

The Efficacy of Mood State Profiling With Elite Performers: A Review and Synthesis

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Research into the relationship between mood profiles and athletic performance has produced equivocal results. It appears that athletic populations tend to show more positive mood profiles than the general population, but that mood profiles are ineffective in differentiating between athletes of varying achievement levels. POMS appears to have greater discriminatory power among homogeneous ability groups in terms of differentiating between successful and unsuccessful performances. In this paper, a number of conditions that increase the predictive capability of preperformance mood profiling are proposed. In addition, measurement issues, factors influencing cross-sectional and intraindividual comparisons, and proposed uses of mood profiling among elite performers are discussed. It is concluded that further research is required to fully understand how intraindividual mood fluctuations influence athletic performance, and to understand the impact of preperformance and intraperformance mood trends upon performance.

The link between mood and sport performance has a strong intuitive appeal among both athletes and researchers. It is not uncommon for athletes to attribute poor performance to their failure to “get in the right mood,” and similarly, sport psychologists have persistently striven to understand mood–performance relationships. The use of mood profiling in sport was pioneered by Morgan and his associates (Morgan & Johnson, 1978; Morgan & Pollock, 1977; Nagle, Morgan, Hellickson, Serfass, & Alexander, 1975). The desirability of the “iceberg” profile, combining high vigor with low tension, depression, anger, fatigue, and confusion, and supposedly reflecting “mental health,” was popularized shortly afterward (Morgan, 1980). The purpose of the present paper is to reconcile apparent contradictions in the mood–performance literature, to present evidence of the predictive capability of mood states, and to put forward recommendations for utilizing mood state profiling as a monitoring device among elite performers.

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Overview of Research Findings

A major challenge for researchers in the area has been to unravel the equivocality of relevant findings. A recent review of Renger (1993), which was critical of Morgan's work on methodological grounds, highlights the confusion surrounding the application of the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) in sport. Renger maintained that mood profile research has focused on two central issues: differentiation between athletes of varying achievement levels and differentiation of the athlete from the nonathlete. In respect of the first issue, studies in basketball (Craighead, Privette, Vallianos, & Byrkit, 1986), football (Daiss, LeUnes, & Nation, 1986), and marathon running (Durtschi & Weiss, 1986; Frazier, 1988) provided compelling evidence that POMS does not differentiate between elite and nonelite performers on the basis of cross-sectional comparisons.

The failure to differentiate between achievement levels on the basis of mood profiles appears to hold true regardless of how the construct of "elite performer" is operationalized. This is not surprising. It is reasonable to assume that variations in physical functioning, such as skill and fitness levels, will contribute more to sporting achievement than will variations in mood. Further, it is apparent from the work of Silva, Schultz, Haslam, and Murray (1981) that physiological measures have greater discriminatory power than psychological profiles even among physiologically homogeneous samples. Hence, where physical variations are substantial, it is entirely unreasonable to expect mood to predict achievement.

As far as discriminating between athletes and nonathletes is concerned, variations in physical functioning will be even greater, and by extension, the same argument would tend to apply. However, it is well established that many types of physical activity have mood-enhancing effects (Berger, Owen, & Man, 1993). Therefore, if physical activity is the more powerful moderating variable, differential mood profiles could be anticipated between active and inactive populations. Significant mood differences between active and sedentary samples were demonstrated by Cockerill, Nevill, and Byrne (1990), and indeed a substantial number of athletic samples have displayed iceberg profiles (see LeUnes, Hayward, & Daiss, 1988; Vanden Auweele, De Cuyper, Van Mele, & Rzewnicki, 1993). By definition such profiles represent variations from tables of normative data, which are derived from the general, largely nonathletic, population (McNair et al., 1971).

Though the balance of evidence may point to athletic populations showing more positive mental health, the evidence must be viewed with caution. A research paradigm that searches for cross-sectional differences in state measures without setting that state measurement in some situational context (e.g., prior to a sport contest or a business presentation) is effectively treating the construct as though it were a stable disposition. It could be argued that both research issues identified by Renger (1993) may be tainted by the tendency of researchers to treat mood as a stable disposition and to assume that high-performance athletes somehow have a monopoly on positive moods. Therefore, more pertinent research issues may be to assess the discriminatory power of POMS within homogeneous groups and to investigate how *intraindividual* mood fluctuations are related to fluctuations in individual performance.

