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Is What You Think What You Get? Optimizing Mental Focus for Technical Performance

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This article considers interesting differences between the mental focus employed by an elite athlete javelin thrower (E1) when contrasted with three international standard javelin throwers (I1, I2, I3). Athletes' mental focus was recorded in both competition and training using self-report measures. In addition, kinematic analysis through point of release was examined for both categories of athlete. In both conditions, E1 demonstrated lower patterns of movement variability. Interestingly, a contrasting mental focus was recorded among athletes I1, I2, and I3 when compared with athlete E1. Tentative conclusions are drawn concerning the optimum sources of information for athletes before task execution in self-paced athletic events.

In elite sport what to think about, or perhaps what not to, has significant consequences for future performances (Singer, 2000). Appropriate psycho-behavioral strategies can enable cognition and attention to work at an optimal level and facilitate athlete performance to challenge and surpass personal bests in competition (Singer, 2000). In contrast, some strategies may yield suboptimum results. The present case study highlights the benefits of selecting an appropriate mental focus and relates this to the stability of movement patterns in one elite and three subelite javelin throwers.

To be a successful javelin thrower requires power, suppleness, speed and strength. For an 80m throw the javelin is released by the athlete at a speed of approximately 30 $m.s^{-1}$ (Morriss, Bartlett, & Fowler, 1997). However, with reference to international competitive standards in javelin, there is little difference between athletes in terms of their respective physiologies or their capacities to generate power through the run-up to actual release (Morriss & Bartlett, 1996). Therefore, at an elite level, technical skill is prized more highly than the ability to generate force (Paish, 2004).

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Accordingly, prior development, practice and "on-the-day" execution of technical skill appears to be the critical performance factor, making this event an ideal laboratory for examining the impact of the adopted mental focus on performance. Reflecting these aims, this article contrasted the mental focus of elite versus international standard javelin throwers, against quantitative process data obtained by kinematic analysis of key variables.

What Is the Optimum Mental Focus?

Received wisdom in sport psychology highlights the use of conscious "cues," often in a blend with other cognitive representations (Rushall & Lippman, 1997), to attain and maintain an optimum mental focus for performance. These can be defined as a cognitive self-regulatory skill (Moran, 2004) which has been reported by athletes to enhance concentration (Williams & Leffingwell, 2002). To this end, coaches have often provided athletes with movement "cues" that often emphasize a subroutine of the movement, for example, whipping the arm through in javelin. These are often referred to as "task relevant cognitions" (Rushall & Shewchuck, 1989).

For the purposes of this article, we need to draw a distinction between cues that emphasize a subroutine or component of a movement and cues that add both emphasis and feeling to the total movement, for example mood words. Mood words are defined by Rushall (2000, p. 1) as, "words which, when said or thought with appropriate feeling and emphasis, have some movement or emotional outcome. If a feeling does not occur, then the content is inappropriate and will be ineffectual." Mood words can reflect various performance capacities. Typically, a list of monosyllabic synonyms for strength, power (force), speed, agility, balance, and endurance are presented to an athlete who then selects those which best fit his or her experience of the movement. More pertinently, mood words have been found to enhance performance to a greater extent than either positive self-talk or task relevant content [cues] (Holingen & Vikander, 1987). If athletes before, or during, closed skill task execution were consciously to attend to an array of task relevant cues or cognitions, this can often undermine performance (Ferrell, Beach, Szeverenyi, Krch, & Fernhall, 2006; Loze, Collins, & Holmes, 2001; Lawton, Hung, Saarela, & Hatfield, 1998). In contrast, mood words can, if carefully selected, provide a holistic "source of information" [SOI] (Reed, 1996) about how the total movement pattern can be optimally sequenced and executed. The utility of a word which has connotations related to the power or speed of a movement, such as "Boom" is that (if it carries the appropriate information to the performer) it can easily be related to task execution while not interrupting the holistic movement pattern. Crucially, to act as a SOI as opposed to a part-skill cue, the mood word must capture the epitome of the movement and possess rhythmical properties that do not divide the movement into orthogonal units.

