

**Bodily crises in skilled performance: Considering the need for artistic habits**

**Author names and affiliations**

John Toner<sup>a</sup>, Luke Jones<sup>a</sup>, Aidan Moran<sup>b</sup>,

<sup>a</sup> School of Sport, Health and Exercise Sciences, University of Hull, Cottingham Road, Hull, HU6 7RX.

E-mail: [john.toner@hull.ac.uk](mailto:john.toner@hull.ac.uk) Ph No. +44 (0)1482 463399.

<sup>b</sup>School of Psychology, University College Dublin, Belfield, Dublin 4.

E-mail: [aidan.moran@ucd.ie](mailto:aidan.moran@ucd.ie) Ph No. 00353 17168189.

**Corresponding author:** Correspondence concerning this article should be addressed to John Toner, School of Sport, Health and Exercise Sciences, University of Hull, Hull, HU6 7RX, England. E-mail: john.toner@hull.ac.uk, Ph No. 0044 01482 46 3399.

**Date of re-submission: 01/10/2015**

**Abstract**

Empirical evidence demonstrates that performing artists are confronted by a variety of ‘bodily crises’ (e.g., injury, attrition of habits induced by aging) over the course of their careers (Wainwright, Williams, & Turner, 2005). Such crises may present a serious threat to

the embodied subject. Unfortunately, many prominent theories of skill acquisition (e.g., Fitts & Posner, 1967) appear to evacuate the body from performance by suggesting that any form of conscious processing (i.e., paying conscious attention to one's action during motor skill execution) will disrupt habitual behaviour. As a result, few researchers have considered how performers might tackle bodily anomalies. In the current paper, we seek to address this issue by discussing a variety of the '*crises*' that confront the performing body. We start by discussing a number of disciplinary practices that may contribute to these crises. Next, we argue that habitual movements must be open to 'acts of creativity' in order to maintain a productive relationship between the performing body and the environment. Then we consider what this 'creative action' might involve and discuss a number of approaches (e.g., mindfulness, somaesthetic awareness) that could maintain and improve one's movement proficiency. Here, our argument draws on Dewey's (1922) pragmatist philosophy and his belief that 'intelligent habit' was required to help people to improve their movement functioning. Finally, we consider the implications of our argument for current conceptualizations of 'habitual' movement and recommend that researchers explore the adaptive and flexible capacity of the performing body.

Keywords: Bodily crises, health, expertise, habit, automaticity

### **Bodily crises in skilled performance: Considering the need for artistic habits**

In seeking to explain the effortlessness that appears to accompany the execution of well-learned movement, James (1950) argued that "habit diminishes the conscious attention with

which our acts are performed” (p. 114). James (1911) believed that such smooth, fluent and efficient movements can only occur when we “trust spontaneity and fling away all further care” (p. 72). Many researchers in the fields of cognitive neuroscience, sport psychology and motor skill acquisition seem to support James’ aphorism by proclaiming that skilled movement in a variety of motor skill domains is ‘non-mindful’ or ‘intuitive’ in nature. These words are generally used to capture the automaticity (i.e., performance requires progressively fewer attentional resources as one acquires greater skill) that is believed to accompany the effortless and fluent execution of *habitual* movement. Indeed, James (1890) believed that habit involves “sequences of behaviours, usually simple...that have become virtually automatic” (p. 107). We are told that skilled performers do not need to think about their actions; instead, ‘what must be done, simply is done’ (Dreyfus & Dreyfus, 2004, p. 253). Such accounts assume that the repetitive practice of experts results in the formation of habitual routines which are run by unthinking automaticity (Bailey & Pickard, 2010; Bargh & Chartrand, 1999).

Common to many of the preceding theoretical perspectives is the notion that the body recedes from direct experience when we perform habitual movements. For example, Leder (1990) argues that the body is an ‘absent presence’ during the performance of everyday routines and that it is not until one is injured or ill that one becomes aware of the mechanical details governing the execution of these actions. Similarly, in sport we are told that problems are likely to arise ‘when an athlete stops using the smooth and practiced techniques and begins to use excessive thinking and “reinvests” effort back to motor functions and one’s physical problems’ (Weiss & Reber, 2012, p. 176). We agree that ‘phenomenological effacement’ (Leder, 1990, p. 26) is likely to accompany the performance of simple tasks (for example, I buttered a piece of toast this morning and have little recollection of the process) but argue that skilled performers (in sport, dance and music) are perfectly used to attending to the body and are required to do so owing to the myriad challenges that confront them. For example, an extensive volume of evidence (e.g., Bissell, 2013; Collins, Morriss, & Trower, 1999; Sparkes & Smith, 1999; Wainwright et al. 2005) points to the ‘sudden volatile transformations’ (Bissell, 2013, p. 122) that occur to the performing body (e.g., injury, accidents, fatigue, loss of form, attrition of habits induced by aging, movement disorders and so on) and render it vulnerable to habitual disruptions or crises. As a consequence, elite performers in all motor skill domains have little choice but to learn ‘new and better techniques’ (Breivik, 2007, p. 127) which will require them to consciously refine habitual

movement patterns. Unfortunately, little research has been conducted to date on how performing artists respond to ‘bodily crises’.

Therefore, in the current paper, we draw on empirical evidence and phenomenological description from skilled athletes, musicians and dancers to consider some of the strategies that could help performing artists to address their ‘bodily crises’ (e.g., injury). According to Shilling (2008) crisis occurs when ‘there develops a significant mismatch or conflict between the social and physical surroundings in which individuals live and their biological and bodily potentialities’ (p. 16). Although we focus on bodily crises we acknowledge the existence of other types of crises (e.g., loss of confidence) that may influence one’s movement and performance proficiency. *First*, we consider how various disciplinary practices that are a common feature of performance environments may contribute to the emergence of these crises. *Second*, we discuss a variety of the ‘crises’ that confront the performing body (paying particular attention to the crises that threaten to disrupt one’s habitual or routinised movement patterns). Importantly, although we argue that these crises may present a formidable challenge to the performer, we recognise that they might also represent opportunities for development, that is, the possibility to explore and extend one’s capabilities. *Third*, we argue that habitual movements must be open to ‘acts of creativity’ in order to maintain a productive relationship between the embodied subject and the environment (Joas, 1996). We consider what this ‘creative action’ might involve and discuss a number of approaches (e.g., mindfulness, somaesthetic awareness) one may adopt in seeking to care for the body. In doing so, we draw on Dewey’s (1922) pragmatist philosophy and, in particular, his belief that ‘intelligent habit’ was required to help people improve their movement proficiency. We conclude by considering what this perspective might mean for current conceptualizations of ‘habitual’ movement and suggest that researchers should continue to explore the adaptive and flexible capacity of the performing body.

