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A phenomenological exploration of exercise mental toughness: perceptions of exercise leaders and regular exercisers

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Although elite sport has provided an ideal context for exploring mental toughness (MT), currently, there is scant research examining how this construct might be equally applicable in exercise settings, where high rates of attrition have been reported. The present research, therefore, aimed to address this gap, and to understand and conceptualise exercise mental toughness (EMT) through in-depth phenomenological interviews with a range of exercise leaders and exercise participants. Seven qualified and experienced exercise leaders and seven regular and frequent exercisers from formal exercise environments (i.e. gym and fitness classes) were interviewed. Interviews were digitally recorded, transcribed verbatim and analysed independently by members of the interdisciplinary research team. Key themes were agreed and member checking was used to promote trustworthiness of interpretations. MT was recognisable in exercise settings, with 10 general dimensions found to be relatively consistent with conceptualisations derived from elite sport (e.g. commitment, focus, emotional control, etc.). Importantly, present findings reveal how mentally tough exercisers think and behave in exercise settings. Some negative consequences were also reported such as over-training and training with injuries. The article also discusses how components of EMT may be valuable in terms of exercise maintenance and relapse prevention during exercise behaviour change.

Keywords: challenge; commitment; exercise maintenance; over-training; resilience

Introduction

Amidst evidence of increasingly sedentary lifestyles, the health of the nation has become a growing concern for health professionals and the government in the United Kingdom (UK) (Department of Health 2011). Research has revealed that regular physical activity or exercise of moderate intensity can reduce the risk of developing chronic illnesses (e.g. cardiovascular disease and obesity) associated with ‘sedentary’ behaviours (Biddle and Mutrie 2008). Despite the potential benefits of regular exercise, facilitating change from relatively inactive to active lifestyles has proven to be complex and challenging, and is influenced by numerous factors (e.g. social,

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economic and environmental). Psychological variables such as self-motivation and self-efficacy have been among the best predictors of exercise adherence (Biddle and Mutrie 2008), suggesting that whether an individual withdraws or persists with an exercise regime is at least partially influenced by individual resources.

Mental toughness (MT) is a term well established in elite sport (Crust 2008) and used by athletes and coaches to describe individuals who are able to persist and find a way to succeed despite setbacks (Cook *et al.* 2014). Given the complex and difficult process of behaviour change, and the potential that some individuals (i.e. mentally tough) may be better prepared to deal with challenges and setbacks, we set out to understand MT in the under-researched area of exercise maintenance. While the term 'exercise' is used throughout, we situate this within the broader conceptualisation of physical activity as a lifestyle behaviour of which exercise is a sub-component. In this article, we explore and analyse using a phenomenological methodology, exercise leaders' and exercise participants' perceptions regarding MT in formal exercise settings (i.e. gym and fitness classes).

Increased levels of physical activity following active interventions tend to diminish over time across a broad spectrum of behaviours, including exercise (Biddle and Mutrie 2008). Exercise interventions have often focused solely on developing intrinsic motivation for *initial* behaviour change, with little consideration of how to integrate and implement programmes to understand mechanisms and processes used to *maintain* change (Naar-King *et al.* 2013). For those beginning formal exercise programmes, studies typically report high rates of attrition and relapse, with few managing to maintain exercise for six months or longer (Hillsdon *et al.* 2005, Hutchison *et al.* 2013). While much previous research has focused upon barriers that prevent behaviour change (e.g. Allen-Collinson *et al.* 2011), some recent studies have also examined what might be learned from individuals who successfully adopt and maintain physically active lifestyles (Hutchison *et al.* 2013). In this context, MT might be an important individual difference that enables some people to persist during the complex processes of behaviour change. It has been empirically demonstrated that MT is related to persistence and overcoming barriers in sport (Gucciardi *et al.* 2008, Weinberg *et al.* 2011), but there is a dearth of research relating MT to exercise adherence.

Mental toughness

Generally accepted to be multidimensional, MT consists of a constellation of positive psychological attributes (Gucciardi *et al.* 2009a, Andersen 2011) although conceptual arguments continue concerning overlap with similar yet distinct constructs such as hardiness or resilience (Crust 2008, Gucciardi *et al.* 2013). Some theorists such as Andersen question whether a clear conceptualisation of MT is possible given the plethora of associated positive psychological attributes that have been reported. While nuanced findings have emerged from qualitative studies in different elite sport contexts, some common components of MT have been consistently reported (see Crust 2008, Weinberg *et al.* 2011) including confidence, focus, commitment, resilience and perseverance. Furthermore, several different interpretations of MT exist, cohering around the extent to which MT is inherited and relatively stable (Clough and Strycharczyk 2012), as opposed to being socialised or taught via more formal psychological skills training (Gordon 2012). The theoretical debate continues, but both qualitative and quantitative studies have found that MT is at least partially

amenable to development through targeted interventions (Gucciardi *et al.* 2009b, Gordon 2012). Although theory-focused debate is undoubtedly important, there is also a need to apply knowledge of MT to help individuals deal with perceived adversity and challenges toward the initiation and maintenance of behaviour change such as increased physical activity. The following sections examine the current understanding of MT from sport research before unpacking the concept in an exercise context.

Gucciardi *et al.* (2008, p. 278) defined MT as:

... a collection of values, attitudes, behaviours and emotions, which enable an individual to persevere and overcome any obstacle, adversity or pressure experienced, but also to maintain concentration and motivation when things are going well, to consistently produce high levels of performance.