Against this backdrop, the problem for any athlete, coach, or sport psychologist is selecting the correct SOI. Theory concerning SOIs has been developed and extensively researched in ecological psychology, and is a major tenet of the work carried out by Gibson (1979). SOIs do not specify all of the material available to the athlete in the competitive environment but rather, offer an appropriate "aide memoire" for the most helpful information concerning the goal-directed activity. Recently, authors have proposed the use of more holistic SOIs (Reed, 1996) which offer the athlete an effective, comprehensive and more unconscious aide memoire for the skill, rather than its component parts (MacPherson, Collins, & Obhi, in review). These authors contrast this employment (which facilitates a smooth performance) with the more limiting use of part-skill cues, stressing the potentially disjointed task execution that may accrue. Studies have already offered some empirical support for this contention. For example, Collins, Jones, Fairweather, Doolan, & Priestley (2001) and Collins, Morriss, Bellamy, & Hooper (1997) have shown that, in competitive conditions, skilled performers can detrimentally alter the patterns of practiced movements by the use of an overly conscious series of mental cues.

Accordingly, this investigation focused on the performance impacts of self-chosen mental cues (sub elite throwers) or SOIs (elite thrower) employed in both training and competition. As predicted by emerging theory, we wished to note the process differences associated with the employment of mental cues or SOIs and the resultant pattern of movement variability with regard to each athlete.

Method

Case Study Design

This case study was designed to contrast mental focus and associated movement patterns between one elite and three international standard throwers, in both practice and competition. Given the exploratory nature of the study and the real-life context in which it occurred, a case study approach was selected because it was neither possible nor desirable to divorce the phenomenon, the mental focus and the associated movement patterns, from the environmental contexts in which the task was executed (Yin, 1994). Given these constraints, individual analysis on a case study basis was the most pragmatic approach to adopt in relation to this select group of athletes (Hopkins, 1999).

In the current study we employed contrasting methodological paradigms to gain insight to athlete's mental focus. For example, kinematic analysis of relevant joint angles, and athlete's mental focus was determined using short, structured "clinical" interviews (Sommers-Flanagan & Sommers-Flanagan, 2002).

Participants

Four javelin throwers volunteered to participate in the study and provided full consent. Athlete E1 was an elite thrower who consistently achieved European, World and Olympic Finals. Athletes I1, I2, and I3 were international athletes, ranked between 35th and 80th in the world, but who had represented their country in international competition on numerous occasions.

Procedure

Each athlete's performance was analyzed for five throws in training (at full pace, with the athlete able to repeat a trial if they were unhappy with their first attempt) and in the most challenging competition identified by each athlete within that competitive season. Three athletes perceived this to be that year's national trials, which represented the trial for the Olympics. For the fourth athlete, the most pressured event was the Olympic final itself.

Clinical Interview Procedure

In training, short clinical interviews (Sommers-Flanagan & Sommers-Flanagan, 2002) were completed immediately after completion of the training trials. Each interview generated one page of transcript per scenario and lasted for approximately five minutes. Questions used pertained to mental focus and competition simulation and event outcome (see Table 1). Furthermore, follow-up questions revealed athletes' approaches to incorporating change from coaching sessions focused on technical refinement. Interviews were recorded verbatim, and then transposed. The same short clinical interviews were used for competition. These interviews were completed, in-person or by telephone, within six hours of the end of the event.

Biomechanical Procedure

A similar three-dimensional design was used in all settings. Two cameras were used to film the throws and, although makes and models varied, the cameras were always phase or gen-locked and operating at filming rates of at least 100 Hz (see Bartlett, Muller, Lindinger, Brunner, & Morriss, 1996 or Best, Bartlett, & Morriss, 1993 for further information on these experimental procedures). In filming the competitive event, for example, we used JC Laboratories Inc. high speed video cameras operating at 200 Hz. One camera was placed approximately perpendicular to the javelin runway in an elevated position on a TV platform. The lens was zoomed so that the thrower's movements, incorporating the end of the last cross-over stride, the delivery stride, and the first few meters of the javelin's flight were in view. The second camera was placed to the rear of the runway, also in an elevated position at the rear of one of the spectator stands and with a similar zoom setting.

The throwing area was calibrated before and after the event using five extendable poles, four of which were placed along each side of the runway, with the remaining pole in the center of this volume. This configuration defined a volume of

Table 1 Clinical Interview Questions for Athletes (A) and Coaches (B)

A. Interview Questions	B. Questions to Verify Interview Accuracy
• What was your mental focus in competition?	• Was this your (athlete's) mental focus in competition?
• What was your mental focus in simulated competition (training)?	• Was this your (athlete's) mental focus in simulated competition (training)?
• What was your aim in this simulated training session?	• Was this your (athlete's) objective in simulated competition (training)?
• What was your aim in this competition?	• Was this your (athlete's) objective in this competition?

approximately 67 m^3 (6 m × 4 m × 2.8 m). Large spherical markers were connected to the top with the base of each pole serving as reference points for the calibration system. Spirit levels were used to ensure that each pole was vertical.