Although the preceding section contains a number of specific aims, the present paper has one major overriding goal. Specifically, we wish to acknowledge the extraordinary demands placed on the body by elite training regimes (in a variety of skill domains) and explain how traditional conceptualizations of skilled performance (which largely evacuate the body from performance) have neglected to consider how the performer might deal with bodily crises. Although we acknowledge the value of recent research which has put forward models that offer a prescriptive account of how ‘attenuated’ technique might be altered (see Carson & Collins, 2011), we call for a complementary line of enquiry that recognises and

discusses the complexities that face performers who are expected to maintain high levels of technical proficiency. As several scholars have identified, this disciplinary expectation is a common cause of many disruptions to the athletic competing body (Johns & Johns, 2000; Jones, Glintmeyer, & McKenzie, 2005; Sparkes, 1998). We hope that such a line of research will encourage these performers to develop a ‘practical reflexive monitoring of their habitual embodied “going”’ (corporeal sensations and linked emotions; Hockey, 2013, p.140). In doing so, performers may learn to embrace the adaptive capacity of the body (i.e., its artistic skill which is inherently flexible and open to change) – and consider various means of increasing the body’s resilience and potential. Crucially, this process requires performers to listen to their body instead of allowing it to recede into background awareness.

### **Disciplinary constraints upon the performing body**

One area where the performing body plays a central role is that of elite-level sport. Performance environments can be characterised as a social arrangement that disciplines individual and collective bodies into ‘docility’ (Markula & Pringle, 2006). In sport, athletic bodies are, through various techniques of discipline, fabricated into productive and efficient machines, capable of the ‘function’ of automated expert performance (Heikkala, 1993). The arrangement of the ‘modern discipline’ (Shogan, 1999) of elite sport dictates that through the precise control, timetabling, measurement and surveillance of bodies, deviation from an activity’s historically celebrated bodily movements is disallowed (Anonymous, 2013). In short, elite sport’s disciplinary arrangement is set-up to produce reliable bodies capable of consistent, mechanistic performance outcomes (Mills & Denison, 2013). However, it is important to acknowledge that a strict observance of these latter outcomes may aid optimal performance in certain activities (e.g., the pole-vault where consistent and mechanistic movement patterns may be required) but hinder performance in others (e.g., figure skating where performance is judged partly on aesthetic or expressive criteria).

Nevertheless, individual athletes who become subjects of the disciplinary arrangement of their performance environment may find the precise movements of their bodies heavily monitored. Elite sport sustains a ‘correct means of training’ (Foucault, 1991) through hierarchical observation, normalising judgement and repeated examination. This training of the body is ensured through the adoption of various disciplinary practices including training logs and fitness testing (Anonymous, 2013), video based performance analysis (Anonymous, in press), GPS data (Williams & Manley, 2014), and consistent observation by an expert

(Johns & Johns, 2000; Lang, 2010). These constant techniques utilise “surveillance” (i.e., indirect or direct observation of individuals) to ensure that the bodily movements of performers are observed, controlled and regulated efficiently (Barker-Ruchti & Tinning, 2010). For example, in their analysis of elite swimming environments, McMahon, Penney and Dinan-Thompson (2012) and Lang (2010), identified that the pressure of being under constant surveillance leads athletic bodies to submit to intensive training protocols, and to self-regulate their own bodily movements and behaviours both during and after their careers. This level of surveillance is also true in other performance arts, including ballet (Green, 1999), where a strong sense of surveillance is regarded as natural to the culture (Benn & Walters, 2001). To illustrate, a ballet dancer in Wainwright et al.’s study (2005) revealed that ‘Every single day that you come to work, people are watching you. You’re looking at yourself; your colleagues are looking at you, you’re looking at colleagues. You’re always being watched by somebody’. A dancer in Dryburgh and Fortin’s (2010) study also admitted that ‘I was told I had to lose weight all the time, so I felt as though I was under surveillance, that’s for sure’ (p. 98). Interestingly, in these environments “positive surveillance” (e.g., motivation) might be beneficial for the dancer’s psychological health while “negative surveillance” (e.g., impossible attainment of an ideal body) has a negative impact on their health.

The demands and expectations of professional performance environments (for example a ballet company or elite sport programme) may place coaches/directors under significant pressure to produce capable and reliable performers with mandated bodily appearances and movements (Oliver, 2005). The accepted default process to ensure this occurs is to continue applying training programmes that are designed in accordance with a dominant discourse that canonises an exclusively bio-medical distortion of the moving human body (Markula, 2001). Of course, it is important to recognise that a number of monitoring processes (e.g., qualitative self-reports derived from training diaries) may be used by athletes and their support personnel to “prime” them whenever they move into the danger zone of injury risk (Willmott & Collins, 2015). On the other hand, we must also acknowledge empirical evidence which suggests that submitting to normalised training protocols may increase the risk of short and long-term injury, identity ‘foreclosure’ (Murphy, Petitpas, & Brewer, 1996), over-conformity to their performance role (Jones et al, 2005; Dryburgh & Fortin, 2010) and psychological harm at moments of bodily crises (Brown & Potrac, 2009; Coakley, 1992).

**Bodily crises**

The preceding evidence indicates that bodily crises may emerge if the performer adheres to the normalised behaviours/movements prescribed by an intentionally cordoned performance space. In this section we consider a number of these crises and how they might influence one's 'embodied going'. Shilling (2008) argues that the moving body is caught between 'unreflective habitual action' and the experience of 'disruption and crises as circumstances change and habits become ineffective' (p. 19). Such crises are inevitable because the relationship between the external and internal environment of action is constantly in a state of flux. For example, injury and aging will change the demands made of people. Schilling (2008) argues that these new body frailties and disabilities may hamper our capacity to act in routinised ways. As a result, the performer may experience a 'blockage of habits' that can, through an unexpected interruption/malfunction of their bodies learned docility, challenge their normalized identity and destroy their confidence in their bodily capacities. For example, the musician who acquires a focal dystonia (a neurological movement disorder which is characterised by involuntary, prolonged muscle contractions which causes afflicted parts of the body to twist into abnormal postures) finds that he/she is no longer capable of executing complex movements with the delicacy, finesse and unerring accuracy that characterized previous skill execution. Consider the case of Alex Klein, a celebrated oboist with the Chicago Symphony Orchestra who spoke about how dystonia 'ended everything I knew of myself. It was a complete loss of identity. Suddenly I was no longer Alex Klein who played for the Chicago Symphony. Everything that I thought existed didn't exist anymore' (Hundley, 2010).

