Rethinking the relationship between momentum and sport performance: Toward an integrative perspective

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ABSTRACT

The relationship between momentum and performance has elicited the curiosity of athletes, coaches, and sport psychologists since the late 1970s. Psychological momentum and behavioral momentum reflect both an impetus expected to entail changes in performance. This article aims to provide an integrative perspective of momentum that is guided by three core principles. Firstly, psychological momentum and behavioral momentum represent two distinct facets of a same phenomenon, called psycho-behavioral momentum (PBM), which mediates the relationship between early and subsequent success. Secondly, PBM reflects a composite phenomenon associating psychological, physiological, and behavioral constructs. Thirdly, PBM reflects a complex and dynamical phenomenon that may take place within different and interconnected time-scales. Additionally, the present perspective proposes to rethink the way of examining the relationship between PBM and sport performance, and encourages considering the distinction between behavioral performance (i.e., internal to the PBM process) and competitive outcomes (i.e., external to the PBM process).

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Athletes, coaches, spectators and media are used to employing the notion of "momentum" to comment sport events, describe and explain behaviors and situations, and make game predictions on the basis of the past and/or ongoing performance of an individual or team. However, the notion of momentum still remains unclear for the actors and spectators themselves as well as for sport psychologists and scientists. In the field of sport psychology, momentum has been conceptualized and investigated through either a psychological or behavioral approach. The psychological approach developed the concept of psychological momentum (PM), which refers to an altered state of mind enabling to perform at an

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extraordinary level (Iso-Ahola & Dotson, 2016). The behavioral approach gave rise to the concept of behavioral momentum (BM), which represents the tendency of reinforced behaviors — that can take the form of tactical actions in sports — to persist in the face of disruptors. Specifically, BM may represent the level of resistance of reinforced behaviors to all opponent’s efforts devoted to annihilate the successful spiral.

As a result, PM and BM both correspond to an impetus expected to entail changes in performance. The present perspective is guided by three core principles: (a) PM and BM represent the psychological and behavioral facets of a same phenomenon, called psycho-behavioral momentum (PBM), which mediates the relationship between initial success and subsequent success; (b) PBM reflects a composite phenomenon associating psychological, physiological, and behavioral components; and (c) PBM is complex because it takes place within multiple time-scales. I begin by reviewing several notable conceptualizations and empirical studies conducted on PM and BM that have appeared in the literature. Then, I will present an integrative perspective of momentum, and I will end by discussing different concepts and proposing new research directions.

1. Momentum and performance

In his seminal theory of PM, the social action model, Adler (1981) proposed a model involving five essential and interrelated factors: (a) goal-initiating motivation (referred to as primitive force), (b) motivation that initiates efforts toward goal attainment, (c) the elicitation of emotions related to goal pursuit, (d) increased physiological arousal associated with goal pursuit, and (e) enhanced performance (i.e., facilitated by the physiological arousal associated with goal pursuit, and (e) the elicitation of emotions related to goal pursuit, (d) increased force factors: (a) goal-initiating motivation (referred to as primitive

Weinberg, 1991; Silva et al., 1988; Smisson, Burke, Joyner, Munkasy, & Blom, 2007; Weinberg & Jackson, 1989). However, if the studies considering performance through behavioral constructs reveal that the results are somewhat consistent, those operationalizing performance through outcomes show that the results are slowly consistent. For example, Silva et al. (1988) revealed that early success did not predict the outcome when athletes’ skill was controlled. In the same vain, Kerick, Iso-Ahola, and Hatfield (2000) observed no link between the experience of PM and outcomes in shooting tasks. Such results contributed to raise serious doubts about the existence of PM (e.g., Gilovich, Vallone, & Tversky, 1985). In sum, while PM seems to facilitate task completion, the literature seems to show that PM does not necessarily influence competitive outcomes.