The co-ordinates of body landmarks for each targeted throw were then digitized. The digitizing rate was 100 Hz for all throws. Approximating the intersection between the long axes of two adjacent body segments identified joint axes of rotation, a method conceptually similar to that of Danoff and Diainis (1980). The digitizing procedure was carried out using an M-Image video capture board interfaced with an Acorn Archimedes 440 microcomputer running software by Bartlett (1990). Event synchronization was achieved by observing the instant of right foot strike to begin the delivery stride. Every frame in each sequence, beginning at the point selected for event synchronization, through to 3 or 4 frames after release, was then digitized.

The 3-dimensional object-space co-ordinates of the eighteen points, defining a fourteen segment performer model, plus the tip, grip, and tail of the javelin, were reconstructed from the two sets of image co-ordinates using a DLT algorithm, corrected for linear lens distortion, implemented for the Archimedes by Bartlett (1990).

Data Analysis

Conducting a study that used interviews and kinematic analysis enabled data to be triangulated. While triangulation cannot be considered a pure test of validity (Mays & Pope, 2000), it ensured a comprehensive examination of the phenomena in question.

Qualitative Clinical Data Analysis

The system of data analysis used in this study was based on Strauss and Corbin's (1998) version of grounded theory. Initial data were analyzed in response to questions asked, in each scenario. Given the simplicity of the qualitative design and the brevity of the questions posed, open coding was used, whereby concepts were identified and their relevance was determined (Holt & Dunn, 2004; Strauss & Corbin, 1998).

For example, raw data extracts relating to aim and mental focus (in competition and simulated competition) were identified from individual transcripts. As analysis continued, concepts, actions and interactions that were similar or dissimilar were grouped together (Holt & Dunn, 2004) and distinctions drawn (see Figure 3). Once inductively developed from the data collected, categories were given a descriptive label (Maykut & Morehouse, 1994) that defined its characteristics.

As a result of the coding process, relationships between concepts developed. This allowed implications to be drawn concerning the apparent relationships between levels of athletic ability, aims and mental focus (see Figure 3).

However, given that a case study is presented (Yin, 1994) it is necessary to emphasize that evidence is also being drawn from the analysis of key kinematic variables. While not a tool commonly used in qualitative sport psychology, the depiction of relevant joint angles lends support to the qualitative storyline (triangulation). The final analytic tool in the current study was the delayed search for literature and its subsequent composition (Strauss & Corbin, 1998). Only once the qualitative data and key kinematic variables had been analyzed, and the nuances determined, was a literature review composed that framed the emergent pattern of data.

Trustworthiness of Qualitative Data

For both interviews for each athlete, validity of the data were confirmed through three stages. First, two investigators independently considered the transcripts selecting quotes which each felt best described each athlete's mental focus. Discussion between the two principal researchers, with reference to a third investigator in cases of nonagreement (none actually occurred), provided a set of between one and three quotes per athlete. Also at this stage, we checked that self-reported mental focus was identical between the training (perhaps more accurately a competition simulation) and competition situations. This was indeed the case, supporting the validity of straight comparison between the two settings.

In the second stage, quotes were presented to the personal coach of each athlete (see Table 1) accompanied by the simple question, "Are you completely satisfied that these quotes describe (E1, I1, I2, I3's) respective mental foci during competitive throwing?" The three coaches involved (one coached both the elite athlete and one of the internationals) all supported the quotes as an accurate representation.

Finally, the quotes were presented back to each athlete participant with a similar question; namely, "Are you completely satisfied that these quotes describe your mental focus during competitive throwing?" (respondent validation, Mays & Pope, 2000). Once again, all participants were happy to endorse their personal quotes.

