commercialized. Thus, producing winning teams that generate publicity, sponsorship, and revenue has become the focus for athletic directors and coaches (Eitzen & Sage, 2003). Further, coaches can be “hired or fired” depending upon win-loss records and are therefore highly dependent on the performance of their athletes. It is not surprising that athletes need to be psychologically tough to deal with the many pressures and demands they face such as producing successful performances, balancing their dual roles as student-athletes, media attention, and mental and physical fatigue.

Athletes of all abilities have long reported that the mental side of sport plays a critical role in helping them reach their potential. This interest in reaching one’s potential in sport from a mental perspective has recently spurred research into the elusive, but often referred to, concept of mental toughness. In recent years, following a study with international competitors, mental toughness was defined as:

Having the natural or developed psychological edge that enables you to (a) generally, cope better than your opponents with the many demands (competition training, lifestyle) that sport places on the performer, and (b) specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure (Jones, Hanton, & Connaughton, 2002, p. 209).

This definition was later verified in a study involving Olympic medalists and World Champions (Jones, Hanton, & Connaughton, 2007). In addition to generating a definition, mental toughness research with elite athletes (e.g., Jones et al., 2002; 2007) has also produced a fair amount of consistency in the attributes that have emerged such as strong self-belief, dealing with pressure, concentration, and a drive to succeed. Further, these attributes have tended to emerge in other sport-specific mental toughness research findings such as in the sports of Australian football (Gucciardi, Gordon, & Dimmock, 2008), cricket (Bull, Shambrook, James, & Brooks, 2005), and soccer (Thelwell, Weston, & Greenlees, 2005). Although each sport had specific and unique characteristics related to the requirements of that sport (e.g., team role responsibility in Australian Football is different from soccer), it is clear that there has also been some general overlap regarding the attributes of mental toughness. It is important to note that studies conducted to date have focused on samples consisting of elite (i.e., international standard), super-elite (i.e., World champion, Olympic standard) or professional performers. Along these lines, researchers have suggested that mental toughness may differ depending upon the context or sport (e.g., Crust, 2008), thus demonstrating the importance of exploring mental toughness in different sporting environments. The present study extends existing research by exploring athletes’ views of mental toughness in the NCAA environment which is considered to be a critical time-point in athletes’ careers and one that is increasingly demanding, both physically and mentally.

Although research findings to date have provided athletes and practitioners with a clearer understanding of what constitutes mental toughness (i.e., the essential attributes), the important implications of this knowledge have been used to spur our investigations into exploring how mental toughness is developed. Indeed, the definition produced by these initial studies suggests that mental toughness is not just an innate characteristic but one that can be developed. In support of this notion, Gould, Dieffenbach, and Moffett (2002) conducted a study with Olympic medalists to explore how they developed their psychological talent. Although this study was not specific to mental toughness, one of the psychological attributes that was highlighted by the athletes as being developed was mental toughness. Overall, findings indicated that psychological talent can be developed and this development typically occurs over a long period of time and is influenced by a variety of factors (e.g., coaches, parents, competitive environments, life experiences). Along these lines, there has been some research in this area indicating that environmental factors played important roles in players' development of mental toughness (e.g., Bull et al., 2005). Specifically, Bull et al. studied elite cricketers and reported that environmental influences provided the foundation for the development of tough character (e.g., competitiveness), tough attitudes (e.g., go the extra mile mindset), and tough thinking (e.g., robust self-confidence). Findings indicated that during players' formative years, parents were an important influence in helping them to develop their mental toughness. Specifically, parents influenced a committed attitude toward playing cricket by emphasizing the importance of the game (e.g., every inning played was important). Being exposed to foreign cricket (i.e., helping to develop the right mindset as an outsider), surviving early set-backs, and being placed in situations where they had to earn success were also important factors that influenced their mental toughness development.

In keeping with the idea that mental toughness, like other psychological skills, is developed over a long period of time, Connaughton, Wadey, Hanton, and Jones (2008) focused upon exploring elite athletes' mental toughness development during their early, middle, later, and maintenance career years (i.e., Bloom's 1985 talent development career phases). Specifically, Connaughton et al. contacted the original athletes who were interviewed in Jones et al.'s (2002) mental toughness study to investigate the underlying mechanisms involved in how the identified attributes were developed and maintained. Findings indicated that mental toughness attributes generally developed throughout their career stages and involved a large number of perceived underlying mechanisms (e.g., motivational climate, coaches' leadership qualities, other individuals such as parents and teammates). In addition, experiencing critical incidents both inside and outside of the sport setting were important features associated with developing mental toughness. In terms of maintaining mental toughness, findings indicated that once it had been developed, a desire and a motivation to succeed, a support network, and the use of psychological skills were three underlying mechanisms important in maintaining it.