1.2. Behavioral momentum and performance

The doubts about the existence of PM led some authors to shift their attention from a psychological conception to a behavioral conception of momentum, thereby leading to employ the approach of BM in the field of sport psychology. This approach falls under the view that momentum — this ‘... state of dynamic intensity marked by an elevated or depressed rate of motion, grace, and success’ (Adler, 1981, p. 29) — can be operationalized through observed behavior (e.g., Roane, 2011; Wanzek, Houlihan, & Homan, 2012). Specifically, BM is defined as ‘...the relationship between response rate and resistance to behavior change when certain ‘disrupter’ events occur’ in the sense that ‘...the velocity of a response is analogous to the rate of reinforcement’ (Roane, Kelley, Trosclair, & Hauer, 2004, p. 146). The literature reports that BM has been analyzed through serial dependency or non-stationarity at different levels of analysis of the games, such as the macro-level of outcomes (e.g., Hughes, Fenwick, & Murray, 2006; Iso-Ahola & Mobily, 1980; Jackson & Mosurski, 1997; Klaassen & Magnus, 2001; O’Donoghue & Brown, 2009) and micro-level of behaviors (e.g., Dumangane, Rosati, & Volossovitch, 2009; Moesch, Backstrom, Granér, & Apitzsch, 2013). Serial dependency refers to the view that an event is dependent on the adjacent event, while non-stationarity refers to the idea that the changes in success rate over the ongoing game exceed the possibility to be explained by chance (e.g., Moesch et al., 2013). Moreover, studies conducted in sports (e.g., basketball, handball, tennis, squash) revealed that the greater the reinforcement rate, the greater the beneficial response to adversity (e.g., Hughes et al., 2006; Jackson & Mosurski, 1997; Klaassen & Magnus, 2001; Mace, Lalli, Shea, & Nevin, 1992;
Moesch et al., 2013). Interestingly, Moesch et al. (2013) reported that 11.6% (using autocorrelations) and 16.3% (using χ²-tests) of the matches displayed BM signs, suggesting the presence of seriation between successful behaviors. In addition, the authors observed that short 5-min periods of BM occurred in approximately 75% of all matches.

In sum, the theoretical and empirical works conducted on both forms of momentum placed a great deal of emphasis on the possible existence of a serial structure of momentum, in the sense that early success (i.e., perceived success for PM) and successful behavior for BM may entail subsequent success through psycho-behavioral processes (e.g., Iso-Ahola & Dotson, 2014, 2016).

2. Reconciling the psychological and behavioral forms of momentum in the field of sport psychology

PM and BM seem to correspond to two facets of a same phenomenon (e.g., Hubbard, 2016) that can be compared to the movement of a physical body until stopped by an external force (e.g., Adler, 1981; Hubbard, 2015, 2016; Markman & Guenthner, 2007; Nevin, 1983, 1992). This phenomenon—called in the present article, PM— is supposed to mediate the relationship between an initial success and subsequent success (e.g., Iso-Ahola & Dotson, 2014, 2016). In that section, I will delineate the mediational perspective proposed by Iso-Ahola and Dotson and the velocity (v) × mass (m) formulations proposed by several authors to account for the psychological and behavioral forms of momentum (e.g., Adler, 1981; Markman & Guenthner, 2007; Hubbard, 2015, 2016; Nevin, Mandell, & Atak, 1983, 1992). Lastly, I will propose an integrative perspective that aims to combine both forms of momentum and emphasize the complexity of momentum.

2.1. Mediational perspective

Based on the view that PM promotes task completion (i.e., efficiency principle of PM), Iso-Ahola and Dotson (2014, 2016) have recently proposed the mediational model of PM that delineates the mediating role of PM process in the relationship between early and subsequent success. The authors defined the process of PM as “...a psychological force in which several factors or qualities converge in a synergistic way to enable one to perform at a level not ordinarily possible” (Iso-Ahola & Dotson, 2014, p. 20). The model posited that an initial success might trigger a PM process, which would mainly contain three distinct mental events: (a) increased sense of self-confidence and internal causal attribution to ability and skills (i.e., psychological energization), (b) increased perceived likelihood of future success (i.e., psychological impetus), and (c) perceived PM (i.e., subjective experience of change) (Iso-Ahola & Dotson, 2016).