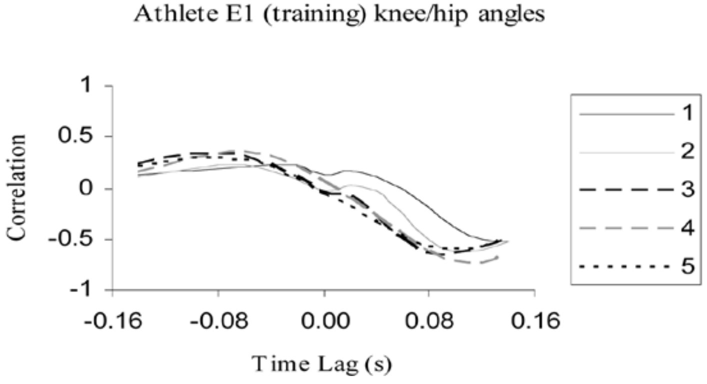
Biomechanical Data Analysis

The ability of throwers to achieve appropriate body positions at crucial instants of the throw has received the most attention from scientists and coaches. However, based on the results of previous biomechanical investigations and the arguments presented in the introduction, we focused rather on the overall temporal co-ordination of the action. Accordingly, four Conjugate Cross-Correlation Functions (CCFs, Amblard, Assaiante, Lekhel, & Marchand, 1994) were developed for each athlete in each of the two situations (training and competition) which best represented the crucial co-ordination features of the skill. These related to knee-hip angles, left knee-right hip-shoulder and right hip-shoulder-elbow coupling, all taken in the final phase of the release.

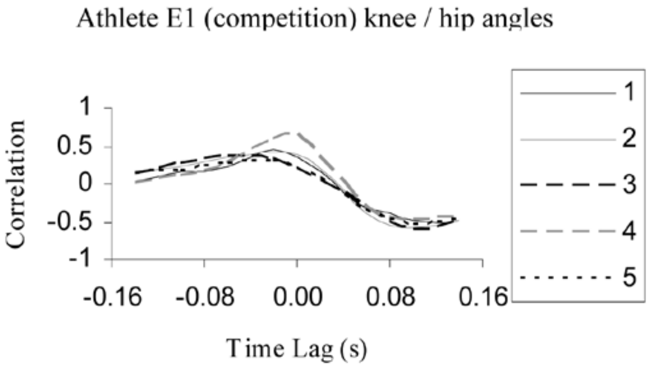
Subsequently, a three-dimensional analysis was completed and temporal patterning of key kinematic variables were contrasted by use of the Conjugate Cross-Correlation Coefficient. These data are summarized in Table 2. The biomechanical variables correlated were elbow; hip and shoulder angles; and left knee—hip and shoulder angles. For the purposes of visual inspection a subset of the data from Table 1 is presented in Figures 1 and 2 (Athletes E1 & I3). In both Figures 1 and 2, practice throw data (marked a, c, e) are depicted on the left, competition (marked b, d, and f) on the right. All graphs presented for both participants display five throws. The three pictorial pairs in each figure present a particular CCF between two joint angles, contrasted between the practice and competition condition.

Table 2 Calculations Obtained Using Conjugate Cross-Correlation Coefficient

Variability Indexes for Key Kinematic Variables						
	Knee and Hip		Left Knee-Hip and Shoulder		Elbow—Hip and Shoulder	
Subject Level	Comp.	Training	Comp.	Training	Comp.	Training
E 1	5.0	7.1	7.8	8.1	8.1	10.9
I 1	14.5	9.3	9.7	5.0	5.0	14.5
I 2	17.0	15.4	15.3	13.1	13.1	9.8
I 3	17.5	12.6	18.8	15.9	11.3	25.8

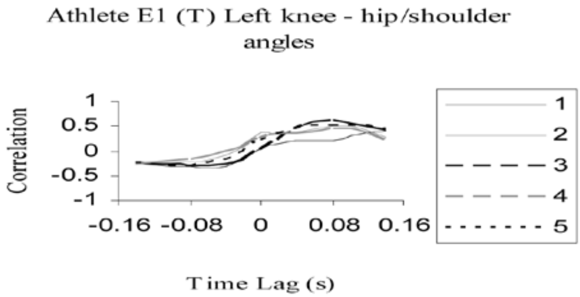


(a)

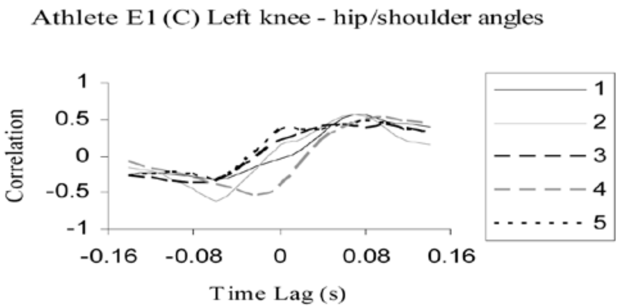


(b)