In those studies that have investigated the predictive capability of mood profiles among athletic samples homogeneous in skill level and physical conditioning, there has been greater success in differentiating between successful and unsuccessful performances. This is particularly true where successful performance has been operationalized as one that leads to selection for a national team. Research has revealed differential POMS profiles between selected and unselected Olympic trialists in the sports of lightweight rowing (Morgan & Johnson, 1978) and wrestling (Nagle et al., 1975; Silva, Schultz, Haslam, Martin, & Murray, 1985). Similar results were found by Silva et al. (1981) with Junior World Wrestling Championship qualifiers and nonqualifiers. In each study, differences were in the direction predicted by Morgan's (1985) mental health model.

Renger (1993) rightly pointed out that it is misguided to classify an elite performer who fails to be selected for a major championship as an *unsuccessful athlete*. However, it may be justified to operationalize their performance during the trials as an *unsuccessful performance* because their immediate outcome goal was not achieved. Even acknowledging the methodological question marks raised by Renger (1993), there is support for the hypothesis that POMS has significant predictive capability among athletes at the elite level. On the other hand, Miller and Miller (1985) found no significant differences in pretrial mood between selected and unselected World Netball Championship trialists, suggesting that the nature of the sport may also moderate the predictive capability of POMS.

Occasionally, performance success has been operationalized in absolute terms using time, finish position, or some other continuous scale, and then attempts have been made to predict performance from preperformance mood using multiple regression models. Generally, this approach has facilitated significant predictions when samples were selected from within relatively narrow ability bands. For example, Cockerill, Nevill, and Lyons (1991) demonstrated that tension, depression, and anger could collectively predict finish time in cross-country running, and Friend and LeUnes (1990) identified anger and vigor as significant predictors of a range of performance indicators in baseball. M.J. Mahoney (1989), using a battery of psychological tests to predict weight lifting performance, found depression and anger scores to be significant predictors.

In recent research (Hall & Terry, 1995; Terry, 1993, 1994, 1995), performance has been dichotomized on the basis of postevent self-ratings by athletes according to whether they perceived themselves to have "performed to [their own] expectations" or to have "underperformed." It can be argued that performance categorized on a relative rather than an absolute basis in this self-referenced manner provides a more sensitive indicator of performance outcome than finish position. Using this method, it proved possible to correctly classify 70.9% ($p = .02$) of performances at World and Olympic level on the basis of preperformance mood profiles in the sports of rowing and bobsledding (Terry, 1993, see Figure 1). Hall and Terry (1995) replicated this strategy during the 1993 World Rowing Championships with 100% ($p = .01$) discriminatory success (see Figure 2), albeit with a smaller sample group. A further replication during the 1993–1994 Bobsled World Cup event in Winterberg, Germany, (Terry, 1995) revealed a similar profile pattern (see Figure 3). Performances were classified to 64.7% accuracy, even though the discriminant function was not significant ($p > .05$).

Contrastingly, pregame mood profiling showed no discriminatory capability among the England cricket team during three matches against Australia (Terry,

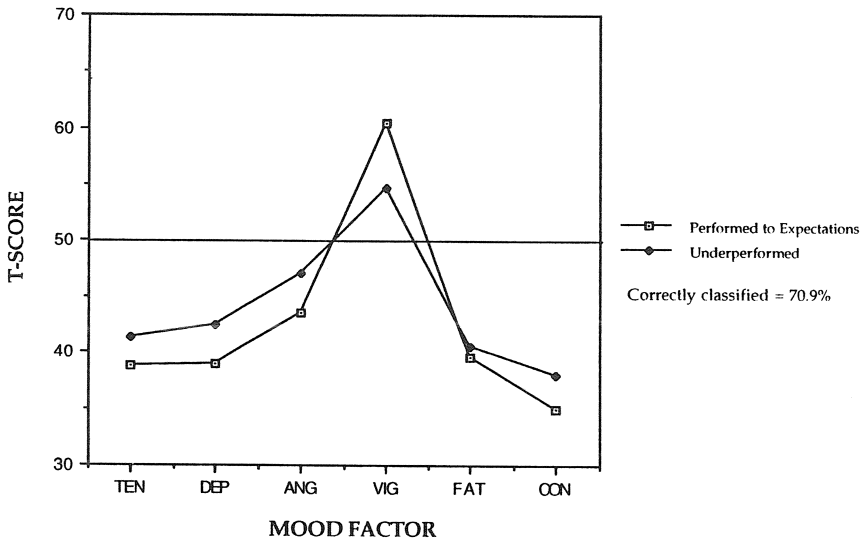


Figure 1 — Comparison of mood profiles for British rowers and bobsledders performing to expectations ($n = 42$) and underperforming ($n = 37$) during World and Olympic competitions (from Terry, 1993).