The authors defined perceived PM as “...an altered and felt state of mind in which a performer senses things going unimpressably his or her way” (Iso-Ahola & Dotson, 2014, p. 20). Additionally, once triggered the PM process would precipitate the occurrence of another success (e.g., task completion) via the increase in mental (i.e., concentration) and physical (i.e., physiological energy) commitment to the activity (i.e., motivation toward the goal) (Iso-Ahola & Dotson, 2016).

The mediational model of PM argued that, besides the PM’s capability to energize consciously achievers, PM would enhance nonconscious automatic processing, thereby leading to develop high levels of performance (Iso-Ahola & Dotson, 2016). This model of PM also proposed the view that the impact of PM on outcomes would depend on the combination of PM’s intensity, frequency, and duration effects (Iso-Ahola & Dotson, 2014, 2016). The notion of intensity effect of PM means that the higher the PM, the higher the likelihood of the subsequent event. The notion of frequency effect of PM means that the greater the number of PM, the higher the likelihood of ultimate success. The notion of duration effect of PM means that the longer the PM(s), the more likely the ultimate success. Said differently, capitalizing PM by experiencing PMs as intense, numerous, and enduring as possible would predict the impact of PM on subsequent performance. Finally, the mediational model of PM considered PM an adaptive phenomenon that aims to foster goal progress.

2.2. Velocity × mass formulations

Drawing a loose analogy to Newtonian physics, authors proposed a v × m formulation that sought to account for the phenomenological experience of PM (Markman & Guenthner, 2007) and the ongoing behavior of BM (Hubbard, 2015, 2016). Markman and Guenthner (2007) assumed that precipitating events would initiate movement toward some (desired or undesired) end-state, and the speed of movement toward that end-state would be experienced as psychological velocity (see also Freyd & Finke, 1984; Hsee & Abelson, 1991; Hubbard, 2005; Thornton & Hubbard, 2002). Psychological velocity, in turn, would combine with psychological mass (or psychological weight, see Hubbard, 2015) – conceptualized as a composite of personal and situational variables that convey importance, immediacy or value – to give rise to the experience, intensity and duration of PM. The v × m formulation assumed that: (1) people would hold implicit theories about the existence of PM; (2) there would be conditions under which PM waxes and wanes; and (3) PM would affect performance. To illustrate, one implicit theory noted by Markman and Guenthner (2007) is that PM is an extra-personal force (e.g., “like having the wind at your back”) that builds in intensity over time if it is uninterrupted, but is difficult to regain if it is interrupted.

Furthermore, rooted in the study of learning, authors conceptualized a v × m formulation of BM (e.g., Hubbard, 2016; Nevin, 1992). According to Nevin (1983, 1988, 1992) and Hubbard (2015, 2016), BM represents the product of behavioral velocity and behavioral mass (or behavioral weight). Behavioral velocity would correspond to response rate resulting from operant conditioning, which represents the process whereby reinforcements (i.e., reward or punishment) shape the direction of behaviors. In that regard, response rate would depend upon response-reinforcer contingencies. Then, the greater the reinforcement rate, the higher the velocity of BM. Behavioral velocity, in turn, would combine with behavioral mass — conceptualized as an additional source of reinforcement, depending upon stimulus-reinforcer (Pavlovian) contingencies — to give rise to the strength of behaviors and its resistance to change. Finally, PM and BM appear as “...the same general phenomenon, with the modifier “behavioral” applied when describing an observed behavior and the modifier “psychological” applied when describing a reported subjective experience.” (Hubbard, 2016, p. 75).