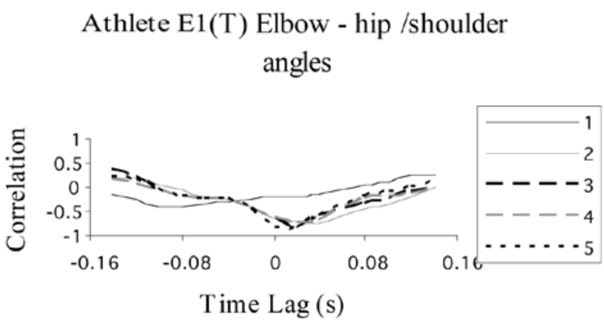
Figure 1 —Athlete E1: Depicts consistency between varying joint angles in training (panels a, c and e) and competition (panels b, d and f). For each joint angle—in both training and competition, five throws were recorded.



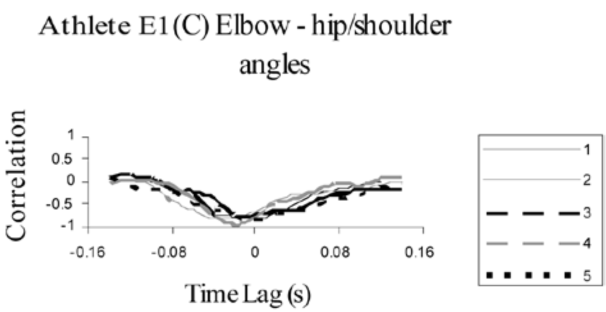
(c)



(d)



(e)



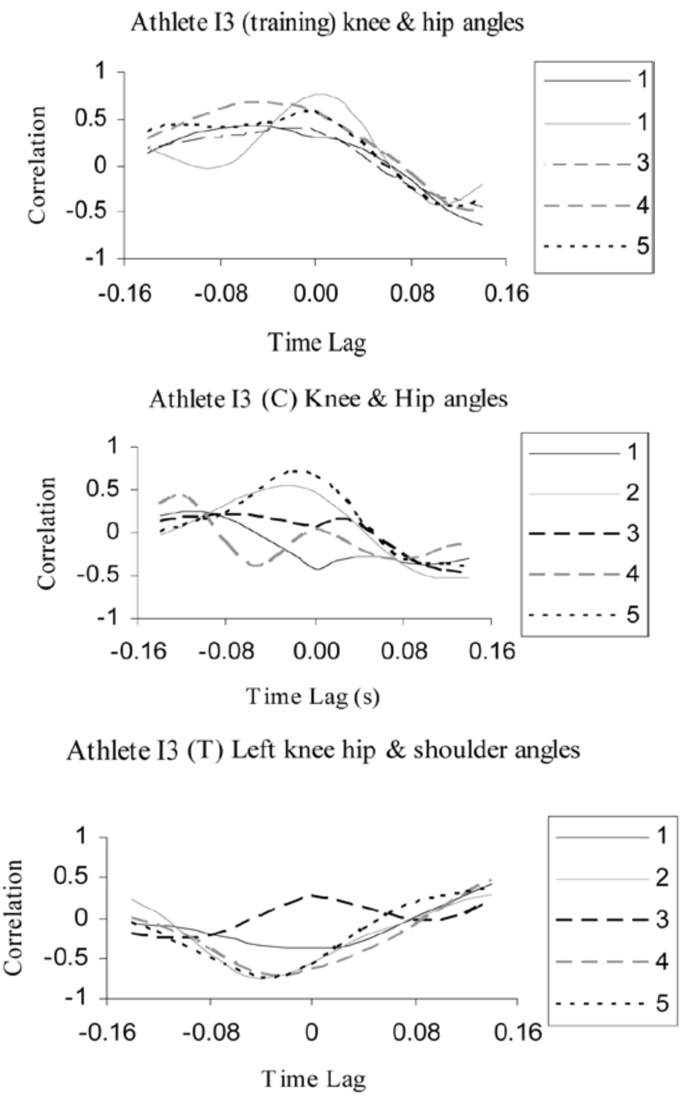
(f)

Figure 1 ***(continued)***

Results

Biomechanical Analysis

Movement variability indices are presented in Table 2, with larger values indicating greater movement variability between throws in competition and training. Figures 2 and 3 present this pictorially, with greater movement consistency shown by greater closeness/overlay of the CCF graph lines.