Thus, it appears that in addition to genetics playing a role in the development of any attribute, the importance of environmental influences in building mental toughness earlier in athletes' playing careers is definitely important (e.g., Bull et al., 2005; Connaughton et al., 2008; Gould et al., 2002). In addition to focusing on the importance of environmental influences (e.g., type, frequency and intensity of practices), literature on expertise and talent development (see Ericsson, 1996)

also underscores the importance of significant others in the development of high performers. Research studies, for example, (Côté, 1999; Durand-Bush & Salmela, 2001; Gould et al., 2002) have reported that coaches, parents, and teammates play important roles in developing athletes' talents and mental skills. Based on existing literature, it is clear that we have some initial information on developing mental toughness from the recollection of elite athletes. Nonetheless, from an applied perspective, further knowledge is needed on the most effective environments to build mental toughness as well as how individual athletes interact with their environments to maximize their mental toughness.

It is anticipated that the information gained from this study will be helpful to both aspiring, as well as current NCAA athletes and coaches. Mental toughness is an important characteristic for athletes and appears to be especially salient for athletes training and competing in high pressure environments such as the NCAA. Indeed, in a recent study with NCAA Division I coaches (Weinberg et al., in press), mental toughness was discussed as being extremely important and they purposely dedicated time in practices to developing it in their athletes. Further, coaches expected athletes to display some mental toughness qualities (e.g., attitude, work ethic) at the high school level during recruitment interest. This finding demonstrates the need to further explore the role of mental toughness (i.e., attributes, developmental strategies, the role of significant others) in NCAA athletes to help prepare younger athletes who are aspiring to "make it" in intercollegiate sports. In addition, the findings of this study can also be a helpful resource to high school coaches who have important roles in preparing athletes for the next stage of their sporting careers. The present study explored the following three areas: (a) mental toughness attributes, (b) the role of significant others in developing mental toughness, and (c) strategies that athletes had been exposed to as a way to build mental toughness.

Methods

Participants

Participants were 15 NCAA Division I athletes (9 males and 6 females) from a variety of team and individual sports including field hockey (2), volleyball (2), crew (1), soccer (2), football (1), basketball (2), swimming (2), and track and field (3). The athletes were aged between 19 and 22 years ($M = 20 \pm 0.91$). Athletes were recruited from 8 different universities in the Midwest region of the USA. For participant recruitment, coaches from athletic programs (a variety of individual and team sports) were initially contacted based on demonstrating a successful track-record (i.e., had received a tournament seeding within the top four for three consecutive seasons, had previously won a conference tournament championship). It was anticipated that successful programs would most likely consist of mentally tough athletes (and possibly physically gifted), and coaches, when asked by the interviewer, felt they recruited mentally tough players. In addition, consistent winning seasons over time would typically involve mentally tough athletes, as noted by coaches. Interviewed athletes were required to have at least one year of experience in the NCAA and were initially recommended by coaches for their mental toughness qualities. All athletes contacted by the research team agreed to participate in the study.

Procedures

Following institutional ethics approval, coaches were contacted in person or via the telephone, and were also sent a detailed outline of the study procedures. Coaches were asked to recommend athletes (based on their mental toughness qualities) to the authors so they could make contact and invite them to take part in the study. Athletes were then contacted via the phone by the interviewer (third author) to set up an initial meeting about the study. During the initial phone call and meeting with each athlete, a brief discussion was held about mental toughness and athletes were asked if they considered themselves to be mentally tough and in what situations they demonstrated mental toughness qualities. The same individual conducted all 15 interviews. The interviewer initially attended classes in qualitative research, and had also been involved in other interview-based research studies with the first and second authors of this study. In addition, pilot interviews were conducted by the interviewer, tape recorded, and then critiqued by the principal investigator. To facilitate interview training, one of the pilot interviews was observed by the second author. An interview was scheduled with each athlete after consent forms had been completed, and held at a quiet place, convenient for the athlete.

Interview Guide

A structured interview¹ guide with elaboration probes (Patton, 2002) was used to help standardize the interviews across participants. However, to obtain in-depth and unique information, athletes were encouraged to discuss, elaborate and lead the conversations into specific areas that facilitated the flow of the interviews. The interview guide used in the present investigation was based on the literature relating to mental toughness, the psychological characteristics of successful athletes, and the psychology of excellence (e.g., Gilbert & Trudel, 2004; Gould et al., 2002; Jones et al., 2002).

The interviews began with general questions related to athletes' previous experiences in their sport (e.g., how they became involved, different levels of competition, and their general progression to becoming NCAA athletes). The main purpose of these questions was to create a comfortable atmosphere for each athlete. The next part of the interview focused on identifying the attributes of mental toughness. It was important to establish a detailed understanding of mental toughness attributes before discussing how mental toughness was developed. Specifically, to provide a starting point for discussions, athletes were provided with a definition of mental toughness emanating from the definition derived from a previous study (i.e., Jones et al., 2002). To ensure a thorough understanding of what constitutes mental toughness in NCAA athletes, all athletes were asked to identify a player in their sport (e.g., another NCAA athlete) who they felt was mentally tough as well as the attributes that made him/her mentally tough. Athletes also discussed their own mental toughness qualities and provided information on various sports situations in which they felt they had demonstrated mental toughness. The main focus of the interviews then turned to the development of mental toughness (e.g., how athletes developed their mental toughness, who was critical to this development and why they were important). Interviews ranged from 60 to 75 minutes in length and were tape recorded and transcribed.