Such accounts tell us a great deal about how these 'crises' can threaten the continuity and coherence of the embodied subject. Similarly, most elite dancers can expect several major injuries during their careers (see Wainwright et al. 2005) and these challenges may threaten not only the performer's livelihood, but also their embodied sense of self. In fact, ballet dancers often continue to perform and practice in spite of the painful and niggling injuries that they live with on an almost daily basis (Alexis & Dimitropoulou, 2011). The performers in this latter study appeared to accept pain as a 'necessary evil'. However, Alexis and Dimitropoulou' (2011) findings also indicated that these dancers were reluctant to reveal anything about their pain or injury to their choreographer as they believed it would represent a sign of weakness and would only prompt a search for their replacement. Additionally, the feeling that their careers are somewhat shortlived is likely to strengthen the dancers' belief

that they must continue to perform through this pain (Wainwright et al. 2005). Consequently, dancers who are forced to take time off in an attempt to recover from injury may experience considerable anguish during the recuperation process. Thus, one dancer in Wainwright et al.'s (2005) study described this experience by stating that 'Your state of mind, it's in a very delicate state, a very delicate state, because you're talking about months. And for a ballerina nine months means a lot. In the long term, if you look at life altogether you say nine months – that's nothing. But for a ballerina it is; every single minute counts. . . . It is unbearable' (p. 54).

Schilling (2008) argued that a failure to address these crises, accompanied by a continued reliance of the inefficient habitual way of being, may 'damage the individual who stubbornly rejects the need to change' (p. 17). Shilling also suggested that the 'blockage' of habits can result in a practical doubt about one's capacities and that this might extend into a crisis of identity, 'disrupted selves' or the notion of 'failed bodies' (see Sparkes & Silvennoinen, 1999). These threats to performance must be met by creative responses which involve engaging in actions that 'alter certain aspects of oneself and/or one's surroundings in order to repair or enhance one's embodied capacities for action' (Shilling, 2008, p. 19).

### **Creative action**

So, what should the performing artist do if he or she is confronted by, or wishes to avoid, bodily crises? We argue that 'creative action' is necessary and that this requires the performer to adopt a heightened awareness of their bodily capacities. We suggest that 'continuous improvement' (i.e., the phenomenon whereby certain elite performers appear to be capable of continuously improving their skills through deliberate practice, even *after* they have become experts; see Anonymous, 2014) is hugely dependent upon one's ability to use 'constructive conscious control' (the defining characteristic of what might be termed "artful habits") rather than on mere mechanical routine. Our argument here has been influenced by the pragmatist philosophy of John Dewey and, more specifically, his distinction between "routine or unintelligent habit" (i.e., the mechanical routine which we argue represents current conceptualisations of movement "automaticity") and "intelligent or artistic habit". Dewey (1922) makes an important distinction between the 'artist' and the 'mere technician'. He argues that the artist's performance is 'fused with thought and feeling' while the mechanical performer 'permits the mechanism to dictate performance' (1922, p. 71). *Artistic habit* allows the artist to perform in a flexible manner (which might involve the use of

improvisatory control – that is, the ability to subtly alter one’s action in response to a dynamic and ever-changing environment) while the mechanical performer relies on the rigidity of *routine habit*. Instead of privileging the notion that mechanical or mindless routine (a perspective privileged by many prominent theories of expertise) is desirable, we propose that it may be useful to consider how habitual actions may be open to intelligent and constructive control.

At this point, it may be helpful to briefly discuss how Dewey (1922) conceptualised habit. According to Dewey it was important not to limit habits meaning to mere repetition. He argued that with ‘habit alone there is a machine-like repetition, a duplicating recurrence of old acts’ (p. 180). Instead, he believed that habit ‘means special sensitiveness or accessibility to certain classes of stimuli, standing predilections and aversions, rather than bare recurrence of specific acts. It means will’ (Dewey, 1922, p. 42). A number of contemporary scholars recognise how will is deeply enmeshed in habit (see Shusterman, 2008) and suggest that this conceptualization allows us to understand how inhibition may help individuals to recognise and overcome bad habits that express themselves in spontaneous behaviours.

Why might ‘artistic habits’ be beneficial to the skilled performer? Conceptualizing habits as ‘intelligent’ or ‘artistic’ emphasises their capacity for flexibility and plasticity – they are not fixed or beyond the realm of control. It also resonates well with the increasing importance of “neuroplasticity” (or adaptive changes in the brain; see Fuchs & Flügge, 2014) in neuroscience. Interestingly, the embodied nature of habits means that we can exert influence in a variety of ways. Indeed, skilled performers intimate understanding of the factors that might constrain or promote the optimal functioning of their movement patterns can, and should, be used to help confront the various bodily crises that will inevitably confront them at some stage during their careers. For example, Bortoli, Bertollo, Hanin and Robazza (2012) demonstrated that skilled athletes could use self-regulatory processes in order to recognize that an alternative plan of action was required during competitive performance and start to focus on core action components, that is, features of action previously identified as functional to task achievement. Accordingly, expert action should be seen as a human activity which is ‘projective, dynamic in quality and ready for ‘overt manifestation’ (Dewey, 1922, p. 41).

Although constructive conscious control plays a central feature in Dewey’s pragmatic approach, he recognises the value of automatism or, ‘mechanism’ as he calls it. He argued

that if we consciously attend to each movement then execution is painful and the product clumsy and halting. While Dewey acknowledges the important role unreflective action plays in guiding us through our world of action he dismisses the idea that a reliance on spontaneity (or end-gaining) will facilitate optimal functioning. Indeed, Dewey (1922) rails against the presumption that our will can work ‘without intelligent control of means’ and that means can exist and yet ‘remain inert and inoperative’ (p. 22). Wish and effort on the individual’s behalf will not be enough for the deed (i.e., change in habit) to be done. Dewey equates this latter approach with primitive magic as it neglects to consider the means necessary to achieve an end. He points to the problems associated with end-gaining by suggesting that if we focus merely on the end-point of our actions (e.g., the trajectory of a ball as it leaves a baseball bat) then habit will always seek to attain the end by habitual methods. For Dewey, this process ignores the importance of intelligently controlled habit. A focus on the desired ends is likely to distract us from attending to what we are doing with our bodily movement and therefore prevents us from seeing how we may optimise our movement proficiency.