Thus, while commonly construed as an important resistance resource during confrontations with stress and in times of adversity (Jones *et al.* 2002), Gucciardi *et al.* (2008) also identify MT as key to sustaining effort and maintaining standards when things are going well. Gucciardi and Mallett (2010) propose that thriving through both positively and negatively construed situations identifies MT as conceptually distinct from resilience, which coheres around withstanding, recovering and adapting from *adversity*. Another important facet of this definition is that it places emphasis on how mentally tough athletes *think, feel* and *behave*, rather than simply presenting MT as a group of positive psychological variables.

Various models of MT have been presented (e.g. Clough *et al.* 2002, Jones *et al.* 2007, Gucciardi *et al.* 2009a) and despite some differences these posit that the qualities of mentally tough individuals (high levels of commitment, self-confidence, psychological control, etc.) facilitate consistent high performance, regardless of prevailing circumstances. Positive responses to challenge and adversity by mentally tough athletes are associated with distinct appraisals of stress (e.g. as challenge rather than threat) and the use of successful coping strategies (Gucciardi *et al.* 2009a, Nicholls *et al.* 2011). Despite this, few theoretical explanations of how MT operates or develops have emerged. Hardy *et al.* (2013) identified mentally tough cricketers as being highly sensitive to punishment but not to rewards, with early threat detection used to plan coping responses. Through establishing that mentally tough players were essentially trait-anxious, these findings run counter to most existing models of MT (e.g. Clough *et al.*) which establish confidence rather than anxiety as a foundation. At present, there appears to be divergent rather than convergent theoretical explanations of MT.

Another recent study (Dewhurst *et al.* 2012) concerning the cognitive underpinnings of MT found some evidence that mentally tough undergraduate students are better able to set aside previously learned information and focus upon a cognitive task. This could explain why mentally tough athletes are able to move on more quickly and successfully following mistakes or setbacks, although the findings are still to be replicated within sport.

Highly pressured elite sport is characterised by the need to perform towards the upper end of capabilities when under pressure and has provided an ideal setting in which to understand MT. In this context, MT has emerged as a key concept related to success and progression (Jones *et al.* 2007, Gucciardi *et al.* 2009b). Nevertheless, numerous other high-pressure domains exist (e.g. business, education and

rehabilitation) where MT is also likely to enable individuals to survive and even thrive when faced with challenge and adversity. Indeed, recent work has found MT to be linked to success in diverse areas (Clough and Strycharczyk 2012).

One recent study examined the relationship between MT and physical activity with high school students (Gerber *et al.* 2012). It was theorised that MT, as a protective resource, would reduce the impact of risk factors such as stress, that can negatively influence mental health and lifestyle choices such as being physically active. These researchers used the model of MT developed by Clough *et al.* (2002), finding that students who fulfilled current physical activity recommendations had higher self-reported MT than those who did not. Nevertheless, the cross-sectional design did not allow direction of causality to be determined.

Although not directly concerned with MT, Lewis and Sutton (2011) examined the relationship between the 'Big Five' personality factors¹ (Costa and McCrae 1985) and frequency of exercise in university gym members. Perhaps the most noteworthy finding was the negative relationship between 'agreeableness' and frequency of exercise. The authors concluded that a certain level of self-focus, even selfishness in committing to a more active lifestyle, is important to successful behaviour change. Recent research concerning coach perceptions of MT in an elite soccer academy highlighted that self-focus and sometimes selfish behaviours were indicative of the mentally toughest players (Cook *et al.* 2014). Overall, high levels of commitment and self-motivation, which have been found central to most models of MT, would seem to be important in terms of exercise maintenance.

We argue, as have others (Collins 2008), that sport and exercise settings often differ substantially from each other. For example, an emphasis on winning and beating opponents appears less applicable within many exercise contexts. Nevertheless, while an understanding of MT has emerged from and is most often explored within elite sport, key components such as confidence, commitment and resilience are likely to be equally important in adhering to exercise, coping with setbacks or circumnavigating barriers to exercise (Allen-Collinson *et al.* 2011). Previous contextual differences in MT identified across sports (Crust 2008), and between athletes and coaches (Gucciardi *et al.* 2008), underscore the importance of studying MT in specific contexts. While it might be expected that the core components of MT are influential in all contexts, it is possible that individual components have greater or lesser emphasis within exercise settings. For example, having the confidence and self-motivation to begin an exercise programme and the commitment to continue would seem to be crucial in successful behaviour change (Biddle and Mutrie 2008).

Gucciardi and Mallett (2010) previously emphasised the importance of a context-rich understanding of MT given the construct appears somewhat contextually bound. On this basis, it is important to establish how exercise leaders and participants view what might be termed *exercise mental toughness* (EMT). Furthermore, an understanding of how mentally tough exercisers think, feel and behave could eventually allow the development of more effective interventions to facilitate exercise maintenance. Understanding of the relationship between psychological variables and adherence could be facilitated as the multidimensional nature of MT incorporates key features of known predictors such as self-motivation and confidence, and other potentially important components (e.g. focus and psychological control) less frequently considered.

The main aim of the present research was to analytically chart (rather than explain theoretically) participants' perceptions and experiences of MT. This is particularly timely given that little attention has, thus, far been devoted to how MT might

transpose to exercise or physical activity contexts. Given that MT has been associated with success in sports and other challenging domains (see Clough and Strycharczyk 2012), it is possible that this construct could also be important in exercise maintenance and sustaining behaviour change. A secondary aim is, based on current results and empirical research, to consider implications for practitioners with regard to supporting participants to maintain long-term behaviour change.