Overall, the interview guide addressed the following major content areas: (a) athletes' sports background and experiences (e.g., could you tell me how long you have been involved in your sport and reaching this level?); (b) athletes' views on

mental toughness and the role of mental toughness in NCAA athletes (e.g., could you explain what mental toughness means for athletes competing in Division I?; do you consider yourself to be mentally tough?); (c) eliciting the attributes of mental toughness (e.g., in your sport at this level, what are the characteristics of mental toughness? what mental toughness attributes do you have and in what situations do you need to be mentally tough?); (d) personal views on how each athlete developed their own mental toughness (e.g., can you tell me how you developed your mental toughness?; who has been influential in helping to develop your mental toughness?); (e) identifying strategies to build mental toughness (e.g., could you explain how you developed your mental toughness and the strategies that have helped you?).

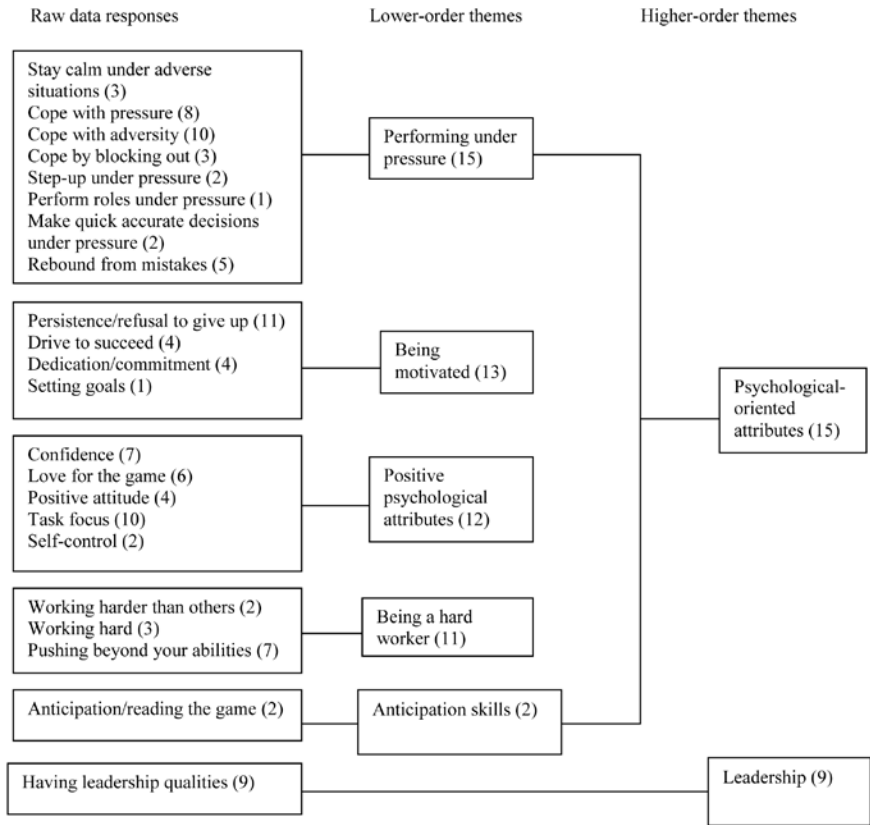
Data Analysis

The interviews were content analyzed by three investigators following procedures recommended by Miles and Huberman (1994) and used in previous sport psychology studies (e.g., Durand-Bush & Salmela, 2002; Gould et al., 2002). Each investigator carefully read the verbatim transcripts and then brought their analyses and opinions to regular group meetings over a 10-week period. In essence, to enhance the credibility of the data collection, analysis, and conclusions, the method of analyst triangulation (Patton, 2002) was used in this study. Three independent researchers content analyzed the transcripts and reached agreement on the coding of raw data and themes that emerged. Specifically, each investigator independently identified raw data themes characterizing each athlete's responses regarding each question in the interview. Raw data responses (quotes or paraphrased quotes representing a meaningful point or thought) were then consensually validated through extensive discussion with the three investigators present. The raw data responses were then organized into patterns of like ideas or thoughts representing lower-order themes. Following this, lower-order themes, if they logically fit together, were grouped to create higher-order themes. It is also important to note that once the interviews had been transcribed, athletes had the opportunity to view their transcript. This procedure enabled athletes to write in any additional information and also acted as a way to establish credible data underscoring that the transcripts were an accurate account of the interviews that took place (Lincoln & Guba, 1985). No additional comments were added to the transcripts.

Results

The first section of the results will provide a brief overview of the themes that emerged pertaining to the attributes of mental toughness. Figure 1 provides a full diagram of the data tree and frequencies of raw data responses. For all figures of data presented the numbers of athletes cited in the lower and higher-order themes are also reported.