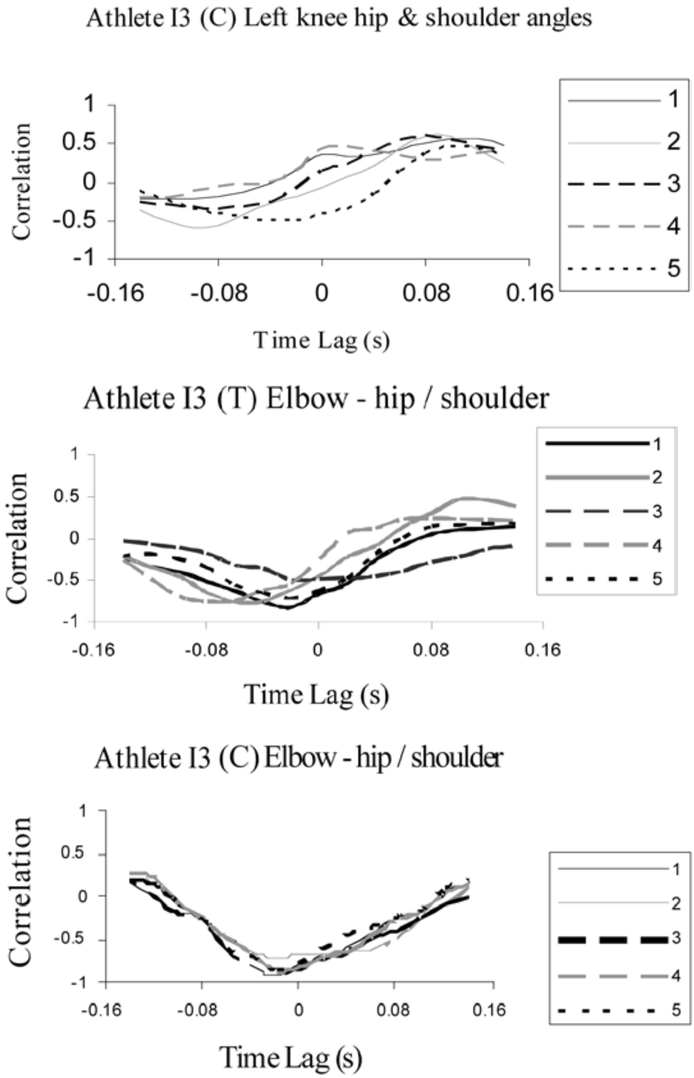


(a)

(b)

(c)

Figure 2 — Athlete I3: Depicts consistency between varying joint angles in training (panels a, c and e) and competition (panels b, d and f). For each joint angle—in both training and competition, five throws were recorded.



(d)

(e)

(f)

Figure 2 ***(continued)***

The contrasting variability in movement consistency between athletes E1, I1, I2 and I3 is of interest (Table 2). A discernible pattern is evident. Note that, for almost all variables, movement variability increases from training to competition for subelites (I1, I2, and I3), but decreased or stayed stable for the elite athlete (E1). The comparatively smaller movement variability demonstrated by the elite thrower enabled that athlete to produce a more consistent movement pattern in competition; the converse being true for athletes I1, I2, and I3.

