



Development and initial validation of the Endurance Sport Self-Efficacy Scale (ESSES)

Paul A. Anstiss^{a,*}, Carla Meijen^b, Daniel J. Madigan^c, Samuele M. Marcora^a

^a School of Sport and Exercise Sciences, University of Kent, United Kingdom

^b School of Sport, Health, and Applied Science, St Mary's University, United Kingdom

^c School of Sport, York St John University, United Kingdom

ARTICLE INFO

Keywords:

Endurance
Performance
Belief
Questionnaire
Efficacy

ABSTRACT

Self-efficacy is likely to be an important psychological construct for endurance sport performance. Research into the role of self-efficacy, however, is limited as there is currently no validated measure of endurance sport self-efficacy. Consequently, the purpose of the present research was to develop and validate the Endurance Sport Self-Efficacy Scale (ESSES). In Study 1, an initial item pool was developed following a review of the literature. These items were then examined for content validity by an expert panel. In Study 2, the resultant 18 items were subjected to exploratory factor analyses. These analyses provided support for a unidimensional scale comprised of 11 items. Study 2 also provided evidence for the ESSES's convergent validity. In Study 3, using confirmatory factor analyses, further support was found for the 11-item unidimensional structure. Study 3 also provided evidence for the ESSES's convergent and concurrent validity. The present findings provide initial evidence that the ESSES is a valid and reliable measure of self-efficacy beliefs in endurance sports.

1. Introduction

Endurance sports are characterised by the performance of continuous, dynamic, and whole-body exercise tasks (Burnley & Jones, 2007). These tasks are commonly seen in activities such as running, cycling, and swimming, or in a combination of these (e.g., triathlon). The duration of these events can range from minutes to days. During these periods, endurance athletes must maintain high levels of effort and perseverance in order to counteract both physical and cognitive fatigue (Marcora, Bosio, & de Morree, 2009; Marcora, Staiano, & Manning, 2009). Alongside persevering with fatigue, endurance athletes must also engage in effective self-regulation strategies relating to pacing (Renfree, Martin, Micklewright, & St Clair Gibson, 2014), attention (Brick, MacIntyre, & Campbell, 2014), and coping (Kress & Statler, 2007; Zepp, 2016). A recent review identified several psychological determinants of endurance performance (McCormick, Meijen, & Marcora, 2015). One key psychological factor highlighted by McCormick et al.'s review, and which has been consistently linked with self-regulation, attention, and coping, is self-efficacy (Bandura, 1997).

1.1. Self-efficacy

Self-efficacy refers to the “belief in one's capabilities to organize and

execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3) and represents the behaviours and skills an individual believes they can successfully perform. Importantly, self-efficacy beliefs are not just in reference to the skills or abilities an individual possesses but rather what they believe they can do with them (Bandura, 1997). For example, an athlete may possess a high level of physical fitness, but if they do not believe they are capable of utilising this fitness in a competitive environment it will count for little towards their self-efficacy.

Self-efficacy beliefs are formed through a series of cognitive processes involving the selection, interpretation, and integration of several sources of information (Bandura, 1997). These sources include past performance experiences, vicarious influences, social and verbal persuasions, and perceptions of physiological and emotional states (see Samson & Solmon, 2011 for a review). In addition to an understanding of the task demands and the perceived ease and difficulty of the task, these sources will help provide an individual with an understanding of their own capability (Gist & Mitchell, 1992). Once these beliefs are formed they can have a powerful effect on an individual's cognitions and behaviour. For example, individuals high in self-efficacy typically set more challenging goals (Locke & Latham, 2002), put more effort into tasks (Hutchinson, Sherman, Martinovic, & Tenenbaum, 2008), and are more willing to persevere when faced with difficulties (Feltz,

* Corresponding author. School of Sport and Exercise Sciences, University of Kent, Medway Campus, Chatham, ME4 4AG, Kent, UK.
E-mail address: pa298@kent.ac.uk (P.A. Anstiss).

Short, & Sullivan, 2008).

1.2. Self-efficacy and endurance performance

Self-efficacy has been associated with better performance in several endurance sports. Burke and Jin (1996) reported that self-efficacy was a stronger positive predictor of Ironman triathlon performance than performance history, maximal oxygen consumption, and sport confidence. Similarly, Okumabua (1985) reported that pre-event self-efficacy explained 40% of the variance in marathon performance. Other studies have also established that self-efficacy is associated with better performance in track running (Laguardia & Labbé, 1993), cross country running (Martin & Gill, 1995) and swimming (Miller, 1993).

There exist several possible psychological and physiological mechanisms through which self-efficacy may enable better endurance performance. On a psychological level, both perception of pain (Astokorki & Mauger, 2016; Mauger, 2014) and perception of effort (Marcora, Bosio, & de Morree, 2008) have been suggested to be key determinants of endurance performance. Attesting to the possible role of self-efficacy in influencing these perceptions, self-efficacy has been associated with improvements in pain tolerance (Johnson, Stewart, Humphries, & Chamove, 2012) and also with reductions in perceptions of effort (McAuley & Blissmer, 2000). On a physiological level, running economy and maximal oxygen consumption (VO₂max) are two key physiological determinants of endurance performance (Joyner & Coyle, 2008). Again, self-efficacy has been associated with improvements in running economy (Stoate, Wulf, & Lewthwaite, 2012) and maximal oxygen consumption (Montes, Wulf, & Navalta, 2017).