The higher-order theme of psychological toughness comprised of the following five lower-order themes: (a) performing under pressure (e.g., coping with adversity, step-up under pressure), (b) being motivated (e.g., drive to succeed, refusal to give up), (c) positive psychological attributes (e.g., confidence, task focus), (d) being a hard worker (e.g., pushing beyond your limits, working harder than others), and anticipation skills (e.g., anticipating and reading the game). The second



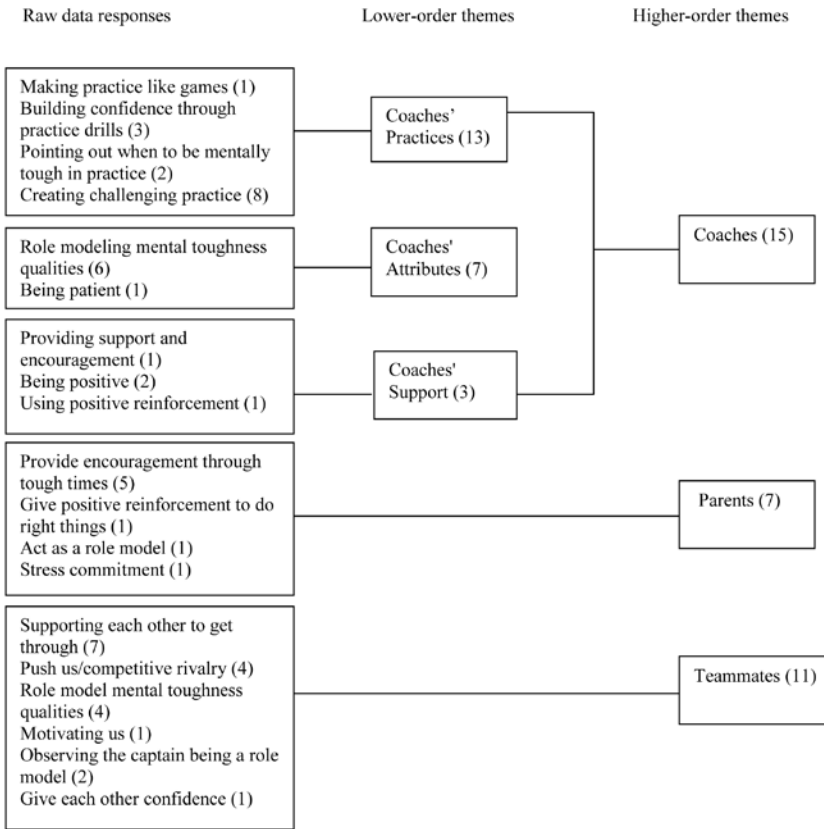
Numbers exceed 15 responses due to multiple raw data responses.

Figure 1 — Attributes of mental toughness

higher-order theme to emerge was leadership. Specifically, in this theme, nine athletes highlighted that mental toughness incorporated athletes being able to demonstrate leadership qualities such as “doing the right thing for the team,” or “stepping up to make decisions under pressure.”

The Role of Significant Others in Developing Mental Toughness

All 15 athletes reported coaches as being most critical to developing mental toughness, and this was followed by parents and teammates. Thus, coaches, teammates and parents emerged as being most prominent and were therefore considered the higher-order themes (see Figure 2). Within the higher-order theme of coaches, 25 raw data responses were identified and comprised of three-lower order themes: (a) coaches’ practices, (b) coaches’ attributes, and (c) coaches’ support. These themes are discussed below.



Numbers exceed 15 responses due to multiple raw data responses.

Figure 2 — The role of significant others in developing mental toughness

Coaches' Practices. Thirteen athletes discussed how they perceived coaches to set up practices to build mental toughness. While doing this, they were seen as trying to build players' confidence and would point out specific situations where players needed to be mentally tough. As one football player stated,

My coach would set up these situations that were challenging but they were just like you were going to see in the game. But even if you failed or performed poorly in practice, the coach would always express confidence in your ability to get the job done. So I eventually became confident and mentally tough because I felt I could handle any situation that was thrown my way.

Similarly, a basketball player explained that his coach "set-up drills that put him under pressure" and that he "didn't want to give up."

Coaches' Attributes. In this lower-order theme, seven athletes indicated that their coaches possessed certain qualities that helped build mental toughness.

These qualities included such things as “being confident”, “demonstrating good leadership skills”, and “acting as a role model.” For example, one athlete explained that she looked up to her coach for guidance and direction and felt her coach projected a confident image and leadership skills which she modeled as a way to build mental toughness. Similarly, a field hockey player stated “I have a real confident coach ... she played for the National team ... she handles pressure for our team positively and I know I can do that also.”

Coaches’ Support. This lower-order theme considered the supportive role of the coach outside of practice and competition. Specifically, three athletes discussed how coaches supported and encouraged them to be positive in trying to achieve their life goals. One athlete explained this support in the following way, “the coach supported us and provided positive reinforcement [for achieving goals] as long as we put forth effort toward reaching our goals.” An example of a coach being positive in response to challenging situations was also discussed by one athlete in the following way, “My coach is the first person I go to if there is a problem. It has a big impact because she knows what to say that is positive and that helps me to know, know I can do better, it challenges me to work hard.”