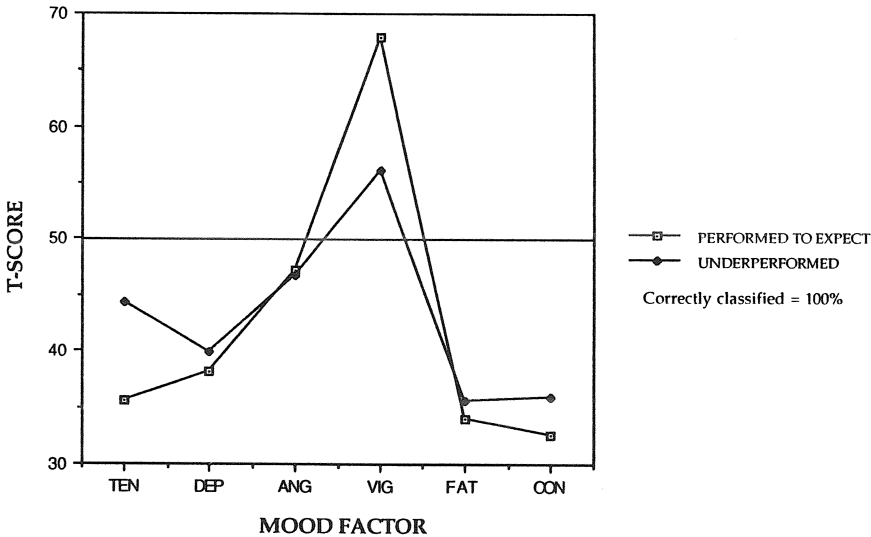


Figure 2 — Comparison of mood profiles for British rowers performing to expectations ($n = 6$) and underperforming ($n = 6$) during the 1993 World Championships. *Note.* From “Trends in Mood Profiles in the Preparation Phase and Racing Phase of the 1993 World Rowing Championships, Roundnice, the Czech Republic,” by A. Hall and P.C. Terry, 1995, *Journal of Sports Sciences*, 13, p. 57. Copyright 1995 by Chapman & Hall. Reprinted with permission.

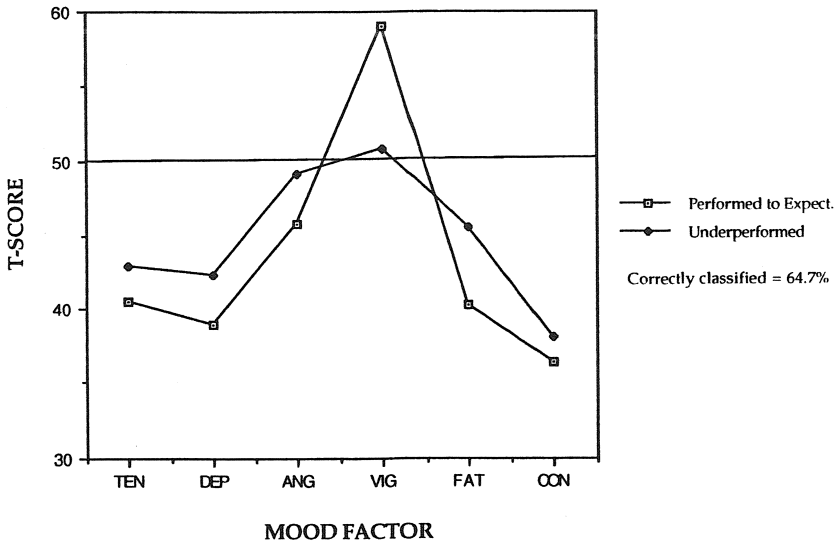


Figure 3 — Comparison of mood profiles for British and Canadian bobsledders performing to expectations ($n = 8$) and underperforming ($n = 9$) during the 1993 World Cup (Winterberg). *Note.* From “Discriminant Capability of Pre-Performance Mood State Profiles During the 1993-94 World Cup Bobsleigh,” by P.C. Terry, 1995, *Journal of Sports Sciences*, 13, p. 78. Copyright 1995 by Chapman & Hall. Reprinted with permission.