Drawing heavily on Dewey’s work, Shusterman (2008) champions the value of somatic attention in helping us to ‘correct, relearn, and adjust our habits of spontaneous performance’ (2008, p. 138). He argues that we cannot rely on our habits to correct themselves ‘through unconscious trial and error or through eventual evolutionary adjustments’ (p. 13). To act spontaneously under such circumstances will simply reinforce these bad habits and the problems that they cause. Instead, in line with Dewey’s perspective, Shusterman (2009) proposes that the attenuated habit must be brought into conscious critical reflection (if only for a limited time) so that ‘it can be grasped and worked on more precisely’ (p. 135).

Of course, it is important to acknowledge that altering long-established habits is not a straightforward matter. Dewey (1922) acknowledged this complexity when he argued that it is ‘the essence of routine to insist upon its own continuation’ (p. 76). This complexity is also recognised by sport scientists who suggest that even when we attempt to inhibit a long-established movement (for example, see Mannell & Duthrie’s, 1975, work on “Habit lag”, that is, when an automatized response, no longer appropriate in a given situation, is nonetheless emitted counter to the intentions of the performer) these patterns may remain present as ‘a ghost...of a stable solution in the attractor outlet’ (Huys, Daffertshofer, & Beek, 2009, p 359). As a result, despite the performer’s best efforts, the old movement pattern remains stubbornly difficult to inhibit during on-line skill execution. This presents the

performer with another challenge because a reliance on mindless habit may lead to stasis rather than growth (Hochstetler & Hopsicker, 2012). So, how may one employ constructive and intelligent means in seeking to confront these challenges? An order of will is not enough to alter habit as ‘conditions have been formed for producing a bad result, and the bad result will occur as long as those conditions exist’ (Dewey, 1922, p. 28). Nor is it enough to instruct oneself not to do something. For example, skilled dancers have been found to exhibit more unwanted movements on a static balance task when instructed to try not to wobble when compared to conditions in which they were simply asked to hold the wobble board steady (Dugdale & Eklund, 2003). In this case, telling oneself not to do something may merely initiate the very act that one is seeking to avoid as the performer is ‘starting with the stimulus to this habit’ (Dewey, 1922, p. 35). Instead of focusing on the avoidant instruction, the performer must find some line of action which will inhibit the undesired behaviour and which ‘by instituting another course of action will bring him to his desired end’ (Dewey, 1922, p. 35).

We argue that Dewey’s emphasis on the practical value of somatic self-consciousness in promoting optimal bodily functioning may be useful in helping us to explain how elite performers can prevent or, indeed, confront bodily ‘crises’. This approach may be particularly useful in teaching performers how to listen to their body thereby reducing the likelihood of acquiring attenuated habits. Although we have argued that creative action is necessary to *inhibit* undesirable movements we also recognise its importance in enhancing skilled performers’ capacity to react *flexibly* to situational demands that they encounter during on-line competitive performance. It is important to re-state our aim here – that is, we wish to avoid prescribing various tools that may be used as a means of ‘remaking’ the machine or disciplining the performing body but, instead, we aim to identify approaches (e.g., mindfulness) that may be used to empower performers by helping them to enhance their own well-being, to develop the creativity or expressivity of their movement, and to recognise when they are endangering their own bodily capacities.

### **Types of creative action**

In this section we will outline types of creative action (i.e., mindful and somatic modes of awareness) that the performer may employ in seeking to combat bodily crises. Each of these approaches represent a form of creative action as they require a reflexive evaluation of one’s movement functioning which allows the identification and subsequent refinement of

‘attenuated’ motor patterns. We start by considering the role mindfulness-based approaches may play in helping skilled performers to monitor their ‘embodied going’ and to identify problematic movement patterns. As has been well documented, mindfulness encourages the development of moment-to-moment non-judgmental awareness of oneself (Kabat-Zinn, 2005). In sport, the mindfulness, acceptance and commitment approach (MAC; Gardner & Moore, 2007) has been widely used as a behavioural intervention to enhance performance and the psychological well-being of athletes. This approach is based on the premise that encouraging non-judgemental momentary awareness will improve athletes’ ability to focus on task-relevant stimuli and to sustain and guide their focus of attention. Mindfulness approaches might enable performers to retain an awareness of the general efficacy of their movement functioning and, at the same time, discourage them from adopting potentially deleterious foci of attention (e.g., worrying about how specific features or components of their action may appear to onlookers). Researchers have recently begun to examine how mindfulness might influence flow states in athletes (Anonymous, 2011; Kee & Wang, 2008), motor learning in novice performers (Kee & Liu, 2011; Kee, Chatzisarantis, Kong, Chow, & Chen, 2012), dancers’ well-being (Caldwell, Adams, Quin, Harrison, & Greeson, 2013) and its effectiveness in weakening habitual behaviours (Chong, Kee, & Chaturvedi, 2014). In the latter study, the authors found that a brief mindfulness induction (lasting 6 minutes) reduced the number of mistakes made by participants whilst learning a new behaviour (i.e., moving a computer mouse cursor in a particular direction). Of course, we recognise that this study involved a very basic motor skill but the findings point to the potential efficacy of mindfulness approaches in helping performers to inhibit unwanted movements.

More recently, Ivarsson, Johnson, Anderson and Mats Altemyr (in press) found that a mindfulness intervention (based on the MAC approach) with a group of elite footballers was associated with a clinically relevant reduction in injuries over a six month period when compared to the injuries sustained by those who took part in a control condition (which involved attending weekly presentations covering topics on group psychology). The authors argued that mindfulness practice might have helped participants attend to relevant stimuli during competition and point to research which has found a relationship between injury and peripheral vision narrowing (Rogers & Landers, 2005). Together, these findings suggest that mindfulness helps performers improve their selective attention – that is, the ability to disengage quickly from an incorrectly cued spatial location and reorient attention to a correct location (Hodgins & Adair, 2010). This might represent a form of cognitive flexibility where

performers can inhibit automated responses by retaining the flexibility to react to the dynamically unfolding events that characterise such performance environments (Rossano, 2003).