Parents

Seven athletes indicated that parents were all seen as role models who supported them through setbacks and provided them with support and encouragement to continue pursuing their sporting goals. One athlete explained having support and encouragement from his parents to do his best in the following way:

... It is a team game and they relied on me and I relied on them so I felt I couldn’t let them down which made me mentally tough... we push each other to the best we can be in practice. My parents were always there for me and supported me. They encouraged me to always give my all and be mentally tough and that really helped ... So I know I can give it my all, not give up on things for me but for my teammates also.

Similarly to athletes viewing coaches as encouraging and being role models, parents were viewed in a similar way. For example, a swimmer explained that her parents helped her deal with setbacks and encouraged her to be committed in difficult situations. Similarly, a volleyball player stated,

My mom always encouraged me to do the right thing, to make good decisions and be focused on my goals and things I want to achieve ... for me in my volleyball to be persistent and also in other things like my classes ... I know I can go after what I want and my goals.”

Teammates

Eleven athletes discussed the importance of teammates in helping to develop their mental toughness. Specifically, the roles of teammates were characterized by phrases such as “motivating each other to work hard”, “using each other to help us push through tough situations”, and “supporting each other under pressure and to push

through barriers.” One athlete explained how her teammate helped her to perform under pressure in games in the following way:

Our team is so competitive, with all players working and trying to win positions ... it puts me under pressure in practice most of the time because I know if I mess up then Jess can step in instead of me ... I have to take that into games and pull it off, y’know when things get tough.

The role of teammates being able to challenge each other also helped to create a strong work ethic, as one soccer player explained,

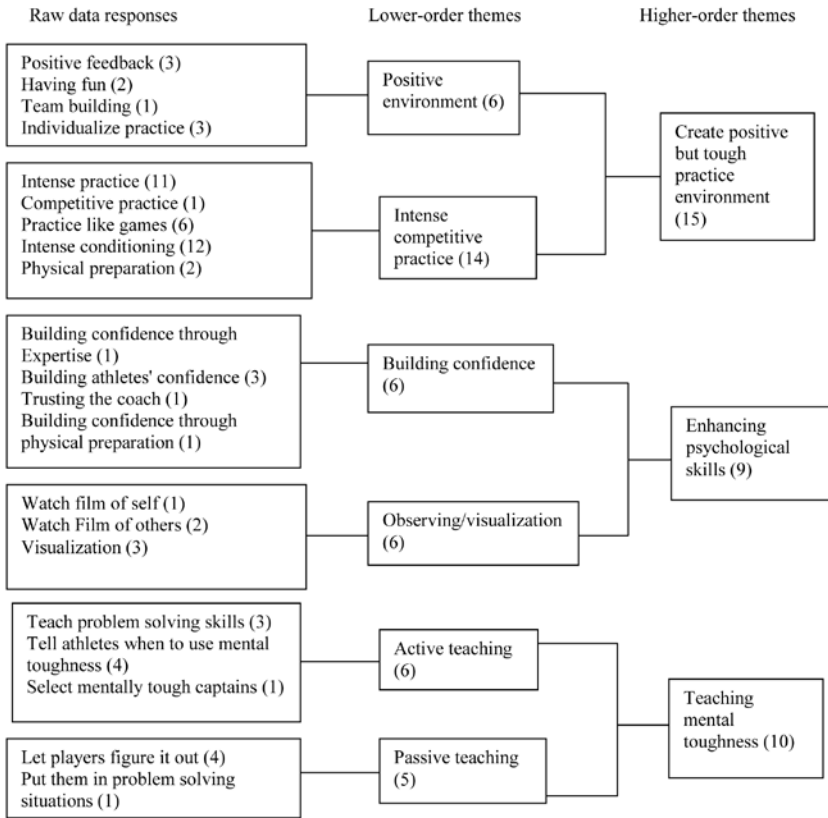
We all want to play, but it’s a supportive atmosphere, it pushes me to give my best and not to quit when the going gets tough like not getting to play one game, but we challenge each other to keep going, it’s like doing our best in practice but also through the way we talk and encourage each other.

Strategies Identified to Build Mental Toughness.

In considering athletes’ perceptions of strategies they had been exposed to that developed mental toughness, 66 raw data responses were generated, resulting in three higher-order themes: Create a positive but tough practice environment (i.e., positive atmosphere/environment, intense competitive practices), enhance psychological skills (i.e., building confidence, observing/visualization), and teaching mental toughness (i.e., active teaching, passive teaching) (see Figure 3). The lower-order themes are presented below.

Positive Environment. Six athletes felt that mental toughness is best developed in a positive atmosphere such as “being made up of lots of positive feedback” and “encouragement from the coach.” Positive feedback was characterized by phrases such as “getting skill specific instruction” as well as “coaches’ supportive body language gestures.” In addition, receiving encouragement from coaches was linked to athletes receiving individualized practice and “being encouraged to reflect on skills performed correctly and incorrectly.” This type of encouragement, in turn, created a positive atmosphere conducive to building mental toughness attributes such as being confident to perform, not giving up during tough situations, and working hard. In addition, developing a cohesive team appeared to aid a “friendly rivalry” necessary to establish game-like practices.