Method

Participants

Seven exercise leaders (four men and three women) and seven regular exercisers (two men and five women) participated in this study. All exercise leaders had gym instructor qualifications (e.g. all REPS; Register of Exercise Professionals certified or equivalent, and had been in the role for between 3 and 14 years; $M=8.6$, $SD=4.4$). They also had a range of other leadership qualifications to teach classes that included exercise to music, step aerobics, body pump, zumba, aquafit, spinning, circuit-training and pilates. In addition, two of the leaders were British Association for Cardiac Rehabilitation Phase IV Instructors working in exercise referral/rehabilitation. All participants were white British and from one geographic county in the east midlands of England. Exercise leaders were aged between 26 and 45 years ($M=33.4$, $SD=6.9$) and had been regular and frequent exercisers for between 4 and 30 years ($M=19.3$, $SD=7.7$). The exercise leaders reported exercising for an average of 13 h over 5.5 days per week, with all but one leader (who did only weight-training) reporting mixed routines that included both aerobic and anaerobic sessions. The seven exercisers were aged between 21 and 48 years ($M=34.0$, $SD=12.6$), and had been regular and frequent exercisers for between 2 and 30 years ($M=16.0$, $SD=11.4$). These participants reported exercising for an average of 9 h over 5.5 days per week, and all but one (who undertook only cardiovascular training) reported a mixed routine of aerobic and anaerobic sessions. The project was given ethical approval by the relevant University Ethics Committee.

All participants (leaders and exercisers) were regular/frequent exercisers, which for the purpose of this research we defined as exercising on at least four days, and for a minimum of three hours per week. Importantly, to establish clear differences from sports-based studies, we ensured that the exercisers were not athletes who were using gym or fitness classes as part of their athletic training. Commensurate with our phenomenological methodology, two additional selection criteria were that participants had experience of the phenomenon being studied (i.e. EMT) and were willing and able to describe their experiences in depth (Polkinghorne 1989). Of the 18 people invited to take part, 14 agreed and provided written consent. Two potential participants declined the invitation to take part, and two leaders were excluded due to insufficient experience.

The phenomenological interview

The form of empirical phenomenology (Allen-Collinson 2011) we utilised seeks to generate rich in-depth accounts of individual *lived experiences*. While other qualitative and quantitative approaches focus upon why or how something happened, this form of phenomenology is primarily concerned with describing *what* participants

experienced (Nesti 2004). Since little is known about EMT, phenomenology is an appropriate method in enabling the collection of descriptive information that elucidates the *life-world* of mentally tough exercisers.

Nesti (2004) proposed the phenomenological interview to be a powerful technique for obtaining rich, descriptive accounts of participants' *lived experiences*. Characteristically unstructured, the phenomenological interview tends to be open and conversational, with the freedom to explore emerging concepts, rather than being constrained by a strict interview schedule (Potter and Hepburn 2005). This approach enables the participant, as co-researcher (Brinkmann and Kvale 2005), rather than the interviewer, to be regarded as the expert in the phenomenon in question. Nevertheless, it is acknowledged that interviews do not provide transparent windows to some inner private self (Smith and Sparkes 2005).

The phenomenological interviews were conducted by the first author and averaged 56 min. An interview guide was created and used flexibly to elicit and elucidate participant conceptualisations of EMT, and to promote rich descriptions of the behaviours, cognitions and emotional experiences of those deemed mentally tough exercisers. Exercise leaders were encouraged to describe what behaviours typified for them mentally tough exercisers within their classes, and also to provide insights about the thought patterns and emotional responses of these individuals based on their personal interactions. Exercisers were asked to describe their own lived experiences. The interviewer encouraged participants to make comparisons between more and less tough exercisers as a way of describing and defining features of EMT more fully. Probes were utilised such as 'Can you tell me a little more about that?' and 'Can you describe what that was like?' to facilitate deeper understanding of the participant's experiences and to provide further elaboration. Towards the end of each interview, the researcher encouraged further contributions by asking, 'Is there anything more you can add to further describe *EMT*?'

Procedure

Purposive sampling (Patton 2002) was used to gain initial participants, including two exercise leaders already known to the research team as appropriately experienced and qualified. Participants were briefed about the nature of the investigation and given assurances of confidentiality should they agree to participate. A process of 'snowball' sampling (Patton 2002) was then utilised to recruit other exercise leaders willing to be interviewed. Importantly, each exercise leader was then asked to recommend an individual from their class/gym who, in their view, epitomised EMT. Interviews were recorded using a digital data-recorder and transcribed verbatim. By analysing each transcript in turn following interviews, the researchers were able to identify when data saturation was emerging. Following the twelfth interview a notable decline in emergent new information was observed, and theoretical saturation (Cote *et al.* 1993) was agreed by the research team after the 14th interview.

A series of measures were undertaken to enhance the authenticity and trustworthiness of participant accounts and data analysis. One of the most important of these processes in phenomenological research involves *epochē/bracketing* (see Allen-Collinson 2011 for a discussion in relation to sports studies). Bracketing requires the researcher to 'attempt to reduce their biases by a suspension of belief in everything that is not actually experienced' (Nesti 2004, pp. 41–42), although the process can never be complete. In the present study, a bracketing interview was conducted between two research

team members in order to explore potential interviewer bias and to try to avoid prior assumptions regarding the phenomenon being transferred into the interview process. In addition, an expert phenomenological researcher team member, not familiar with MT research, was involved as part of the team approach to data analysis. The use of an interdisciplinary research team further promoted critical evaluation and allowed a form of investigator triangulation (Allen-Collinson 2009).

A comprehensive member-checking process (cf. Friesen and Orlick 2010) was also used, where participants were provided with a full interview transcript in addition to the initial interpretations of the research team. Participants were asked to assess the accuracy of the transcripts and discuss researchers' interpretations. Short meetings (approximately 20 min) were held between the first author and participants to challenge or confirm the findings (Friesen and Orlick 2010). Where face-to-face meetings were not possible, this process was completed via email. Member checking is considered good practice in ensuring that a credible, authentic and plausible interpretation is offered (Culver *et al.* 2003). Participants were given the chance to question interpretations and offer alternative explanations. This process resulted in minor changes and enhanced the team's confidence in the data interpretation.