1994, see Figure 4) with only 48.5% ($p > .05$) of performances correctly classified—less than by chance. This contrast offers weight to the argument that the characteristics of the sport could moderate the impact of preperformance mood. Sports such as wrestling, rowing, and bobsledding are of short duration (<10 minutes), whereas netball lasts 60 minutes and a cricket test match lasts 5 days (even though the duration of individual performances will be variable). Because the potential for mood fluctuations *during* performance increases with performance duration, the predictive capability of preperformance mood will decrease accordingly.

Current research supports the conclusion that the presence of an iceberg profile per se contributes little to the prediction of athletic performance for two main reasons. First, there appears to be substantial variation between sports in terms of the desirability of specific mood factors. For instance, success in karate (Terry & Slade, in press) and, perhaps surprisingly, cross country running (Cockerill et al., 1991) appears to be associated with above-average anger scores. Similarly, high levels of tension have occasionally been shown to be facilitative to performance rather than debilitating (Cockerill et al., 1991).

Second, as with most state measures, individual differences are great, and it is not uncommon for athletes to perform well despite having theoretically “negative” profiles. Terry (1993) showed that although 73.8% of successful performances were associated with preperformance icebergs, more than a quarter were not. Conversely, 54.1% of unsuccessful performers exhibited icebergs. Therefore, fluctuations around intraindividual norms may prove more sensitive

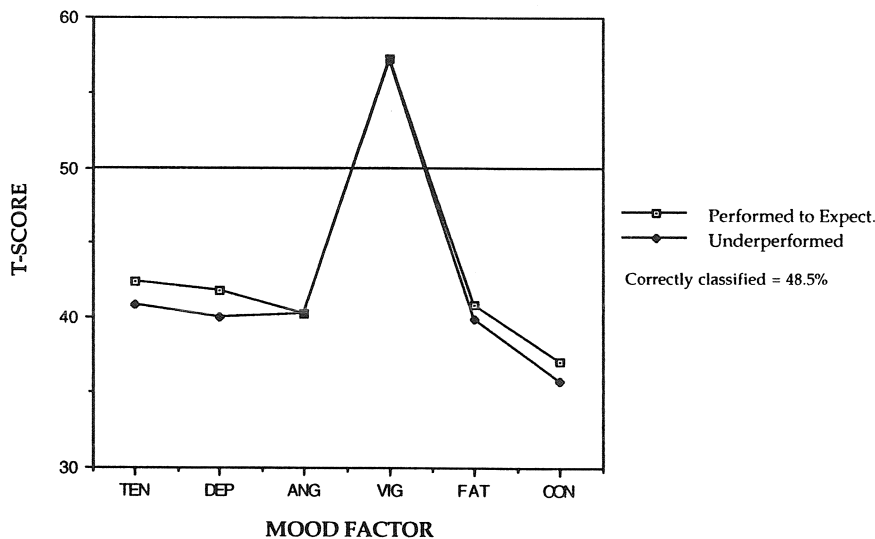


Figure 4 — Comparison of mood profiles for English cricketers performing to expectations (*n* = 18) and underperforming (*n* = 15) in three Ashes test matches during 1993 (from Terry, 1994).

indicators of performance, and indeed such a strategy has shown its effectiveness in longitudinal projects (Mahoney & Kremer, 1993; Morgan, Brown, Raglin, O'Connor, & Ellickson, 1987; Terry, 1992).

In summary, available research indicates that when certain conditions are met, preperformance mood profiles predict a greater proportion of performance variation. The proposed conditions—namely, short duration events, a self-referenced performance criterion, and relatively homogeneous levels of ability and conditioning—should be considered in future research utilizing mood state profiles.

Measurement Issues in Mood State Profiling

In order for mood profiling to be a worthwhile exercise with elite sports performers, a range of measurement issues must be addressed. Perhaps the most critical consideration is the means by which mood is evaluated. Although the original 65-item version of POMS has dominated the literature, there is a growing list of alternative measures (see Table 1). Three shortened versions (Grove & Prapavessis, 1992; Shacham, 1983; Terry, Keohane, & Lane, in press) have been developed to cater to situations where time is of the essence, reducing administration time from 3–7 min to 2–5 min.