It might also be helpful for performers to develop 'kinaesthetic' awareness ('a dynamic sense of constantly shifting one's body in space and time in order to achieve a desired end'; Potter, 2008, p. 449) of their bodily movement in seeking to combat bodily crises. Most skilled performers will have developed a finely honed kinaesthetic awareness of their action as they acquire technical proficiency but this acuity may diminish as performance becomes increasingly habitualised or if they are discouraged from attending to the moving body. Evidence suggests that attending to kinaesthetic feedback may act as an 'attentional check' by helping the performer to gauge whether movement is 'in tune' (Jackson, 1995). Attending to bodily cues allows the performer to make adjustments when a part of their action is being performed inefficiently (Jackson & Csikszentihalyi, 1999). To illustrate, Nyberg (2015) found that elite freeskiers learn how to discern (i.e., through 'focal awareness' which is conscious) their rotational velocity to such an extent that they "know whether they will be able to perform the trick the way it was intended without adjustments, or whether they will need to make adjustments during the flight phase" (p. 7). They also draw on 'subsidiary awareness' which is 'less conscious' and includes knowledge of the 'particulars' such as the friction of the snow and their feelings of previous jumps. These elite performers were even found to shift the target of their focal awareness in the midst of the activity itself. For one performer, this meant that he was focally and somatically aware of his rotational velocity while in the air but could quickly change his awareness to take into account environmental conditions such as his position in relation to the targeted landing area.

How might practitioners seek to enhance a performer's kinaesthetic awareness? One method might be through the use of various somatic practices that encourage performers to retain an awareness of their movement functioning. The Feldenkrais method of somatic education (see <http://www.feldenkrais.com/whatis>) may be one type of somatic practice that both teachers and performers can use to achieve this latter aim. Rather than emphasising how the body should look from a third person perspective (e.g., the dance instructor) this latter method places an emphasis on how the body feels from the performer's viewpoint. Fortin, Long and Lord (2002) described a number of strategies that may be associated with this particular form of somatic practice. For example, the dancer may be taught how to identify

inefficient movement patterns that are likely to result in injury. Fortin et al describe how they noticed some dancers in their class had a tendency to pronate their feet in a plie exercise. This way of performing the exercise could lead to an imbalance in the force transmitted through their knee joints. To address this issue, the instructor sought to increase the participants' somatic awareness of how they could support their weight through their feet. To do so, he asked participants to state aloud their sensations as they pressed through their heels and their big toe. Another strategy that may be used to emphasise the feeling of the movement is to use tactile feedback. Fortin et al asked dancers to place a hand on their partner's sternum and the other hand just below their lower back. Participants were then asked to feel a connection between these two points and to sense that they have a 'direction, a line of energy or a beam of light between the palm of your hands' (p.169). Next they were asked to slowly decrease the pressure of their contact until their hands just 'floated away'. According to Fortin et al somatics allows the performer to experience 'plasticity of the self' thereby providing them with the capacity to make enlightened choices about themselves.

Mindful and somatic practices might be particularly useful in helping performers to pay close attention to the type and quality of practice/training that they engage in. These practices could play an important role in performance arts medicine – a discipline whose primary purpose is to help prevent or avoid injury. Unfortunately, many musicians acquire injuries as a result of their intensive practice schedules or the use of inefficient technique when playing their instrument (Allsop & Ackland, 2010; Wynn Parry, 2004). Indeed, injuries are more likely to occur if the musician suddenly increases practice time because of an upcoming recital or competition (Butler, 2011). However, it is important for performers to remember that increasing practice time does not inevitably result in improved performance and that they should attach greater importance to the type and quality of practice they engage in. Importantly this might require them to pay careful attention to the efficacy of their action as they practice repetitive movements for long periods. Allsop and Ackland (2010) argued that pianists might be more likely to experience playing-related musculoskeletal disorders when inefficient technique requires them to exert greater force when playing repeated octaves and octave-chords. Repetitive movements may lead to the degradation of sensory feedback information that control fine motor movements which may, in turn, contribute to the onset of repetitive strain injuries including focal dystonia (Byl, Merzenich, & Jenkins, 1996). To avoid representation degradation Byl et al (1996) recommend that attention is given to the

spacing between repetitive motion events in order to minimize the engagement of ‘normally differentiated sensory inputs’ (p. 280).

Extending this idea, Allsop and Ackland (2010) argued that sufficient breaks were another important factor in preventing injury amongst performing artists. According to these authors, performers should ensure that they give themselves adequate rest (e.g., 5 or 10 minutes per hour of practice) and limit the practice of awkward or technically difficult passages to 2 or 3 minutes per session. Interestingly, a central feature of somatic education is the emphasis it places on balancing rest and activity (Batson & Schwartz, 2007). Research suggests that “distributed” practice (i.e., the amount of rest between trials is equal to or greater than the amount of work within the trial) may be more beneficial than “massed” practice (i.e., periods of work that are substantially longer than the amount of rest between trials) in the acquisition and retention of motor skills (see Lee & Genovese, 1988). Batson & Schwartz (2007) argued that somatic awareness could be used in the context of distributed practice in order to enhance skill learning and coordination in dance. Rather than taking idle breaks during distributed practice Batson (2007) advocates the use of what might be termed ‘active rest’. Here, a student is encouraged to ‘observe themselves with attention to residual sensations, and to maintain a general state of open awareness to novel, more vivid reorganization of their self-image—a new place from where to act’ (Batson, 2007, p. 72). This reduced activation prompts a change in self-organization which encourages freedom of choice when the individual seeks to reactivate movement. Batson (2007) argues that promoting such sensory awareness is the ‘*key agent of change* in perturbing habitual movement behaviours, and promoting self-organization’ (p. 72).