Data analysis

Prior to data analysis, a consistent process was agreed by the research team, reflecting a flexible, inductive content approach in order to generate themes (Silverman 2001). Commensurate with phenomenological principles, the researchers were mindful to allow the concepts and themes to emerge from the data, and employed an iterative process of data analysis. The researchers independently analysed the interview transcripts to identify raw themes and increase trustworthiness. This involved data immersion through multiple readings of the transcripts and the process of 'indwelling' (Maykut and Morehouse 1994). The researchers separately produced initial discovery sheets of keywords, concepts and themes that emerged from the data, before provisionally grouping common concepts into categories. Initially, data for leaders and exercisers were coded and analysed separately; however, after a team discussion it was agreed that the most parsimonious account of the data could be achieved by combining the data due to the consistency of emerging themes. Comparisons were then made between these independent analyses as authors discussed and eventually agreed on a number of higher order themes and general dimensions. There was a high level of agreement between researchers concerning the general dimensions, and where minor disagreement existed relating to sub-themes the transcripts were re-examined and coding decisions discussed to 'reconcile' analytic divergences (Allen-Collinson 2013). Individual transcripts were analysed to examine the appropriateness of the classification of meaning segments into established theme categories (Podlog and Eklund 2007) to enhance the accuracy of the coding and inductive analysis. Consistent with much qualitative data, there were multiple ways in which data 'segments' could have been interpreted and coded. Nevertheless, some members of the research team had extensive experience (*ca.* 18 years) of clinical and non-clinical exercise/physical activity settings. We, thus, have some confidence that this familiarity with sub-cultural terminology and meaning helped our interpretive endeavours. With regard to judgement criteria, and commensurate with our 'open', phenomenological approach, we adhere to relativist, rather than criteriological approaches (Sparkes and Smith 2009) to evaluate our form of research inquiry.

In making explicit our paradigmatic grounding, and having sought detailed feedback from our ‘expert’ participants vis-à-vis our initial interpretations, we hope that readers too will have confidence that our findings are firmly grounded in contextual understandings of our participants’ *life-worlds*.

Results and discussion

Consistent with the main aims of this research, the following section provides an overview of participant perceptions on EMT, with verbatim quotes used to ‘give voice’ to participants. The initial results and discussion section makes comparisons between present findings and existing MT research from sport in order to highlight potential contextual differences between sport and exercise. This section also makes comparisons with existing exercise psychology literature related to relevant topics such as adherence and dependence. Finally, the general discussion considers the main findings and how these can be useful in further understanding, and potentially in planning for behaviour change.

The mentally tough exerciser

Participants described attributes, attitudes, behaviours, cognitions and emotional processes that represent the mentally tough exerciser (see Table 1). Each of the 10 general dimensions which emerged is discussed below. Each participant is identified by a number within parentheses, with participants 1–7 representing leaders and participants 8–14 the exercisers. Higher order themes existing within these general dimensions have been italicised within the text.

Motivation to achieve

This general dimension concerns motivational qualities and provides interesting comparisons with sports research. While sport coheres around competing, competition is not usually considered a key characteristic of exercise/exercise settings. Nevertheless, similar to findings from sport, mentally tough exercisers were described as having high levels of *competitiveness*, encompassing being competitive with self (comparisons with self-standards) but perhaps more surprisingly *competitiveness* with other exercisers and instructors. Exercise leaders reported that exercisers would attempt to turn an exercise class into a competition where achieving greater distance or enduring a task for longer than others was seen as the goal. This *competitiveness* was also reflective of behaviours in exercise classes and choice of activities. As one leader noted:

They almost want to do everything at 100 mile an hour in almost every exercise, as quick as they can, you know. They come to the sort of higher intensity classes that we do. But if you put them into more of a Pilates situation, for example, where the focus is on slow, controlled movement and it’s quality of the movement and not quantity, I think they find that difficult and to some extent, wouldn’t enjoy it. (3)

Mentally tough exercisers were reported to work at a consistent high intensity that singled them out from other exercisers, although this at times resulted in negative consequences (see over-commitment below). Mentally tough exercisers were able to maintain their own motivation without the need for encouragement from leaders.

Table 1. Participant descriptions of EMT.

Example raw themes	Lower order	Higher order	General dimension
They're competitive with themselves and with other people (1)	Competitive with self Competitive with other exercisers Competitive with instructors They make it a competition	Competitiveness	Motivation to achieve
When you exercise like I do [intensity] you just stick out like a sore thumb (14)	Always give their best Every session has to be hard Striving for personal bests	Consistent and intense strivings	
Very self-motivated, not needing somebody close to go, 'One more, come on!' Not needing that kind of external feedback (11)	Self-motivated Keeps motivated Doesn't need encouragement	Maintains own motivation	
It's having goals, definitely, that helps, that is the reason why I go every day (9)	Know what they want Know what they are aiming for Long-term goals (sense of purpose) Goals for each session	Clear goals	Goals and sense of purpose
I like to run with a goal in mind, as in a long-term goal (13)			
Most of the time [goals] have to be very flexible, mainly I guess because you feel different every day (11)	Flexible goal-setting Resetting goals (if too difficult or easy)	Flexible goals	
When they're actually taking part in the activity, they are focussed and wanting to work (3)	Focused on the task at hand Attentive Tunnel vision Tune-out/avoid distractions	Task-oriented focus	Focus
While I'm exercising I don't talk to people or anything (9)	Avoiding interactions with others (self-contained focus)	Self-focus	
Gym time is my time (12)	Body monitoring		
It's a small buzz [achievement] and I'm thinking about the next thing already (9)	Moving on (shifting focus) quickly after achievements or setbacks	Rapid refocus (after exercise)	
They need to be, of the nearly exhausted situation for them to feel good about themselves (6)	Need to push themselves Desire to be pushed further by leader Need to be sweating and aching	Only satisfied after hard physical workout	Reinforcement from hard work/sweating and aching

(Continued)

Table 1. (*Continued*).