Thrower	Throwers' reported mental foci and objectives in event (C) and competition simulation (training) – (T)	Concepts & Actions	Implications
E1	• "Rhythm… just rhythm. I have to hear the music" (C) • "I work hard on keeping the whole action 'together'"(T) • "When (Coaches name) makes a technical point, I work on it for a few throws, then try to slot it into the total movement" (T) • Imagery plays a massive part in this, both at the track and away from training" • "It's all about getting a really clear and consistent picture of the whole movement"(T)	• Rhythm • Holistic 'whole' movement • Integrating technique into the whole movement	Means of integrating technical change - Imagery Whole-part-whole skill development Consistent mental focus in training and competition Process (rhythm) influences movement outcome No mention of performance pressure Characteristics of excellence - elite
I1	• I have an emphasis on a 'fast arm' as my key point. (C) • It's my best feature, my springiness. I try to keep that going in the event." (C) • "Throw hard, get a good 'separation'" (C) • "Stay springy through the approach (T) • "I am always 'building' my technique…taking ideas from (coach name) and other throwers and trying to fit them into what I do" (T)	• Mental focus on part skill cue (throw) • Integrating technique into part of the whole movement	Key performance indicators are in contradiction Process (fast-arm) influences movement outcome Random integration of technique Non-elite
I2	• "I just try to keep form, stay on the floor and get a good block" (T) • "In competition, I'm trying to execute what (coach's name) tells me to do"(C)	• Mental focus on part skill cue (block) • Integrating technique into part of the whole movement	Competing mental foci in competition Unsystematic tinkering with throwing technique Non-elite
I3	• "When I am under pressure, I always concentrate on a giving it a good ****"(C) • "Just throw hard….get it away quickly and things stay respectable" (C) • "Continual development: I don't want to stand still and always look to develop my throwing action…sometimes I'll try things in the middle of a comp" (C)	• Mental focus on part skill cue (throw) • Integrating technique into part of the whole movement • Performance pressure	Susceptible to perceived negative competition pressure Generation of movement sub-routine associated with negative words Unsystematic tinkering with throwing technique Non-elite

Figure 3 — Open coding of clinical interview data.

Clinical Interview Analysis

A crucial means of understanding this pattern of movement variability lay in the clinical interview data that described athletes' mental focus (see Figure 3). The raw data, concepts, actions, and implications are outlined in Figure 1. Raw data themes for Elite 1 (E1) were rhythm and holistic movement. With reference to participants I1, I2, and I3, the predominant raw data themes related to a mental focus on *part* of the whole throw. Interestingly, these participants were also concerned with integrating technical change into the javelin throw; for example, participant I3 links performance pressure to executing a subroutine of the whole-movement. In a similar vein, for athletes I1 and I3, the self-reported focus was concerned with getting the javelin away quickly through concentrating on arm speed. This focus resulted in a corresponding decrease in movement variability (Table 2) of this subroutine in competition, but the movement variability of other joint angles in competition was comparable with those found in training. It appears that, as suggested in the Introduction, attending to one subroutine may have interfered with the consistency of the whole movement. Consideration of the CCFs (Figures 1 and 2) provides a diagrammatic representation of these contrasts.

In general, fluctuations in movement variability between training and competition was associated with the presence (or absence) of self-chosen appropriate (or less appropriate) mental cues. Crucially, a mental focus which accentuated a holistic SOI (in the athlete's words—"rhythm") was related to a reduction in movement variability. For example, Athlete E1 attended to the holistic SOI (rhythm) of the throw in the event, whereas the other athletes focused on subroutines contained within the whole movement. The implications of these findings will be discussed in the following section while making reference to findings in the current literature.

Discussion

On the basis of the evidence provided, we suggest that a rhythmically attenuated SOI can provide a holistic movement guide that contains complex information concerning the sequencing and orientation of the resultant movement pattern in a format which requires minimal interpretation. Specifically, the factor that combines associated patterns of movement is the rhythm at which the skill is executed. Underpinning the above examples is the use of a rhythmically cued SOI to optimize motor patterns, in so doing, synergizing mental and physical practice.

The mental cues used by the athletes were telling. In athlete E1's view, the key to determining consistency and performance was to focus on the rhythm of the whole throwing action (including the run-up), and use of this holistic SOI (cf. our comments earlier) generates a consistency across the whole action. This is reflected quantitatively by the smaller variability indices shown in Table 2, and the greater degree of overlap apparent in almost all of the pictorial pairs in Figures 2 and 3.

Conversely, with athlete I3 as one example, clinical interview data revealed a consistent focus on only one part of the skill. To achieve a consistent distance, athlete I3 was focusing on arm/shoulder speed—a subset of the whole throw. It is important to note that this aid worked effectively for that particular bit of the skill. As a consequence of this verbally administered part-skill cue, Figure 1 (F) and Table 2 show that this component of the movement pattern remained consistent in comparison with all other components of the skill but only in the competitive setting where the mental cue was employed (Figure 2 a, b, c, d, and e). However, in so doing, the net effect on the rest of the movement pattern has lead to relative instability, as athlete I3's attention is focused on a subcomponent rather than the whole movement. In short, focus on one part of the skill may provide a consistent execution of an inevitably less than optimum pattern!