Recent findings suggest that mindful and somatic modes of awareness might help prevent ‘bodily crises’ but researchers have yet to conduct systematic investigations on this issue. Further research is therefore required to identify the precise cognitive mechanisms that underpin the beneficial effects of these latter modes of awareness. A greater understanding of this issue will help performers learn when and how they may use these forms of awareness as a means of combating bodily crises. Additionally, although somatic classes such as Pilates and the Alexander technique are becoming increasingly popular in dance programs (Adams, Caldwell, Atkins, & Quin, 2012) mindfulness-based approaches appear to have received less attention in these contexts. This is somewhat surprising given research findings which indicate the efficacy of the MAC approach (e.g., Garner & Moore, 2004; 2007) as a

performance enhancement intervention in sporting contexts. Teaching performing artists to become increasingly mindful may help them identify the bodily sensations or modes of conscious processing that accompany bouts of peak and poor performance. Mindfulness based interventions can encourage performers to accept cognitions, emotions, and sensations and to commit themselves to positive action (i.e., a focus on task-relevant cues), instead of seeking to alter negative thoughts or unpleasant emotions (Bernier, Thienot, Codron, & Fournier, 2009). Overall, becoming skilled at recognizing bodily sensations that are associated with ‘attenuated’ movement patterns will help alert performers to the possible onset of bodily crises. We hope that practitioners (including trainers and directors) working within performance arts programs will consider the benefits that may be derived from empowering performers in such a manner.

### **Conclusion**

There is little doubt that habit confers upon the skilled performer a great number of advantages. Perhaps most importantly, it allows performers to focus on the strategic aspects of execution rather than on the mechanical details governing task implementation. This ‘cognitive economy’ is undoubtedly crucial in allowing performers to execute complex movements with great efficiency. However, we believe it is important to put pressure on the notion – supported by many psychological perspectives – that habitual action is an entirely automatic or mindless activity. Such conceptualizations are likely to disempower performers who are seeking to maintain or improve the quality of their movement patterns. Instead, we agree with Glaveanu’s (2012) assertion that ‘the degree of automatization of any one habit varies on the whole with its degree of specificity but it never reaches an absolute level of mindless, uncreative routine or it would not qualify as habit’ (p. 83). It would seem far more accurate to emphasise the flexible and dynamic qualities of habit that allow performers to ‘de- and rehabitualize behaviour in a dynamic and creative way’ (Glaveanu, 2012, p. 83). That is, our bodily movements are open to conscious intervention and must be in order for the performer to confront ‘crises’. Perhaps skilled performance should be conceptualised as ‘habitual creativity’ which Glaveanu (2012) defines as ‘the ways in which novelties form an intrinsic part of habitual action by constantly adjusting it to dynamic contexts, allowing for transitions between and combination of different “routines”, and finally perfecting practices, thus resulting in mastery’ (p.84).

This latter notion of habitual creativity might help us explain a wide volume of phenomenological evidence which indicates that performers in a variety of disciplines (sport, dance etc) pay great heed to the quality and efficacy of their action. Training and performance for many skilled performers is an effortful, conscious and deliberate process and these individuals are driven by the desire to enhance their skills (Breivik, 2012; Ravn & Christensen, 2013). Routine habitual actions (e.g., tying shoelaces) are predictable, and once they can be done, we have little motivation to improve. Elite artistic performance, on the other hand, appears to be characterised by the ongoing desire to refine and advance one's bodily capacities. Of course, we acknowledge that the body may be an "absent presence" (see Leder, 1990 for a detailed discussion) during the performance of simple everyday activities but the performance of complex skills inevitably require a degree of attentiveness – not in the form of computationally demanding foci of attention but in terms of a kinaesthetic attunement to the body's general functioning. We suggested that such bodily awareness is essential if performers are to identify bodily practices that are likely to damage their health and well-being (and to threaten their embodied sense of self). Unfortunately, much of current literature advises performers to evacuate the body from skill execution.

As we have argued, elite training regimes often seek to transform the body through a variety of disciplinary procedures (see McMahon & Barker-Ruchti, 2015). Expectations possessed by trainers, commercial sponsors, and the viewing public, create a narrative that one must consistently exhibit brilliance or surpass previous levels of excellence. Such pressures push performers to constantly extend themselves and to continue to seek perfection. The sports science literature abounds with recommendations designed to help practitioners achieve this latter aim – that is, the design of training programmes that aim to sculpt and discipline the performing body all in the hope of perfecting it and making it invulnerable. Unfortunately, despite their discipline, dedication and best efforts the performer's body faces decay – it is inevitable that the edifice will crumble. One of our aims in the current paper was to highlight some of the types of creative action that may be used by the performing artist to halt this decline or, at the very least, to help them recognise when they may be endangering their own health and wellbeing.

We wish to conclude by re-iterating our belief that the habitualisation of movement plays a vital role in facilitating expert performance but it would also appear that performers must use reflective bodily awareness in order to maintain and improve performance proficiency (Breivik, 2013; Montero, 2010). The possibility also remains that the ability to

monitor, identify, and alter inefficient movement patterns is what separates the truly elite performer from his/her merely proficient counterpart. These adjustments seem inevitable given that no matter how much the performer trains and refines her skills ‘care and judgement will always be needed because there are countless opportunities for things to go wrong, or at least differently’ (Bailey & Pickard, 2010, p. 371). We argue that ‘continuous improvement’ at the elite level requires the existence of intelligent or artistic habit and that expert movement patterns are in fact paradigmatic examples of artistic skills. These habits are, by their very nature, sensitive and flexible and become more varied and adaptable with practice and use. We hope that by encouraging performers to use mindful and somatic practices that they learn how to monitor and sculpt their own movement patterns. This knowledge might help them to resist some of the societal and sub-cultural pressures that endanger their bodily capacities. We therefore encourage researchers to investigate the various types of bodily awareness used by performers and to explore how they can be helped to make sense of the ‘ongoing selfing process’ (Fortin et al. 2002, p. 174) as they confront the bodily crises that will inevitably arise. In this regard, we propose that Dewey’s (1922) work act as a useful analytical framework for researchers wishing to explore the conditions that best foster intelligent habit and those that result in inflexible modes of bodily functioning.

### References

- Adams, M., Caldwell, K., Atkins, L., & Quin, R. (2012). Pilates and mindfulness: a qualitative study. *Journal of Dance Education*, 12, 123-130.

[Anonymous 2011] Details omitted for double-blind reviewing.

Alexias, G., & Dimitropoulou, E. (2011). The body as a tool: Professional classical ballet dancers' embodiment. *Research in Dance Education, 12*, 87-104.

Allsop, L., & Ackland, T. (2010). The prevalence of playing-related musculoskeletal disorders in relation to piano players' playing techniques and practising strategies. *Music Performance Research, 3*, 61-78.