2.3. Toward an integrative perspective of momentum

In line with the view that PM and BM reflect similar processes (Hubbard, 2015, 2016), the present perspective combines the mediational model of PM (e.g., Iso-Ahola & Dotson, 2016), the social action model of PM (e.g., Adler & Adler, 1976), the dynamical model of PM (Gernigon et al., 2010), and the v × m formulations of PM and BM (e.g., Hubbard, 2016; Markman & Guenthner, 2007; Nevin, 1992). Following the perspective of Iso-Ahola and Dotson (2016), the present one defines PM as a process characterized by an altered sense of functioning that allows to achieve at an extraordinary level, and posits that the process of PM can mediate the link between early and subsequent success. Specifically, it presumes that
success could trigger psychological and neurological processes (e.g., self-confidence, internal causal attribution, reinforcement, automatic processing) enabling to give to rise to optimal motivational and behavioral patterns (e.g., self-determination, persistence, high coordination), thus fostering the occurrence of another success. Consistent with the $v \times m$ formulations (e.g., Hubbard, 2016; Markman & Guenther, 2007; Nevin, 1992), the present perspective proposes that PBM velocity corresponds to the quantity of reinforcement that shapes the direction of cognitions (e.g., perceptions of control, success expectations) and behaviors (e.g., repeated actions). For instance, a football player realizing that supplying the central midfielder increases the opportunities to get successful may develop a sense of control over the game and may be encouraged to persevere in that strategy. PBM mass (or weight) refers to internal (e.g., learned responses; Adler, 1981; Hubbard, 2016) and contextual (e.g., perceived importance of the event; Markman & Guenther, 2007) determinants capable to affect the intensity and persistence of perceptions and behaviors. For instance, and in the continuity of the previous example, the player may resist changing his strategy despite some failed attempts. Interestingly, Adler (1981) called ratio of conversion the mechanism aiming at transforming PM velocity into PM experience, and suggested that acquired skills, dominant response patterns, talent, etc., may encourage such a transformational capacity. In that regard, ratio of conversion may refer to the concept of PBM mass.

Consistent with the views that PM and BM involve dynamic representation (i.e., representation intrinsically conveys temporal information; see Hubbard, 2015, 2016) and that momentum refers to a time-based system (e.g., Briki, Den Hartigh, Markman, & Gernigon, 2014; Briki, Den Hartigh, Markman, Micallef, & Gernigon, 2013; Gernigon et al., 2010), this perspective posits that PBM is embedded in a large process shaped over time. Applying Haken, Kelso, and Bunz’s (1985) recommendations for testing the dynamical systems properties of history-dependence and non-linearity, Briki et al. (2013) examined PM dynamics among actual cyclists competing against each other on home trainers. Feedback was manipulated in such a way that one cyclist experienced a positive momentum sequence while the other cyclist experienced a negative momentum sequence. The authors found that perceptions of PM exhibited a pattern of critical boundary reflecting an abrupt change at the same time gap between the cyclists in both momentum sequences. However, the critical boundary pattern that was observed was asymmetrical in shape: PM perceptions during the negative momentum sequence exhibited a relatively abrupt decrease, whereas PM perceptions during the positive momentum sequence exhibited a relatively delayed increase. In light of these results, Briki et al. (2013) speculated that negative PM was more difficult to destabilize than is positive PM. This kind of asymmetry not only supports the pervasive finding that negative events have a more powerful psychological impact than do positive events of the same absolute value (e.g., Kahneman & Tversky, 1979), but also suggests that momentum is fluctuant and historically embedded (e.g., Gernigon et al., 2010).