Example raw themes	Lower order	Higher order	General dimension
If I'm doing something and it's really hurting I'm thinking this is really good (9)	Resistance to regeneration sessions (less satisfying) Not hurting is not working hard enough		
I love pushing the boundaries and seeing what my body can do and how far it can go (11)	Pushing to the limit/physical boundaries Pushing through barriers Doing more and working harder than others	Working to maximum	
Completely and utterly determined to keep physical activity within their lifestyle (4)	Regular attendance Arriving early	Prioritising exercise	Commitment
They'll make an hour, two hours out of their day to come in, do their thing (2)	Prepared to change lifestyle/ make sacrifices Nothing to interfere with goals Attend regardless of circumstances		
I normally need to know where I've gone wrong ... I'm very analytical (11)	Compare to previous sessions Mental review of the session	Reflection and analysis	
I've got a whole training diary. I even look back two years to see how I'm comparing (14)	Reflect on goal importance Monitors own performance Planning for progression		
I didn't come here for no reason ... I don't like the feeling of you know, wasting an opportunity (10)	No excuses Strict regime Get on with it Serious about exercise Avoids breaks	No nonsense attitude (it's work)	
You've got to be tenacious; you've got to stick at it (14)	Persistence Perseverance Stubborn determination	Tenacity	
Very hard on myself if I miss a day or something like that (9)	Hard on themselves after missed session Critical self-talk	Self-critical	Over-commitment
I've come back from injury too quickly and pushed myself too hard, too soon and I've then got re-injured (11)	Exercising when injured Tendency to over-train Over-train after missed session (compensate) Training through rest days	Over-training	
I'm just always looking for ways to try and improve (9)	Ask advice of instructors Growth minded	Seeking new knowledge to improve	Learning and growth orientation
I will ask for advice especially from someone I know (14)	Learning from other exercisers Reading and searching for information		

(Continued)

Table 1. (Continued).

Example raw themes	Lower order	Higher order	General dimension
So I'm thinking about actual change and it's in my mind that I'm allowing myself to be flexible (8)	Thinking of ways around problems Openness to change Flexible routes to goals	Adaptive and flexible thinking	Resiliency
You're never that injured that you can't exercise something (14)	Different exercises when injured Adopts new approaches	Adaptive and flexible behaviours	
I think they're very good at turning things [setbacks] into positives and very quickly (1)	Thinking about sense of achievement and positive feelings to come Taking the positives from negatives Setbacks inspire motivation It will get easier	Remaining positive in tough times	
High threshold of pain or could just block it out and work through it (5)	Dissociate from pain Pain tolerance/acceptance Downgrading pain to discomfort	Coping with pain	
When I have had a setback I almost try even harder because I don't want to have tried and failed (11)	Intensified efforts after failure Doesn't dwell on failures	Moving on after failure or setbacks	Control over emotions/stability
I don't really have many emotions (11)	Few emotions Small range of emotions	Narrow range of emotion	
They'd never really get that excited or they'd never really be that disappointed (1)	Stable emotions Few highs or low	Mild emotional experiences	
Short lived [emotions] because they're going onto the next thing (4)	Keep emotions in check Short-lived gratification/disappointment (refocus)	Emotions under control	Challenge appraisal
I quite often put myself in a challenging situation which I either sink or swim (11)	Choosing the harder option Making things more difficult Approaching challenging situations Excited by challenges/problem solving	Challenge seeking	
They believe they're going to get there and again I think it's a self belief in what they want to do (6)	Belief in achieving goals Belief in own abilities Belief in ability to change	Self-belief	

Goals and sense of purpose

Having *clear goals* for the long term and for each particular exercise session was indicative of EMT. Exercise leaders endorsed the importance of clear goals and contrasted this with less tough exercisers with only 'a very vague sense of their goal' (1). Exercisers reported that long-term goals were often in their mind during particularly tough sessions, and provided a sense of purpose or meaning, motivating

attendance at classes or the gym, even when feeling less motivated to do so. A number of exercisers reported thinking through short-term goals (for that session) while travelling to the gym. A key feature of EMT was that long-term goals tended to be more fixed, while short-term goals were seen as flexible so long as these were aiding progress towards the overall aim; for example: 'Friday nights you might go, it's quite busy, like I'll go in there thinking I'd better go on the treadmill and they're all taken. So I'm like right, I'll do something else that I'll completely change. It's not rigid' (8). Having some flexibility in terms of short-term goals would appear important in adapting to changing life circumstances (e.g. setbacks and constraints) whilst maintaining a feeling of progression.

Focus

Consistent with sport literature (Gucciardi *et al.* 2008, Weinberg *et al.* 2011), participants reported focus as a key characteristic of EMT. Three higher order themes were reported, the first of which was a *task-oriented focus*. This represented deep engagement with the task and meant that potential distractions were set aside. This theme did not represent being less sociable, but reflected the desire to concentrate and not be disturbed or distracted during the 'work' of exercise.