Bailey, R., & Pickard, A. (2010). Body learning: examining the processes of skill learning in dance. *Sport, Education and Society, 15*, 367-382.

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462.

Barker-Ruchti, N., & Tinning, R. (2010). Foucault in leotards: corporeal discipline in women's artistic gymnastics. *Sociology of Sport Journal, 27*, 229-250.

Batson, G. (2007). Revisiting overuse injuries in dance in view of motor learning and somatic models of distributed practice. *Journal of Dance Medicine & Science, 11*, 70-75.

Batson, G., & Schwartz, R. E. (2007). Revisiting the value of somatic education in dance training through an inquiry into practice schedules. *Journal of Dance Education, 7*, 47-56.

Bissell, D. (2013). Habit displaced: The disruption of skilful performance. *Geographical Research, 51*, 120-129. doi: 10.1111/j.1745-5871.2012.00765.x

Breivik, G. (2007). Skillful coping in everyday life and in sport: A critical examination of the views of Heidegger and Dreyfus. *Journal of the Philosophy of Sport, 34*, 116-134.  
doi:10.1080/00948705.2007.9714716

Breivik, G. (2013). Zombie-like or superconscious? A phenomenological and conceptual

- analysis of consciousness in elite sport. *Journal of the Philosophy of Sport*, 40, 85-106.
- Brown, G., & Potrac, P. (2009). 'You've not made the grade son': de-selection and identity disruption in elite level football. *Soccer and Society*, 10, 143-159.
- Byl, N. N., Merzenich, M. M., & Jenkins, W. M. (1996). A primate genesis model of focal dystonia and repetitive strain injury I. Learning-induced dedifferentiation of the representation of the hand in the primary somatosensory cortex in adult monkeys. *Neurology*, 47, 508-520.
- Caldwell, K., Adams, M., Quin, R., Harrison, M., & Greeson, J. (2013). Pilates, mindfulness and somatic education. *Journal of Dance & Somatic Practices*, 5, 141.
- Carson, H. J., & Collins, D. (2011). Refining and regaining skills in fixation/diversification stage performers: The Five-A model. *International Review of Sport and Exercise Psychology*, 4, 146-167.
- Chong, Y. W., Kee, Y. H., & Chaturvedi, I. (2014). Effects of Brief Mindfulness Induction on Weakening Habits: Evidence from a Computer Mouse Control Task. *Mindfulness*, 1-7.
- Coakley, J. (1992). Burnout amongst adolescent athletes: A personal failure or social problem? *Sociology of Sport Journal*, 9, 271-285.
- Collins, D., Morriss, C., & Trower, J. (1999). Getting it back: A case study of skill recovery in an elite athlete. *The Sport Psychologist*, 13, 288-298.
- [Anonymous 2013] Details omitted for double-blind reviewing.
- Dewey, J. 1922. *Human nature and conduct*. New York: Henry Holt and Company.
- Dreyfus, H., & Dreyfus, S. (2004). The ethical implications of the five-stage skill-acquisition model. *Bulletin of Science, Technology & Society*, 24, 251-264.
- Dryburgh, A., & Fortin, S. (2010). Weighing in on surveillance: perception of the impact of

- surveillance on female ballet dancers. *Research in Dance Education*, 11, 95-108.
- Dugdale, J. R., & Eklund, R. C. (2003). Ironic processing and static balance performance in high-expertise performers. *Research Quarterly for Exercise and Sport*, 74, 348-352.
- Fitts, P.M., & Posner, M.I. (1967). *Human performance*. California: Brooks/Cole Publishing Company.
- Fortin, S., Long, W., & Lord, M. (2002). Three voices: Researching how somatic education informs contemporary dance technique classes. *Research in Dance Education*, 3, 155-179.
- Foucault, M. (1991). *Discipline and punish: The birth of a prison*. London, England: Penguin Books.
- Fuchs, E., & Flügge, G. (2014). Adult neuroplasticity: more than 40 years of research. *Neural plasticity*, p. 541870.
- Gardner, F. L., & Moore, Z. E. (2004). A mindfulness-acceptance-commitment-based approach to athletic performance enhancement: Theoretical considerations. *Behavior Therapy*, 35, 707-723.
- Gardner, F. L., & Moore, Z. E. (2007). *The psychology of enhancing human performance: The Mindfulness-Acceptance-Commitment (MAC) approach*. Springer Publishing Co.
- Glăveanu, V. P. (2012). Habitual creativity: revising habit, reconceptualizing creativity. *Review of General Psychology*, 16, 78.
- Green, J. (1999). Somatic authority and the myth of the ideal body in dance education. *Dance Research Journal*, 31, 80-98.
- Heikkala, J. (1993). Discipline and excel: Technologies of self and body and the logic of competing. *Sociology of Sport Journal*, 10, 397-412.
- Hockey, J. (2013). Knowing the 'Going': the sensory evaluation of distance running. *Qualitative Research in Sport, Exercise and Health*, 5, 127-141.

## BODILY CRISES

Hodgins, H. S., & Adair, K. C. (2010). Attentional processes and meditation. *Consciousness and Cognition, 19*, 872-878.

Hundley, T. (2010). Retrieved from

<http://query.nytimes.com/gst/fullpage.html?res=9C04EFDD103DF930A25755C0A9669D8B63>

Huys, R., Daffertshofer, A., & Beek, P. J. (2009). The evolution of coordination during skill acquisition: The dynamical systems approach. In A. M. Williams & N. J. Hodges (Eds.), *Skill Acquisition in sport: Research, theory and practice* (pp. 351-373). Abingdon: Routledge.

Ivarsson, A., Johnson, U., Andersen, M. B., Fallby, J., & Altemyr, M. (2015). It Pays to Pay Attention: A Mindfulness-Based Program for Injury Prevention with Soccer Players. *Journal of Applied Sport Psychology*, (ahead-of-print), 1-16.

Jackson, S. A. (1995). Factors influencing the occurrence of flow state in elite athletes. *Journal of Applied Sport Psychology, 7*, 138-166.

Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports: The keys to optimal experiences and performances*. Champaign, IL: Human Kinetics.

James, W. (1911). *On vital reserves: The energies of men. The Gospel of relaxation*. Retrieved from <http://archive.org/details/onvitalreserves02jamegoog>.

James, W. (1950). *Principles of Psychology* (Vol. 1). New York: Dover.