Furthermore, the potential property of history-dependence of PBM also suggests that it may take place within different and interconnected time scales, and Den Hartigh, Van Geert, Van Yperen, Cox, and Gernigon (2016) provided evidence about this hypothesis. Specifically, the authors asked athletes to take part in a rowing-ergometer tournament that was composed of a series of three races, and manipulated the races in order to create both long-term PM and short-term PM. The authors revealed that athletes were psychologically less vulnerable to short-term failures after experiencing a long-term positive PM than after experiencing a long-term negative PM. Additionally, they revealed that athletes who were experiencing a long-term positive PM, relative to those who were experiencing a long-term negative PM, reported higher levels of PM perceptions, and self-efficacy, and exerted greater efforts. In sum, the present perspective proposes that past events, current events, and anticipated future events shape the ongoing perceptions, affects, goals, and behaviors, and that short-time PBM affects long-term PBM and vice versa. Said differently, PBM refers to a complex and self-organized phenomenon that is irreducible to the sum of its components and that emerges spontaneously from the multiple interactions between its components.

3. Discussion and future research

The main goal of the present article was to propose an integrative perspective of momentum consisting in combining PM and BM and rethinking the relationship between momentum and sport performance. To do so, I mainly used the mediational and dynamical models of PM (Gernigon et al., 2010; Iso-Ahola & Dotson, 2014, 2016) and the models based on the analogy to Newtonian physics (Hubbard, 2016; Markman & Guenther, 2007; Nevin, 1992). I proposed to regard momentum (or PBM) as (a) a mediating phenomenon that may account for the relationship between early and subsequent success, (b) a composite process that may involve psychological, physiological, and behavioral variables, and (c) a complex phenomenon that is fluctuant and historically embedded and that may take place at different temporal scales. Additionally, I presumed that PBM originated in the $v \times m$ formulation and reflected the impetus capable to influence an actor’s ability to reach a desired goal. In that regard, PBM presents some distinctions (and resemblances) with other phenomena, such as hot-hand and flow.

3.1. Momentum, hot-hand, and flow

The hot hand fallacy corresponds to misperceptions of randomness related to performance, leading to attach falsely causal attributions. Hence, hot hand reflects the belief that gain is more likely to occur after a gain than after a loss (Avugos, Köppen, Czienkowski, Raab, & Bar-Eli, 2013; Bar-Eli, Avugos, & Raab, 2006). In that regard, PBM and hot-hand are both characterized by an altered state of mind, thereby leading develop perceptions about one’s ability to reach the desired goals (Iso-Ahola & Dotson, 2014). However, PBM represents a broader phenomenon than hot-hand. Indeed, if the hot hand fallacy may represent a psychological aspect of the process of PBM, PBM is above all the product of a $v \times m$ formulation, reflecting a more complex phenomenon involving personal (e.g., learned responses) and situational (e.g., perceived importance, value) variables. PBM also bears a resemblance to flow, which describes an experiential state of complete concentration in a task, accompanied by a loss of self-awareness and a distorted sense of time (e.g., Csikszentmihalyi, Abuhmedeh, & Nakamura, 2005). Hence, contrary to PBM, flow represents a psychological state, but not a process. However, and consistent with Iso-Ahola and Dotson’s (2016) view that PM would foster automatic

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1 In order to examine dynamical systems properties (e.g., history-dependence, non-linearity), Haken, Kelso, and Bunz (1985) recommended testing the effects of linear and gradual variations ascending and descending of a control parameter (i.e., a variable that may lead the system through its different possible states without prescribing the emerging state) on an order parameter (i.e., a variable that may reflect the global behavior of a dynamical system).

2 A critical boundary pattern is observed when the boundary between two typical behaviors of the system remains fixed despite changes in the direction of the variation of the control parameter. Mathematically, critical boundary supposes that a given value of $x$ gives one value of $y$, and that the nonlinear change appears at the same value of the control parameter.
process, one may suggest that flow, which is characterized by an automatic functioning, would be a possible consequence of PBM. Finally, PBM corresponds to a psychological and behavioral impetus triggered by a shift in perceived ability to reach a desired goal. In that regard, the hot hand fallacy may represent the starting point of the PBM process, which may promote the experience of flow.