Self-efficacy appears to be an important factor for endurance performance. The assessment of this importance, however, is contingent on being able to adequately measure relevant self-efficacy beliefs. Here several limitations are evident in the existing literature. First, previous studies have not followed recommendations for self-efficacy scale development (Bandura, 1997, 2006). For example, Stoate, Wulf, and Lewthwaite (2012) measured self-efficacy using a scale which conceptualised self-efficacy in the form of “will” rather than “can”. This is problematic because “will” generally refers to an individual's intention as opposed to an individual's perceived capability (Bandura, 2006).

Second, for those studies which have employed multi-item scales, self-efficacy was typically assessed in terms of ascending or descending performance times (Burke & Jin, 1996; Laguardia & Labbé, 1993) or distances (Bueno, Weinberg, Fernández-Castro, & Capdevila, 2008). Such scales are known as hierarchical self-efficacy scales (Feltz et al., 2008). Whereas this approach is common in sport and exercise settings, Feltz et al. (2008) cautioned against an overreliance on such scales as they result in an oversimplification of complex performances. Hierarchical scales are popular as they typically report high levels of scale score reliability (Feltz et al., 2008) and they do not require a deep understanding of the demands in that domain and, therefore, they can easily be adapted to various study designs and scenarios.

Whereas such scales have helped provide evidence for the link between self-efficacy and performance, they often possess limited practical benefit for practitioners, coaches, and athletes. For instance, two athletes could both perceive themselves as not capable of achieving a certain time for a race/to cover a certain distance in a given time. For one athlete, this may be due to the belief that they are unable to pace themselves appropriately, whereas for the other athlete this may be due to the belief they are not capable of tolerating exercise-induced pain. A hierarchical scale would not allow us to differentiate between these two reasons and instead would merely suggest that both athletes perceive themselves incapable of achieving that time or covering that distance. This approach thus limits the possibility of accurate interventions (Bandura, 1997; Feltz et al., 2008). The measurement of these behaviours and skills would be best served through the use of a non-hierarchical scale.

Non-hierarchical scales look to assess an individual's self-efficacy

across the full range of subskills that underpin performance in that domain (Feltz et al., 2008). Given the similarities in the demands and determinants of performance across endurance sports (Brick, MacIntyre, & Campbell, 2016; McCormick, Meijen, & Marcora, 2016; Renfree et al., 2014), it is likely that there are common subskills which underpin performance across all endurance sports. Therefore, the development of an endurance sport-specific scale would be beneficial because it would provide practical implications for the design and delivery of self-efficacy interventions, as well as allowing further exploration of both the theoretical determinants (e.g., coaching, task difficulty, perceived fatigue) and outcomes (e.g., perception of effort, perseverance, performance) of self-efficacy beliefs.

1.3. The present research

There is currently no validated non-hierarchical scale of self-efficacy for endurance sports. Given the potential importance of self-efficacy in endurance performance, the development of such a scale would be beneficial for both practical and theoretical reasons. Consequently, the aim of the present research was to develop the Endurance Sport Self-Efficacy Scale (ESSES) that measures self-efficacy specific to the endurance sport domain. We also sought to provide preliminary evidence for the validity and reliability of the ESSES. In so doing, a series of three studies are presented.

2. Study 1

The purpose of Study 1 was for initial item and scale development. First, in line with Bandura (2006) recommendations for self-efficacy scale development, factors relating to endurance performance were identified through literature searches and the research teams' own conceptual knowledge, and items relating to these factors were developed. Next, the items and scale were subjected to an expert panel for review in order to ensure high levels of content validity.

3. Method

3.1. Development of the initial item pool

In the construction of self-efficacy scales, Bandura (2006) urged that scales should be specific to the chosen domain, and researchers should attempt to identify the key factors relating to performance in these domains. Once these key factors have been identified, items relating to these factors should be created allowing the measurement of specific self-efficacy beliefs. This approach can help promote a scale which demonstrates improved sensitivity to individual differences in self-efficacy beliefs and promotes a greater level of validity in that domain (Bandura, 2006).

Performance in endurance sport is a complex mixture of physical, technical, and psychological factors (Taylor, 1995). Relating to the physical factors, endurance athletes aim to ensure they are physically prepared for their endurance sport (Jones & Carter, 2000) and they aim to manage exercise-induced sensations such as exercise pain, injury pain, discomfort and exertion (Christensen, Brewer, & Hutchinson, 2015; Samson, Simpson, Kamphoff, & Langlier, 2017; Schumacher, Becker, & Wiersma, 2016). In regards to the technical aspect, endurance athletes must ensure they pace themselves appropriately to help ensure high levels of performance (Renfree et al., 2014), ensure appropriate technique and form (Novacheck, 1998), and they must also be able to maintain high levels of concentration to aid this and other related decision-making processes (Brick, MacIntyre, & Campbell, 2014). Psychologically, endurance athletes must cope with a variety of stressors (Fletcher, Hanton, & Mellalieu, 2006; Martin, 2002; McCormick et al., 2016), and ensure they manage any unwanted thoughts (Holt, Lee, Kim, & Klein, 2014) and emotions (Lane & Wilson, 2011) which may impede their performance.

Download English Version:

<https://daneshyari.com/en/article/7252862>

Download Persian Version:

<https://daneshyari.com/article/7252862>

[Daneshyari.com](https://daneshyari.com)