Johns, D. P. & Johns, J. S. (2000). Surveillance, subjectivism and technologies of power: An analysis of the discursive practice of high performance sport. *International Review for the Sociology of Sport, 35*, 219-234.

Joas, H. (1996). *The Creativity of Action*. Cambridge: Polity.

- Jones, R., Glintmeyer, N., & McKenzie, A. (2005). Slim bodies, eating disorders and the coach-athlete relationship: A tale of identity creation and disruption. *International Review for the Sociology of Sport*, 40, 377-391.
- Hochstetler, D., & Hopsicker, P. M. (2012). The heights of humanity: Endurance sport and the Strenuous Mood. *Journal of the Philosophy of Sport*, 39, 117-135.
- Kabat-Zinn, J. (2005). *Coming to our senses: Healing ourselves and the world through mindfulness*. New York, NY: Hyperion.
- Kee, Y. H., & Wang, C. J. (2008). Relationships between mindfulness, flow dispositions and mental skills adoption: A cluster analytic approach. *Psychology of Sport and Exercise*, 9, 393-411.
- Kee, Y. H., & Liu, Y. T. (2011). Effects of dispositional mindfulness on the self-controlled learning of a novel motor task. *Learning and Individual Differences*, 21, 468-471.
- Kee, Y. H., Chatzisarantis, N., Kong, V. P. W., Chow, J. Y., & Chen, L. H. (2012). Mindfulness, movement control, and attentional focus strategies: effects of mindfulness on a postural balance task. *Journal of Sport and Exercise Psychology*, 34, 561-579.
- Lang, M. (2010). Surveillance and conformity in competitive youth swimming. *Sport, Education and Society*, 15, 19-37.
- Lee, T. D., & Genovese, E. D. (1988). Distribution of practice in motor skill acquisition: Learning and performance effects reconsidered. *Research Quarterly for Exercise and Sport*, 59, 277-287.
- Leder, D. (1990). *The absent body*. Chicago, IL: University of Chicago Press.
- Mannell, R. C., & Duthie, J. H. (1975). Habit lag: When automatization is dysfunctional. *The Journal of Psychology: Interdisciplinary and Applied*, 89, 73-80.
- Markula, P. (2001). Beyond the perfect body: Women's body image distortion in fitness magazine discourse. *Journal of Sport and Social Issues*, 25, 158-179.

- Markula, P., & Pringle, R. (2006). *Foucault, sport, and exercise: Power, knowledge, and transforming the self*. London, England: Routledge.
- McMahon, J., Penney, D., & Dinan-Thompson, M. (2012). Body practices – exposure and effect of a sporting culture: stories from three Australian swimmers. *Sport, Education and Society, 17*, 181-206.
- McMahon, J., & Barker-Ruchti, N. (2015). Assimilating to a boy's body shape for the sake of performance: three female athletes' body experiences in a sporting culture. *Sport, Education and Society*, (ahead-of-print), 1-18.
- [Anonymous 2013] Details omitted for double-blind reviewing.
- Montero, B. (2010). Does bodily awareness interfere with highly skilled movement? *Inquiry: An interdisciplinary Journal of Philosophy, 53*, 105-122.
- Murphy, G., Petitpas, A., & Brewer, B. (1996). Identity foreclosure, athletic identity, and career maturity in intercollegiate athletes. *The Sports Psychologist, 10*, 239-246.
- Nyberg, G. (2015). Developing a 'somatic velocimeter' – the practical knowledge of freeskiers. *Qualitative Research in Sport, Exercise and Health, 7*, 109-124.
- Oliver, W. (2005). Reading the ballerina's body: Susan Bordo sheds light on Anastasia Volochkova and Heidi Guenther. *Dance Research Journal, 37*, 38-54.
- Potter, C. (2008). Sense of motion, senses of self: Becoming a dancer. *Ethnos: Journal of Anthropology, 73*, 444-465.
- Ravn, S., & Christensen, M. K. (2014). Listening to the body? How phenomenological insights can be used to explore a golfer's experiences of the physicality of her body. *Qualitative Research in Sport, Exercise and Health, 6*, 462-477.
- Rogers, T. J., & Landers, D. M. (2005). Mediating effects of peripheral vision in the life event stress/athletic injury relationship. *Journal of Sport & Exercise Psychology, 27*,

271-288.

Rossano, M. J. (2003). Expertise and the evolution of consciousness. *Cognition*, 89, 207-236.

Shilling, C. (2008). *Changing bodies: Habit, crisis and creativity*. Sage.

Shogan, D. (1999). *The making of high performance athletes: Discipline, diversity, and ethics*. Canada: University of Toronto Press.

Shusterman, R. (2008). *Body consciousness: A philosophy of mindfulness and somaesthetics*. Cambridge University Press: Cambridge.

Sparkes, A. (1998). Athletic Identity: An Achilles' heel to the survival of the self. *Qualitative Health Research*, 8, 644-664.

Sparkes, A. & Smith, B. (1999). Disrupted Selves and Narrative Reconstructions, in A. Sparkes and M. Silvennoinen (Eds.), *Talking Bodies: Men's Narratives of the Body and Sport*, (pp. 76–92). SoPhi: University of Jyväskylä, Finland.

Sparkes, A., & Silvennoinen, M. (Eds). *Talking bodies: Men's narratives of the body and sport*. SoPhi: University of Jyväskylä, Finland.

Taylor, W., Potrac, P., Nelson, L., Jones, L., & Groom, R. (In press). An elite hockey player's experiences of video based coaching: A poststructuralist reading. *International Review for the Sociology of Sport*.

[Anonymous 2014] Details omitted for double-blind reviewing.

Wainwright, S. P., Williams, C., & Turner, B. S. (2005). Fractured identities: injury and the balletic body. *Health*, 9, 49-66.

Weiss, S. M., & Reber, A. S. (2012). Curing the dreaded “Steve Blass disease”. *Journal of Sport Psychology in Action*, 3, 171-181.

Williams, S., & Manley, A. (2014). Elite coaching and the technocratic engineer: thanking the boys at Microsoft! *Sport, Education and Society*. Epub ahead of print 18 September. DOI:10.1080/13573322.2014.958816.

## BODILY CRISES

Willmott, T., & Collins, D. (in press). Challenges in the transition to mainstream: Promoting progress and minimizing injury in freeskiing and snowboarding. *Sport in Society*.