Concern has been expressed that, with five negative mood factors and one positive factor (two in the shortened version by Grove & Prapavessis, 1992), the unipolar versions of POMS have an excessively negative orientation (B.P. Miller, personal communication, April 12, 1992). From the viewpoint of the sport psychology practitioner responsible for maximizing performance, this may well be

Table 1 Versions of the Profile of Mood States

Authors	No. items	Subscales	Type
McNair, Lorr, & Droppleman (1971)	65	Tension, depression, anger, vigor, fatigue, confusion	Unipolar
Lorr & McNair (1988)	76	Composed–anxious, agreeable–hostile, elated–depressed, confident–unsure, energetic–tired, clearheaded–confused	Bipolar
Shacham (1983)	37	Tension, depression, anger, vigor, fatigue, confusion	Unipolar
Grove & Prapavessis (1992)	40	Fatigue, anger, vigor, tension, esteem, confusion, depression	Unipolar
Terry, Keohane, & Lane (in press)	27	Tension, depression, anger, vigor, fatigue, confusion	Unipolar

a strength rather than a weakness. There is compelling research evidence that negative affect inhibits sports performance (e.g., Jones & Hardy, 1990), whereas the notion that positive affect enhances performance is less well established. Hence, the original POMS may provide the most thorough indicator of performance-threatening moods.

Also, in relation to this issue, the exact nature of moods is the subject of continuing debate (C. Mahoney, 1989; Nowlis & Nowlis, 1956). Of persistent interest is whether semantically contrasting mood states, such as happy and sad or vigorous and fatigued, truly coexist or belong at opposite extremes of a bipolar continuum. Advocates of the bipolar theory may be drawn toward mood profiling using the bipolar version of POMS (POMS-BI; Lorr & McNair, 1988), which quantifies mood along six affective continua (composed–anxious, agreeable–hostile, elated–depressed, confident–unsure, energetic–tired, and clearheaded–confused).

POMS-BI has been used productively in exercise (Cogan & Parfitt, 1994; Daley & Parfitt, 1994) and injury rehabilitation (Pearson & Jones, 1992) environments. However, there is tentative evidence that the original POMS may be more sensitive in assessing mood changes than POMS-BI. Turner (1993) assessed the pre- and postexercise mood of 40 exercise participants. Participants were randomly assigned to either POMS or POMS-BI as the assessment device. Significant mood enhancements emerged for participants profiled using the original POMS, whereas no mood changes were evident for the POMS-BI group, even though the exercise activity met the mood-enhancing criteria proposed by Berger et al. (1993).

The second measurement issue involves temporal considerations, both in terms of the instructions to participants and the administration of the questionnaire. Participants are asked to describe “how you have been feeling *during the past*

week including today.” The transient nature of moods can make such a description problematic for athletes, many of whom comment that their moods fluctuate substantially during the course of a week. Moreover, the impact of prior moods upon current performance is questionable. Hence, where mood–performance links are being investigated, there is a strong case for using “how you are feeling *right now*” in the instructions to the athletes. It is unfortunate that many researchers fail to report the time references utilized in their measurement of mood state. This should be given greater priority in future research.

The time scale between mood profiling and performance is also an issue related to the transient nature of moods. Logically, a greater proportion of performance variation could be accounted for by a mood profile taken one hour prior to performance rather than one day. However, in Olympic or World Championship environments, it is generally considered too intrusive to take psychometric measurements on competition day. Therefore, administration on the eve of competition often proves the best compromise. Indeed, from the sport psychology consultant’s perspective, eve of competition profiles may be superior. Such profiles have been shown (Hall & Terry, 1995; Silva et al., 1985; Terry, 1993) to have similar predictive capability to “one hour” profiles (Cockerill et al., 1991), but have the advantage of allowing time for intervention by the sport psychologist, should the profile indicate this. It is clear from the results of Miller and Edgington (1984) that response distortion can occur if athletes suspect that the profiles are to be used for selection purposes. Hence, the postselection period on the eve of competition may provide the optimum time for profiling elite athletes.