Intense Competitive Practices. In this theme, 14 athletes discussed creating competitive practices as an effective strategy to build mental toughness. This theme was characterized by phrases such as “practices should be strict and game-like”, “intense”, and “pressurized” while also emphasizing “tough physical fitness/conditioning.” As one athlete stated, “you need to be stretched in practice and asked to give your all if you are to become mentally tough in the actual competition.” Thus, athletes in this theme discussed using intense competitive practices to specifically build the mental toughness attribute of performing under pressure during competition. In addition, two athletes explained how being physically prepared enables them to display other mental toughness attributes. For example, one athlete stated, “it makes you strong physically and mentally, if you have to deal with pressure right at the end of the game you have to have it [fitness] to succeed through those stressful times.”



Numbers exceed 15 responses due to multiple raw data responses.

Figure 3 — Strategies identified to build mental toughness

Building Confidence. Within this lower-order theme, athletes discussed that coaches should build trusting relationships with athletes, and build personal confidence through their own knowledge and expertise as well as always trying to build up the confidence of their athletes. A swimmer explains the role of confidence in the following way:

You always want to have a confident coach ... that they believe in themselves, it definitely helps me to have confidence in my coach ... And it's important that he [my coach] believes in me. I get lots of feedback from his knowledge, and criticism, y'know but that all helps me work on my technique and I can see myself improving. Yeah, I trust my coach and I get my confidence from doing that.

Observing/Visualization. In this lower-order theme, three athletes discussed building mental toughness through watching films of either themselves or of

elite athletes performing the skills in question and demonstrating specific mental toughness qualities (e.g., pushing/working hard, leading the team, performing under pressure, portraying a confident style while performing). In addition, three athletes highlighted the use of visualization where by athletes would be asked to image themselves performing an activity and seeing themselves being successful.

Active Teaching. In this lower-order theme, six athletes discussed that mental toughness can be built through adopting certain teaching strategies such as “pointing out specific situations during practice and games of when and how to be mentally tough.” The common theme here was on actively being taught mental skills perceived to encompass mental toughness (e.g., persisting through difficult tasks, developing self-belief, demonstrating a positive attitude) with the focus on teaching, as opposed to merely learning by doing. For example, a basketball player stated:

My coach tends to stop me or pull me one to side, we can kind of look back on what just happened and he’ll say like, “this is where you have to take a risk and go after it”, so he can show me about how to be mentally tough and when I need to be more like that.

Passive Teaching. Five athletes highlighted that athletes would be “placed under stressful situations and then try to figure out or problem-solve the best solution.” The goal would be for athletes to figure things out for themselves and thus become “quicker decision makers under pressure”, and “developing a feeling of self control.” The focus on teaching via problem solving is seen in the following quote by a soccer player:

It’s tough at first, we [our team] have been involved in drills where we have to figure out the plays needed to do it successfully ... the mental toughness comes in when I am in these difficult situations, I’ve had to learn to persevere and work through it, so I make the right choice. It comes with figuring out what to do in difficult situations.

Finally, when athletes discussed various situations that they needed to be mentally tough, two areas outside of the sports setting were highlighted. These areas referred to the academic setting (i.e., test taking) and career success (i.e., job interviews). Specifically, the mental toughness attributes of dealing with pressure (e.g., dealing with fear), positive psychological attributes (e.g., having confidence), being motivated (e.g., persistence), and people skills (e.g., meeting others’ expectations) were discussed as being transferable to these other areas of life.

Discussion

This study explored NCAA athletes’ perceptions of mental toughness. To extend current knowledge on mental toughness the study focused on obtaining detailed information on the following three areas: (a) the attributes of mental toughness, (b) the role of significant others in developing mental toughness, and (c) strategies to build mental toughness. It was anticipated that conducting this study on mental toughness in the NCAA environment would provide helpful information to aspiring

as well as current NCAA athletes and coaches who want to continue to build mental toughness. The findings will be discussed in relation to existing mental toughness research as well as focusing on practical implications for athletes and coaches.