Those that seem tougher, are more serious during the actual class or the actual session itself, more focused perhaps, on the task in hand. I think it's a case of when they're actually taking part in the activity, they are focused and wanting to work. (3)

The second theme of *self-focus* was subtly different and concerned deliberately avoiding interactions with others, engaging in more 'monadic' or insular behaviours that allowed the mentally tough exerciser to focus on self. This went beyond a task-oriented focus and included body monitoring during continuous exercise. One exerciser (10) reported that: 'I like tuning into my body and I'm thinking about more of my body than I am what's going on around'. Perhaps one of the most interesting and consistent findings concerned the third higher order theme of *rapid refocus*, where following goal achievements or setbacks mentally tough exercisers would quickly refocus onto the next goal or task. There was a sense of urgency or impatience to move on, not necessarily because mentally tough exercisers did not reflect (quite the opposite).

Reinforcement from hard work/sweating and aching

This general dimension relates to the satisfaction, pleasure and reward that mentally tough exercisers obtain from pushing their bodies to the point of exhaustion. Whilst reference to work ethic/work rate are commonplace in the MT literature (Gucciardi *et al.* 2008), the present findings were more indicative of embodied experiences and positive associations between symptoms of fatigue (including pain) and a sense of satisfaction that the exercise session has been worthwhile. This finding is commensurate with research on other physical cultures such as bodybuilding (Shilling and Bunsell 2009) and distance running (Allen-Collinson 2009), where the feeling of pushing the body 'to the max' is sought, even when painful. According to one participant, 'the pain thing is almost a satisfaction' (14). Whilst to some less tough exercisers the signals of working hard (e.g. sweaty body and aching muscles) would be repugnant, mentally tough exercisers felt reinforced by these sensations.

I like the feeling of you know, when you've worked hard and you're sweaty or you're aching already and you know the next day you're going to wake up and it's going to be a struggle to get out of bed! (8)

Commitment

This general dimension is indicative of how much a mentally tough exerciser invests in their goals. *Prioritising exercise* is a key theme which demonstrates commitment through such behaviours as regular attendance, arriving early and being prepared to make sacrifices to ensure time for exercise. 'The dedicated committed ones will come all the year round, come what may. There won't be those barriers in place; they won't allow anything to take over what they enjoy doing or what they see as a habit' (4). As one exerciser reflected, it involves: 'overcoming your normal excuses ... because there are 1001 excuses why you can't [exercise]. I think sometimes MT is just getting yourself there in the first place' (14). Another key theme was having a *no-nonsense attitude*, viewing exercise as a job that needs completing. One of the leaders referred to mentally tough exercisers as 'no-nonsense sort of people' (1). Mentally tough exercisers reported *reflection and analysis* in the aftermath of success and failure. This was purposeful and goal-oriented thinking that involved quantitatively monitoring one's own performances, analysing errors (reasons for failure) and planning for progression. The final higher order theme of *tenacity* represented being able to remain steadfast and obstinate when faced with challenges or adversity. While the term tenacity has not been regularly used to describe MT in sport, persistence and determination have been consistently reported. The tenaciousness of exercisers reflects the meaning and value of the outcomes that they are striving to achieve. One exerciser simply stated that 'It's like I won't give up; I won't let it [hard exercise] defeat me' (9). The importance of commitment in relation to behaviour change is reinforced by one leader who stated that 'the people that are mentally tough, if they don't see a change straightaway they'll still keep working towards it' (2).

Over-commitment

Much previous research concerning MT has focused exclusively on the positive psychological variables characterising successful sport performance. Present findings are supportive of Andersen (2011) who suggested potential drawbacks to being mentally tough in sport that can lead to maladaptive thinking and dangerous behaviour. The general dimension of over-commitment has certain parallels with exercise dependence/addiction. Participants reported that mentally tough exercisers did not always follow sensible exercise plans incorporating sufficient rest intervals/days and felt compelled to add extra, intense sessions following missed classes, low-intensity training or perceived unsatisfactory performances: 'If I've had a bad session then I'll do an extra one at the weekend or something to make up for it' (9). Most of the exercise leaders reported that mentally tough exercisers tended to over-train.

They will do over and above and sometimes I say well, maybe you need a rest day today and I'll be training someone else and I'll see them on the treadmill sort of thing, you know. So in actual fact, they're quite hard to rein in at times. (1)

Of particular concern is the tendency to train when injured, thus risking incurring a more serious injury. In the case of one exerciser, this involved not allowing sufficient time to recover from injury because of the desire to exercise again.

I've struggled with coping with the injury. I've come back from injury too quickly and pushed myself too hard, too soon and I've then got re-injured and that has been a massive, that's actually taken a lot longer to get over. (11)

Participants also reported that mentally tough exercisers tended to be very *self-critical*, primarily regarding self-talk and the need to meet very high self-expectations. In the case of one exerciser, this went further and involved physically hitting himself (not causing self-harm) when falling below his own expectations.

Learning and growth orientation

An appetite for learning and development was indicative of mentally tough exercisers. While the less tough were content with repeating previous sessions and exercising within a 'comfort zone', this was reported as anathema to mentally tough exercisers, to whom progression was the main aim. Mentally tough exercisers would seek guidance in order to improve.

They'd be wanting to know more at the end of the session. They're thinking always about how and what more they could do to get better in losing weight or increasing their fitness levels. They don't seem comfortable with keeping what they're doing for a while. They want to move on to the next step. (4)

When plateaux were reached, mentally tough exercisers were soon thinking about what changes could be made in order to progress. As one stated, 'Every problem can be solved, it's just about finding different routes in how to do it. I get an excitement from figuring out how to do that as well' (11). In contrast to mentally tough athletes pushing through physical barriers (Jones *et al.* 2002), these exercisers were more adept at circumnavigating problems by thought rather than muscle. As well as *adaptive and flexible thinking* participants also reported *adaptive behaviours* that were most evident when exercisers were injured. Most exercisers reported still attending the gym or exercise session when injured but switching their focus to working and improving non-injured areas: 'If I've hurt my left leg then my arms are fine and my stomach's fine so there's no reason not to exercise those bits' (14).