3.2. Positive inhibition and negative facilitation

If one can be easily confused while examining the topic of momentum, since its important resemblances to the above-mentioned phenomena, one might also lose faith in its existence while realizing that positive (or negative) momentum sequence can level down (or level up) sport performance. Consistent with the concept of homeostatic balance, the projected performance model (Cornelius et al., 1997) addressed that issue by assuming that motivational systems would work to down-regulate PM intensity. According to the projected performance model, when perceptions of current performance either exceed (or are exceeded by) mean zone performance, positive PM (or negative PM) occurs. Thus, positive PM may elicit positive inhibition — characterized by a decrease in effort following successful performances — as well as negative facilitation — characterized by an increase in effort following negative feedback of performance (Cornelius et al., 1997; Silva et al., 1988). Specifically, the model of Cornelius et al. (1997) borrowed heavily from the notion of control systems that posit a negative feedback loop (e.g., Carver & Scheier, 1998; Powers, 1973). According to Carver and Scheier (1998), detection of discrepancies between a reference value — such as the expected velocity of moving toward a desired goal — and perceptions of the current situation — such as the perceived velocity of moving toward a desired goal — elicits emotions that signal the need to reduce the perceived discrepancy. Because positive emotions (e.g., pleasure, satisfaction) signal that one is progressing toward the targeted goal more quickly than expected, the control system encourages a decrease in effort (called coasting — see Carver, 2003). Conversely, because negative emotions (e.g., anxiety, fear of failure) signal that one is progressing toward the targeted goal less quickly than expected, the control system encourages an increase in effort. Cornelius et al. (1997) speculated that positive inhibition and negative facilitation are not systematic because individuals can activate forces to resist them by using mental skills or strategies. In turn, Cornelius and colleagues suggested that such forces might contribute to maintaining momentum over time by eliciting the expenditure of effort (see also Adler & Adler, 1978).

Employing competitive trials with participant dyads, Cornelius et al. (1997) found that both self-evaluations of performance and situational variables predicted PM perceptions, providing support for the notion that such perceptions result from a greater agreement between self-evaluations of current performance and mean zone performance. In addition, failure rate was positively related to levels of exerted effort (and vice versa for success rate), providing evidence for both negative facilitation and positive inhibition. Additionally, other authors found that negative momentum sequence led to enhanced behavioral performance (Perreault et al., 1998) and outcomes (Mack & Stephens, 2000; Stanimirovic & Hanrahan, 2004), suggesting the activation of the negative facilitation effect (Cornelius et al., 1997; Silva et al., 1988). Interestingly, focused on the analysis of dependence structure of BM in handball, Moesch et al. (2013) revealed that 7% of all matches showed a negative autocorrelation, indicating that a positive event was more likely followed by a negative event or conversely. Such a phenomenon that the authors labeled “anti-momentum” (p. 117) resembles the phenomena of positive inhibition and negative facilitation (Cornelius et al., 1997). Finally, the literature reveals that positive and negative consequences may appear as a response to a negative momentum and positive momentum, respectively. However, and consistent with Silva et al.’s (1988) and Cornelius et al.’s (1997) view as well as Moesch et al.’s (2013) results, Hubbard (2016) indicated that “… positive psychological momentum and negative psychological momentum occurred more often than did positive inhibition and negative facilitation” (p. 59). Said differently, both ironic phenomena might be considered as exceptional responses taking place when the individual is motivated “… to escape an aversive stimulus” (in the case of negative facilitation) and when “… a reinforcer [is] losing its effectiveness as a result of satiation motivation” (in the case of positive inhibition) (Hubbard, 2016, p. 69).