Regarding the characteristics of mental toughness for NCAA athletes, findings were fairly consistent with previous investigations (e.g., Bull et al., 2005; Jones et al., 2002; Jones et al., 2007; Thelwell et al., 2005) reiterating that mental toughness is made up of such attributes as the ability to cope with pressure, staying motivated and persisting despite obstacles, positive mindset, staying focused despite distractions, and working hard to achieve goals. These findings provide information on the specific psychological skills that might be targeted with high school athletes as a way to develop specific mental toughness attributes and prepare them for intercollegiate sports. For example, the psychological skill of positive self-talk is one effective way to build and maintain confidence. In addition, self-talk has also been used by athletes to increase their motivation and perseverance, and to cope with adverse situations (Durand-Bush & Salmela, 2002). These psychological characteristics certainly appear to have overlapping links with the attributes of mental toughness indicating that self-talk is a useful skill to develop aspects of self-confidence. Another example of a key psychological skill that could be implemented is the use of goal-setting. Specifically, goal-setting can be used as a strategy to increase athletes' intrinsic motivation which emerged as a theme in the current study as an attribute of mental toughness (e.g., work hard, drive to succeed). It is well documented that setting goals direct attention and action, and helps players focus on what they need to do both in the short-term and long-term. Finally this might open up increased dialogue between NCAA and high school coaches regarding specific strategies to build mental toughness in athletes. Regarding the mental toughness attributes that emerged there are two limitations to highlight. First, providing athletes with a definition as a starting point for discussions during the interviews may have influenced the findings. However, raw data responses that were generated also extended beyond this definition, thus it may not have had a significant effect. Second, to fully explore the attributes of mental toughness specific to the NCAA environment, athletes, in addition to responding relative to themselves, were also asked to recall a player (i.e., teammate/opponent) that they considered to be mentally tough. Thus, it is possible that some subjective inferences were being made by the interviewed athletes relative to what other athletes were thinking.

With regards to the various situations that athletes displayed mental toughness, it is important to note that athletes also perceived some of the mental toughness attributes (e.g., dealing with pressure, being motivated) to help them in nonsport settings such as taking tests and interviewing for jobs. Therefore, in addition to using psychological skills to develop mental toughness for sport performance, these skills (e.g., goal-setting, coping with pressure, managing expectations) might be integrated into other classes for athletes such as the CHAMPS life skills program. Specifically, existing literature indicates that mental skills learned in a sport setting may not always automatically transfer to nonsporting environments (e.g., Gould, Collins, Lauer, & Chung, 2007). Thus, although athletes in the current study discussed using mental toughness in other areas of their lives, specifically teaching for the transfer of mental toughness attributes would be optimal.

In addition to the psychological component of mental toughness, the physical aspect of mental toughness also emerged which appeared to enable athletes to exhibit

the psychological attributes of mental toughness. For example, athletes discussed the importance of physical conditioning in that it allowed them to push harder and cope with adversity during stressful situations, as well as providing a robust mental edge. This finding is not unique to the NCAA environment because previous studies have also hypothesized physical toughness as a component of mental toughness (e.g., Gucciardi et al., 2008). Researchers have noted that the extent to which mental toughness has a physical component is not fully determined (e.g., Crust 2008). Nonetheless, there does appear to be a relationship between mental toughness and physical endurance (Crust & Clough, 2005). In addition, previous research focusing on elite athletes has demonstrated that some mental toughness attributes interlink between one another. Specifically, being physically prepared has been linked to displaying high levels of self-belief (e.g., Bull et al., 2005; Gucciardi et al., 2008). Indeed, Leohr (1995) highlighted that mental toughness “feeds” off physical condition. Taken together, the findings indicate that being in good physical condition is considered a prerequisite for displaying mental toughness. It is often hard to be mentally tough if you are not in condition to do so. Thus, this connection between the physical and mental aspects should be emphasized when teaching mental toughness, and designing practice and training sessions.

Along these lines, regarding significant others in the development process of mental toughness, findings indicated that the most important person appeared to be the coach. Athletes perceived coaches to provide support and encouragement both inside and outside of practice/competition environments. In addition, coaches were seen as possessing certain attributes, which helped athletes to build mental toughness including being confident, and exhibiting good leadership skills. These findings demonstrate that it is important for NCAA coaches to have access to continued professional development opportunities and coach education programs that can enhance their own psychological skills (e.g., leadership behaviors and styles, coaching efficacy, creating a positive motivational climate). The use of on-line seminars and materials may help to facilitate this process. Another finding was that coaches were seen as setting up difficult practice and training environments that simulated challenging game conditions. In particular, this environment emphasized the mental toughness attributes of performing under pressure and not giving up during competition. Therefore, it is important for coaches to consider how they can create the best practice environments for building mental toughness. Certainly, putting athletes into game-like and pressure situations by manipulating key elements such as time, space and level of opposition (i.e., over-load situations) would appear to be essential ingredients.

It does appear that NCAA athletes place a significant amount of importance on their coaches to build mental toughness. In the current study, coaches were seen as directly (mentoring, planned teaching) or indirectly (fostering/nurturing/instilling important skills) teaching mental skills. These results regarding the importance of coaches are consistent with previous findings in the area of building mental skills (e.g., Gould et al., 2002). Finally, athletes perceived that coaches emphasized expectations and standards, hard work, and discipline. Taken together, the findings indicate that creating an encouraging practice environment (varying direct instruction-oriented drills and problem solving-oriented drills) while still upholding high expectations for athletes to learn and further develop their skills is important for building mentally tough athletes.