Resiliency

This general dimension concerned the responses of mentally tough exercisers when faced with difficulties or setbacks. Maintaining exercise behaviours over the long term is often challenging in light of the multiple demands (family, work, etc.) from other life domains but also because exercise can be unpleasant at times. Mentally tough exercisers were good at *remaining positive in tough times*, often via thinking about how good they would feel about themselves if they completed a tough exercise session. Setbacks or failures were viewed as a natural part of the learning process which facilitated motivation and enhanced future efforts. If a mentally tough exerciser experienced a setback, 'they'd be: like, right let's do it again, let's do this test next week. Whereas somebody else would be like well, let's hold off on that for a while' (1). Various forms of coping with the pain associated with repetitive and high-intensity exercise were reported, but one of the most interesting concerned a re-evaluation or downgrading of sensations over time. 'I suppose it's in my mind I'm thinking that before I felt it was pain, but now I'm thinking it's more, it's feeling

tough, it's more like, like I say, discomfort, so I give it a different name' (13). Another more commonly reported approach was 'switching off' or ignoring the pain. In sum, mentally tough exercisers did not dwell on failures and actually were more likely to intensify efforts following setbacks.

Control over emotions/stability

The emotional oscillations of mentally tough exercisers were generally reported to be mild. Although there was evidence to support effortful control or managing emotions, there were also indications that mentally tough exercisers were emotionally stable, with one participant reporting 'I don't get like you say, highs or lows' (8). Nevertheless, emotional control was more consistently reported.

I think if you're mentally tough and you're that driven you maybe don't allow yourself to have a broad range of feelings because you're trying to be tough and like you're trying just to do everything as well as you can, like you ignore feelings, that you ignore maybe your body or your mind telling you that you're tired or can't be bothered or, I don't know, feel sad or fed up but you actually ignore that more, whereas people who aren't as mentally tough will probably just accept their emotions maybe and give up or not do - or not try as hard. (9)

Similarly, Crust (2009) found mentally tough athletes were not 'less emotional', but rather were better at controlling their emotions, and this has been a consistently reported component of MT in sportspeople (Clough *et al.* 2002, Gucciardi *et al.* 2008). While some leaders indicated that on rare occasions emotions such as disappointment, frustration or joy were evident, these were generally short-lived as the exerciser moved on to focus on their next goal.

Challenge appraisal

One of the defining features of the mentally tough exerciser was found to be appraisal of challenge rather than threat. There was evidence of *challenge-seeking* behaviour which, consistent with the model of Jones *et al.* (2009), was underpinned by *self-belief*. While confidence and self-belief have been posited as the 'cornerstones' of MT in sport, the present research is more indicative of belief in achieving goals and in the ability to change as facilitating challenge appraisals. Excitement rather than trepidation about challenges was commonly reported.

When I'm faced with a challenge I'm quite often very excited. That's the first thing that normally comes into my mind, is that, 'How am I going to achieve this?' This is quite exciting for me. It's quite often something new; I have to learn something. (11)

Similarly, another exerciser emphasised the attraction to seeking harder options and viewing this as motivating.

And you know when they give you an option, like an easy option or a hard option, I'm always going for the hard option. But you can see with the people that pick the easier option first before even trying maybe the harder option, whereas I'll always start with the harder option. (9)

These were the 10 general dimensions that emerged from data analysis.

General discussion

The main purpose of the present research was to begin to describe and understand EMT. This has enabled comparisons to be made between exercise and sport domains. In addition, present findings offer some applied implications with regard to the important area of exercise maintenance, given the exercise habits (e.g. frequent attendance) of mentally tough exercisers.

Exercise leaders reported that mentally tough exercisers could be identified within group or individual sessions, by their work rate, competitiveness and preference for intense, demanding exercise. In addition, displaying high commitment (e.g. attending frequently), responding positively to setbacks, possessing a thirst for knowledge, having a sense of purpose, limited emotional expression and embracing rather than avoiding challenges were also indicative of EMT. Given the vast array of positive psychological variables used to represent MT within sport (see Andersen 2011), it is not surprising that descriptions of EMT cohere around similar themes to those previously reported. There are, nonetheless, several important comparisons that can be made which highlight contextual differences and similarities. For example, mentally tough athletes have been found to be highly competitive and according to our findings this characteristic also appears within exercise settings. Mentally tough exercisers were adept at creating competition and competing with others (including leaders) to achieve more work or endure high intensity exercise for longer.

One of the most interesting findings was that exercisers not only maintained a task-oriented focus during exercise, but also retreated into an inner-world and focused upon themselves, their body and corporeal sensations, and deliberately avoided interactions with others. Lewis and Sutton (2011) previously explained that self-focus, even selfishness, were important in physical activity behaviour change. Prioritising personal time to exercise over other commitments (e.g. family, social relations) may be important in establishing and maintaining exercise as a habit, as time constraints are consistently reported as barriers to exercise. While less frequently reported within sport there is some evidence of 'selfish' behaviours linked to MT and progression in professional soccer (Cook *et al.* 2014).