A third measurement issue concerns the comprehension of items by subjects. Grove and Prapavessis (1992) pointed out that some POMS items are ambiguous. My personal experiences suggest that *listless*, *deceived*, and *full of pep* often require explanation. Also, *ready to fight*, which as part of the anger dimension should be taken literally, is often interpreted as a metaphor for “ready to compete.” Furthermore, words such as *blue* and *bushed* may be better established in the North American culture than elsewhere, and *grovelly* (Shacham, 1983) may not be universally understood as part of the anger dimension. To minimize misunderstandings, participants should be supplied with a culturally appropriate alternative word list such as that developed by Albrecht and Ewing (1988). The age of subjects may also moderate their comprehension of items, and there is a need for a POMS version designed specifically for children.

Factors for Consideration in Cross-Sectional Comparisons

It would appear that the prime consideration in cross-sectional comparisons is the control of possible confounding variables. It has already been argued that the selection of a sample group that is homogeneous in terms of ability and physical conditioning is essential for mood profiling to predict performance. Further, the task environment should be considered carefully. From the evidence reviewed above, it seems likely that preperformance mood is more closely related to performance in short duration activities.

To explain this relationship, it is necessary to hypothesize about the mechanisms by which mood influences performance. Although these mechanisms are unknown, some propositions seem tenable. First, high levels of confusion and

depression should result in difficulty maintaining correct attentional control; certainly no study has shown a positive correlation between either of these mood components and sport performance. Second, tension should lead to loss of fine muscle control and hence debilitate performance. Alternatively, tension might facilitate performance for the underaroused athlete, which may help explain the equivocal findings related to this subscale. Third, fatigue should reduce both physical capacity and self-efficacy. No research evidence has shown fatigue to have positive effects, whereas vigor, which enhances both perceived physical capacity and self-efficacy, appears to be closely associated with superior performance. Fourth, anger, being perhaps the most powerful mood component, should act either to divert attentional focus or to enhance determination. The link of anger to increases in adrenaline, an established agent in pain tolerance, may explain its association with superior performance in contact sports such as karate.

The preperformance mind-set of athletes may be highly influential upon performance, but if their mind-set changes *during* performance, then the influence is reduced. Logically, therefore, duration of event should be an important moderating variable. Investigation of the impact of *midperformance* mood profiles upon athletic performance may help to clarify the moderating effects of performance duration.

There may appear to be an inconsistency between the argument that short duration events facilitate the predictive power of mood profiling due to the transient nature of moods and the suggestion that even of performance is the optimum time for profiling. It has been shown that performance-related thoughts dominate athletes' thinking for some time prior to performance (Cratty, Lange, & O'Neill, 1984). The emotional response to preperformance mental rehearsal will be less intense than the response to actual events once performance has commenced. Hence, mood will tend to fluctuate more dramatically during performance than in the day leading up to it.

Another area for consideration is the impact of task variability upon the predictive capability of mood profiling. There is an argument that the fewer external influences upon performance, the more the athlete's mind-set will determine outcome. This would suggest that reduced task variability in the form of self-paced, relatively closed skills offers increased prediction. This argument is supported by the significant findings from sports such as rowing (Hall & Terry, 1995; Morgan & Johnson, 1978), weight lifting (M.J. Mahoney, 1989), cross country running (Cockerill et al., 1991), and bobsledding (Terry, 1993). Interactive, open-skilled sports, on the other hand, may reduce predictive capability, explaining nonsignificant findings in sports such as netball (Miller & Miller, 1985) and cricket (Terry, 1994). Significant predictions found in wrestling (Nagle et al., 1975; Silva et al., 1985) and karate (Terry & Slade, in press) suggest that the individual nature of a sport may be a stronger moderating variable than task variability.

Factors for Consideration in Intraindividual Comparisons

There are several issues for a sport psychologist to consider before drawing inferences from an athlete's mood profile. One important consideration is that the predictive capability of individual profiles tends to be enhanced the longer

the profiling process continues. Once an individualized database of mood profiles is generated through regular profiling, variations from an athlete's normative profile may suggest performance fluctuations. It should be emphasized that individual differences are large, and therefore, a single profile may tell little about forthcoming competition prospects. For example, Figure 5 shows profiles for two athletes prior to World Cup medal-winning performances. Although the profiles are very different from one another, they both represent profiles typically associated with good performance *for those individuals*.