3.3. Theoretical implications

Consistent with Iso-Ahola and Dotson’s (2016) perspective, the present perspective assumes that initial success triggers psychological and neurological processes that optimize motivational and behavioral response patterns, thus fostering the occurrence of another success. In line with Adler and Adler (1978) envisioning “… a more complex process than this simple cause–effect relationship” (p. 154), this perspective presumes that PBM reflects a complex process where a diversity of determinants may interact with each other, thereby leading to the abrupt emergence of affective, cognitive, physiological and behavioral changes. In that regard, Den Hartigh et al. (2014), focused on team-experienced PM using rowing competitions, displayed that (a) perceptions of collective efficacy and task cohesion were higher during positive momentum sequence than during negative momentum sequence, and (b) interpersonal coordination was better during positive momentum sequence than during negative momentum sequence. Thus, those results support the view that PBM may reinforce motivation and behavioral efficiency, fostering in turn the appearance of a subsequent outcome. Moreover, and consistent with the control process models of PM (e.g., Adler, 1981; Cornelius et al., 1997; Taylor & Demick, 1994; Vallerand et al., 1988), this conceptual work posits that PBM may involve motivational mechanisms based on cybernetic feedback systems of affects leading to either intuitive effects (e.g., positive PM leads to enhanced performance) or counterintuitive ones (e.g., positive PM leads to perform poorly).

Further studies should examine the mediating role of PBM by investigating various psychological mediators (e.g., perceptions, judgment, reasoning) and behavioral mediators (e.g., behavioral efficiency, intra- and/or interpersonal coordination), as well as the impact of behaviors on the environment (e.g., competitive outcomes). Additionally, studies should apply designs allowing comparing performances observed during positive momentum, negative momentum, and no-momentum sequences. The presence of a no-momentum sequence would allow exploring more precisely the different links between early success, the different components of the PBM process, and subsequent success. I also recommend making a distinction between behavioral performance (e.g., energy expenditure, exerted power, efficiency) and competitive outcomes, in the sense that the former would belong to the process of PBM, while the latter would correspond to possible collateral effects. This echoes Vallerand et al.’s (1988) model that aimed to resolve the conflation between PM and its consequences in terms of competitive outcomes. In sum, PBM reflects a global process combining psychological and behavioral forces. As a result, momentum should not be reduced to a statistical phenomenon (Iso-Ahola & Dotson, 2014) or streakiness (Briki, Den Hartigh, Hauw, & Cernignon, 2012).

Despite that, streakiness might help shed the light on the PBM process and, more specifically, it might help understand how PBM
may influence the self-regulatory mechanisms operating during the pursuit of goals. Huang, Zhang, and Broniaczyk (2012) demonstrated how mental representations of one's perceived progress level function as self-regulatory mechanisms that maintain motivation and elicit effort expenditure during goal pursuit. Huang et al. (2012) demonstrated that people: (a) who just started pursuing a goal tended to exaggerate their perceptions of progress in order to believe that the desired endpoint was attainable, and (b) who were close to attaining their goal tended to minimize their progress perceptions in order to enhance perceived discrepancies and thereby elicit greater effort expenditure. Future research might examine whether and when individuals activate and shift their perceptions of attainability and discrepancy during momentum sequences. Moreover, an exploration of the relationships between attainability perceptions, self-efficacy and optimism, as well as between perceived discrepancies and pessimism, would shed additional light on the motivational processes that are inherent to PBM.

4. Conclusion

Paradoxically, momentum is one of the most commonly referred to psychological phenomena in the realm of sport, yet one of the least understood (e.g., Taylor & Demick, 1994). In the present article, I sought to provide a perspective based on noteworthy theoretical models of momentum already existing in the literature that have attempted to account for the relationship between momentum and performance (e.g., Hubbard, 2016; Iso-Ahola & Dotson, 2016; Markman & Guenther, 2007). I also sought to suggest that the study of momentum would benefit from the reconciliation between the similar phenomena of PM and BM (e.g., Hubbard, 2016). Momentum has elicited the curiosity of sport psychologists for almost 40 years because it appears to be a pervasive phenomenon, yet elusive to capture empirically. Given the integrative feature of this perspective of PBM, future work on momentum may benefit from an interdisciplinary approach that borrows from such disparate fields as biomechanics, physiology of effort expenditure, and neurophysiology.

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