Implications to Physical Practice

The implications that derive from this study stem, in part, from the open coding which generated concepts, actions and implications evident in Figure 3. Limitations notwithstanding, the potential implications of the current study are of interest relating to instructional issues and the implementation and refinement of athletic technique. For example, if a coach asked a performer to attend to a particular aspect of their technique, there may be a net *detrimental* loss in the overall stability of joint angles across the whole movement in association with the *effective* adoption of the coaching points proposed. There are two obvious and contrasting outcomes: either, coaches adopt single point technical inputs and accept as inevitable that technical change may limit eventual performance. Alternatively, however, various points of technical change may be integrated as part of a rhythmical strategy to introduce improvements in technique while providing the athlete with an appropriate mental focus (i.e., the rhythm of their footfall) and not the position of the javelin before release.

There are a number of potential links between this study and other findings in the literature. For example, several authors (e.g., Agostini, Righi, Galmonte, & Bruno, 2003; Ainscoe & Hardy, 1987) have already referred to the use of rhythm as an effective focus to maintain readiness before performance. The automatic "don't think" idea is obviously enshrined in the "Inner Game" series (Gallwey, 1986), supported by evidence regarding choking (Beilock & Carr, 2001) and underpinned by reinvestment theory (Masters, 1992).

In this vein, one interesting implication can be discerned from the athletes' mental focus during training for technical development. There was an associated difference between the elite athlete and the international athletes as to how they incorporated technical change into the whole movement. The elite participant used a very consistent and deliberate strategy which is best described as "Whole-Part-Whole" (Kurtz & Lee, 2003; Park, Wilde, & Shea, 2004—Figure 1). By contrast, the other athletes' approach could best be described as "Progressive Part" whereby technique was adapted without specifically considering the impact of technical change, and a corresponding shift in mental focus, may play upon the whole movement. Once again, these ideas must be considered carefully, and further investigation is obviously needed. However, it seems like the holistic focus should usefully pervade training and competition.

The other significant implication relates to the desirability of using a "whole skill," rhythm-based mental focus. In such cases, the whole skill can easily be rehearsed and 'primed' using mental skills tools, such as PETTLEP (Holmes &

Collins, 2001). By contrast, single-point, task-relevant cognitions offer limited capacity for use as preperformance routines (Singer, 2000). With reference to this approach, it is interesting to note the use of mental simulation of movement in relation to athlete E1 and it is apparent absence in relation to the other athletes. Particularly when the absence, or indeed the presence of behaviors associated with the pursuit of excellence are considered to be an essential component in the mental stratagem of elite athletes in training and in competition. Furthermore, in the current study the use of rhythm as an SOI by E1 was demonstrated to influence focus and distraction control—a further tenet of behavior considered to be associated with excellence. In contrast, it is interesting to note athlete I3's focus when in competition and under pressure (see Figure 3) is concerned with external recognition for respectability.

Limitations of the Current Study

These data are only case studies, albeit on high class performers. Crucially, further research is required to determine the potentially causative impact of SOIs on movement stability (instability). It is obviously not possible to make generalizations from subelite to elite performers in this regard, so study participants must be chosen with care! Furthermore, no link has been demonstrated between distance thrown and the optimal use of a rhythmically oriented SOI, although the elite athlete was, by definition, throwing further than the others. Further investigation needs to be carried out to develop the method by which mental focus and rhythmically oriented SOIs could be altered in training and competition and to further explore the nature of the relationship between mental focus and performance.

We should also emphasize the need to consider both the learning stage and the event of the athletes. Obviously, all four of our participants were at the autonomous stage of learning (Fitts & Posner, 1967). As such, an automatic, almost unthinking performance is indicated. We are not suggesting on the basis of this limited case study, that a holistic rhythm-based approach is suitable for athletes at earlier stages of development. Caution is also needed in extending the ideas from this investigation to other sports. For example, some events traditionally involve better performance in competition than training; javelin is one. Other sports, or even some performers within sports, do better in training and then try to reproduce these performances in competition (e.g., Olympic Weightlifting—Collins et al., 2001). Clearly, each activity and each performer has individual characteristics, which indicate that empirical investigation or individual support should be based on data obtained in that context.

Conclusion

In conclusion, this article offers further support for the employment of holistic SOI foci as a promoter of optimum performance. For practitioners, considering the selection of SOIs, and constantly checking their meaning to the athlete, may potentially help to ensure maximum return.

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