As part of the interviews, athletes were asked to discuss strategies that they had been exposed to that they considered to be effective in building their mental toughness. A major way to build mental toughness according to athletes was by creating intense competitive practices. Thus, it was clear that making practices difficult, emphasizing game-like pressure situations and tough competitions within practices were considered key strategies by athletes on how coaches should continue to build mental toughness. These findings are in accordance with some of the themes that emerged in Bull et al.'s (2005) study with elite cricketers whereby belief in quality preparation, competitiveness with self and others, thriving on competition, and "go the extra mile" mindset were reported when referring to building "tough thinking", "tough character", and "tough attitudes" within a framework of mental toughness. In particular, findings suggest that the development of mental toughness was facilitated because cricketers were exposed to harsh experiences (e.g., adjusting to being an outsider when playing cricket in foreign countries, valuing a non-smooth pathway to success, believing that hard work is needed to be successful). Similarly, a study conducted by Connaughton et al. (2008) highlighted the importance of friendly rivalry among teammates when building mental toughness. Competitive rivalry among teammates was also noted in the current study to help build mental toughness as teammates were seen as helping to push each other to try harder when they were tired. From an applied perspective, these findings suggest that coaches ought to consider various ways in which they can simulate game-like situations whereby teammates are competing with each other to improve their skills. Thus, at this level of competition, the emphasis might be on providing athletes with the necessary coping skills to "use" competitive rivalry in a positive manner.

In addition to the majority of athletes reporting the importance of creating an intense competitive practice environment, other athletes highlighted that being exposed to a positive environment helped to build their mental toughness. A positive environment was described as one which emphasized encouragement, along with positive and instructional feedback. This notion of support was also seen throughout much of the interviews when referring to others who helped athletes build mental toughness. This support included helping athletes build confidence since building confidence, in part, requires a positive environment and lots of encouragement. Confidence was seen as a critical mental skill that needed to be nourished and athletes felt that coaches should not only build confidence in their athletes but also build athletes' confidence in their coaches. This finding is consistent with research findings on the development of mental skills (e.g., Côte, 1999; Gould et al., 2002). Further, having a strong self-belief is a consistent finding in previous mental toughness research (e.g., Bull et al., 2005; Jones et al., 2007). For example, in Bull et al.'s study, cricketers discussed the importance of having a robust inner confidence, and the ability to make use of this confidence in competition. In essence, from an applied perspective, coaches should consider providing reinforcement and feedback which emphasizes a positive approach to the learning and performance of skills and competition as a way to build athletes' mental toughness. For the most part, application from existing mental toughness research emphasizes that exposing athletes to difficult situations (simulation training) is an effective way to build mentally tough athletes, especially the attributes of performing under pressure and bouncing back from setbacks. While this is an important finding, it is also a welcomed addition to the recent mental toughness literature that creating a positive

motivational climate also has a large role to play (e.g., Connaughton et al., 2008; Weinberg et al. in press). The findings of the current study indicate that this positive approach also hold true for athletes competing in the NCAA.

Future Directions

This study examined NCAA athletes' views on mental toughness with a specific emphasis on how mental toughness is developed (i.e., strategies used to build mental toughness and the roles of significant others). It is important to note that due to the small sample size ($n = 15$), the findings of this study may not be applicable to all sports and athletes in varying phases of their careers. Nonetheless, findings do shed some light on strategies that have helped NCAA Division 1 athletes to build their mental toughness. Further research is still warranted on understanding the most appropriate climate for developing mental toughness, especially in varying career stages of athletes (e.g., youth/high school, collegiate). It appears coaches are particularly important in developing mental toughness, yet little information is available on how knowledgeable coaches actually build mental toughness. Indeed, future research should also consider athletes' views on coaching practices that they perceive to inhibit the development of mental toughness. Along these lines, although athletes in this study discussed mental toughness in a positive light, it is worth noting the potential dangers of coaches developing mental toughness in young athletes. Specifically, research has highlighted that mental toughness has been linked to a greater pain tolerance (Crust & Clough, 2005). Thus, mentally tough athletes might be more susceptible to longer-term injuries if they "practice through pain." This is an area of concern that coaches should be made aware of, especially in aspiring young athletes. Finally, research is needed to provide support for the effectiveness of mental toughness training programs beyond regular psychological skills training programs.

Conclusions

To conclude, the present investigation provided insight into athletes' views on what constitutes mental toughness in NCAA Division 1, the important roles of coaches in helping athletes to develop mental toughness, as well as strategies used to build it. The findings have implications for both high school athletes and coaches, as well as for athletes and coaches currently performing/coaching in the NCAA. Specifically, athletes reported a variety of experiences that had influenced and continued to influence the development of their mental toughness. These experiences included the competitive sport environment (e.g., tough competitive contests, tough workouts) and coaches' behaviors (encouragement not to give up, coaches having high expectations). These findings have practical implications for how practices and situations might be structured to enhance the development of mental toughness. Specifically, setting up practices to simulate the competitive environment and intense conditioning were discussed as part of how to create the desired competitive practice environment. In addition, building confidence (e.g., developing athletes' skill expertise, building trust, helping athletes experience success) and creating a positive environment (e.g., positive feedback, fun, individualized practice) were highlighted as being important ways to try and build mental toughness. Thus, it does appear that the two environments (i.e., intense/tough and positive) are desired and need to complement each other.

Note

1. A copy of the interview guide is available from the first author.

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