Caddick and Ryall (2012) have been critical of the social construction of MT, and the presentation of a romantic sporting ideal or 'superhuman' quality reminiscent of the 'Hollywood hero'. Similarly, Andersen (2011) connects the concept of toughness to a 'macho' culture of sport, critiquing research that constructs 'fantasies' of the ideal mentally tough athlete. This particular version of masculinity could be argued to have been reinforced within exercise settings, as our data are replete with references to 'pain as satisfaction', having 'no excuses' or 'pushing to the maximum'. However, these were not idealised states but actual perceptions of 'real' exercisers, and interestingly there were more women than men who were identified by leaders (male and female) as epitomising MT. Some might argue that these 'tough' female exercisers are 'locked in' or complicit in the (re)production of dominant forms of masculinity, but such a fixed notion of what constitutes masculinity fails to account for the social construction and relationality of masculinity and femininity, and how these are produced by social actors in specific contexts. Indeed other research has found women to be constructed as equally or *more* 'tough' and pain-enduring than men (e.g. Bendelow 1993, Pike 2005).

Andersen (2011) argued that MT may be accompanied by a ‘dark side’ that is less frequently explored, where the macho attitudes associated with the construct may lead to damage, distress and even intolerance. There is some evidence from the present research that MT may not be exclusively positive, with exercisers reporting being highly self-critical, adopting a ‘no pain, no gain’ philosophy and demonstrating a tendency to over-train. In some cases, but not all, there was a willingness to train through pain and injury. These appear to be maladaptive and potentially unhealthy behaviours that have some commonalities with exercise dependence (McNamara and McCabe 2012); future research might profitably examine these relationships more thoroughly.

A consistently reported finding was that mentally tough exercisers would rapidly refocus on the next goal or task following both setbacks and success. It is possible that this is tied to emotion management as participants didn’t dwell on success or failure but attended to the next objective. Carver and Connor-Smith (2010) clarified how the appraisal of events leads to emotions. The analytic thinking and problem-solving reported by some participants during later reflection appears to fit with avoiding appraisal in the immediate aftermath of self-perceived success or failure. Whether this was a deliberate strategy – which might be consistent with the theorising of Hardy *et al.* (2013) and the notion of pre-planned coping – or merely a common characteristic of the sample, remained unclear. There are, however, some parallels between this and the work of Dewhurst *et al.* (2012) who found significant relationships between cognitive inhibition and MT using the directed forgetting paradigm, where participants with higher MT were able to set aside previous information to avoid cognitive interference with upcoming tasks. Nevertheless, further qualitative approaches in other contexts, and quantitative approaches using cognitive paradigms, are needed to understand the significance of this finding.

As with any study, there are limitations. First, the data were collected within only one geographic region and single rather than repeat interviews were undertaken with participants. Second, the present study included participants who were already habitual exercisers, and therefore future longitudinal research could examine the ‘adoption’ as opposed to ‘maintenance’ stage of behaviour change. Third, it is acknowledged that the formal exercise settings used within this study fall within the broader physical activity domain, and research that considers a wider range of physical activities is needed. Fourth, while the focus on MT in frequent and regular exercisers adds to existing knowledge, it is acknowledged that different exercise classes, different leaders and different participants are likely to produce differently nuanced results. Nevertheless, when present findings are compared with evidence from sport, the construct of MT is still clearly recognisable within exercise settings.

Conclusion

The knowledge gained in this study may be of use to applied practitioners. Whilst we identify some areas for consideration, we also urge caution as the results are based on a small and purposefully selected sample that may not be representative of the whole population of mentally tough exercisers. First, participants in the present study valued high-intensity exercise and competition, and leaders working with similar exercisers need to consider creating challenging, varied sessions that avoid repetition or exercise within ‘comfort zones’. This could involve careful planning to balance need for progress with consolidation. Second, the importance of quality of

movement or technique may need to be reinforced, as exercise leaders reported this was often deemed of secondary importance to work output. Third, the importance of rest days and sufficient intervals between exercises need to be emphasised to reduce the risk of over-training. Finally, leaders might closely monitor exercisers who are injured, because of the possibility of returning to exercise before sufficient recovery. Given the potential for over-commitment, leaders could work with exercisers to design sessions, where appropriate, that safely target non-injured limbs and muscle groups to satisfy the desire to keep training.

Gaining knowledge of how mentally tough exercisers think, feel and behave is an important development that may eventually benefit less tough exercisers. For example, the identified importance of *focus* and an awareness of *self* as components of EMT indicate that approaches such as 'Mindfulness' (see Bishop *et al.* 2004) could be useful in maintaining exercise behaviours. Moreover, other psychological interventions such as motivational interviewing (MI; Miller and Rollnick 2013) appear effective in eliciting motives and barriers to change as well as exploring client values and attitudes across a range of settings. The current results suggest that encouraging *commitment* to change is fundamental in EMT. Developing effective maintenance strategies were reflected by participant descriptions of needing a *rapid refocus, reinforcement, tenacity* and *remaining positive in tough times*. Integrating approaches such as MI with cognitive behavioural (CB) interventions can be helpful in managing the risk of relapse and has found support in many other health behaviour contexts (Naar-King *et al.* 2013).

Consistent with CB approaches, descriptions of EMT illustrated the need for *guidance* rather than always *going it alone*, where aspects such as gaining support, identifying supportive environmental conditions and self-monitoring underpin behaviour change techniques. Developing strategies in an explicit and transparent manner is important when attempting to control temptations to return to a more inactive lifestyle, and this need to *manage emotions* and *gain stability* was again highlighted by exercisers and exercise leaders alike as important aspects of EMT. Poor levels of compliance and adherence to recommended interventions undermine the efficacy of many community-based lifestyle modification programmes (Biddle and Mutrie 2008). Statements from both exercisers and exercise leaders suggest the need to understand more fully the attitudes and values of individuals before developing a focused plan that is both challenging yet attainable.

Note

1. Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

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