The degree of intraindividual mood fluctuations also warrants consideration. There is some evidence that good performance is associated with mood stability or mood enhancement during the preperformance period (Hall & Terry, 1995; Terry, 1992). Terry (1992) collected daily mood profiles during World Cup and Olympic competitions. A pattern of significantly fluctuating moods was obtained for an underperforming four-man bobsled crew, whereas a pattern of mood stability from competition to competition emerged for the top performing crew. Similarly, Hall and Terry (1995) found that World Championship rowers who performed to expectations tended to show a steady *downward trend* in tension, depression, anger, fatigue, and confusion as competition approached. In contrast, their underperforming colleagues showed increasing tension and fluctuating anger and confusion during the same period.

Such trends do not identify the *direction* of influence (i.e., causality), however. It is equally possible that negative mood brought on by some external factor will adversely affect training, or that poor training performances will result in mood deterioration. Both might be reflected in poor competition performance. While it is easy to accept that an athlete whose mood becomes progressively more positive is likely to perform well, there is a clear need for further research aimed at understanding the impact of preperformance mood fluctuations upon

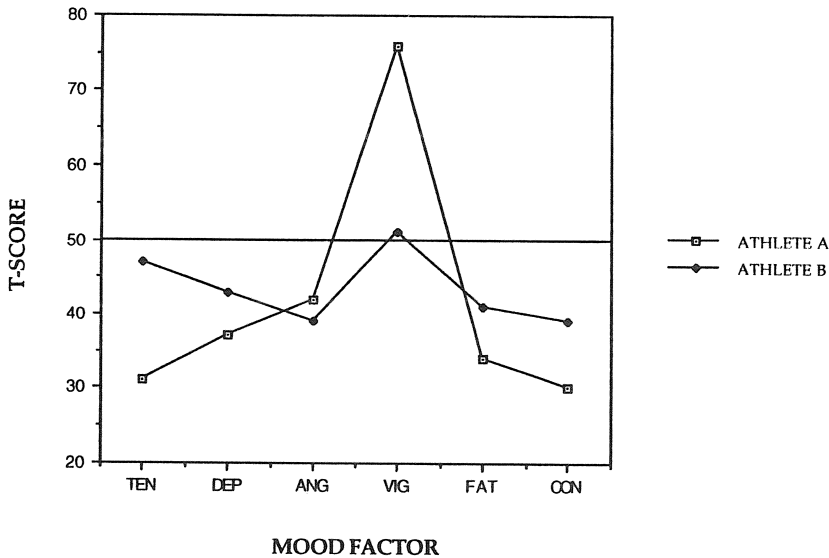


Figure 5 — Comparison of mood profiles for two British bobsledders prior to World Cup winning performances.

performance outcome. An intraindividual approach may prove a productive strategy in gaining insight in this area.

Another important issue in intraindividual mood comparisons is the frequency of profiling. In situations where mood profiles have been linked to training load as a psychological monitor of staleness and overtraining (Mahoney & Kremer, 1993; Morgan et al., 1987), POMS is sometimes completed before and after each training session. Similarly, where mood profiling is used as an index of adjustment to a new time zone or climatic conditions, daily administration may be justified. For most purposes, however, excessively frequent profiling is unwise. There is a need to strike a balance between building an individual database while not exhausting the cooperation of athletes. In my work as a sport psychology consultant, frequency of profiling varies from three times a week when on the road with squads, to once a week or once every 2 weeks with athletes communicating by fax.

Proposed Uses of Mood Profiling in Elite Sport

There are a number of potential uses for mood profiling available to the sport psychology practitioner working with elite athletes:

- As a general monitor of the athlete's mind-set
- As a catalyst for discussion during one-to-one sessions
- As an intervention in its own right
- For early problem identification
- As a monitor of the mood of team officials and support staff
- As a monitor of training load
- As a monitor during the acclimatization process
- For identification of overtrained athletes
- As a monitor during rehabilitation from overtraining
- As a monitor of emotional responses to injury
- For performance prediction
- As a contributor to the individualization of mental training

Of course, in many instances, a single profile may facilitate more than one objective. The primary function of profiling is to obtain a general indicator of athlete mind-set. Explaining an athlete's profile to him or her acts as an effective catalyst for discussion during one-to-one sessions, perhaps guiding questions toward the *reasons* tension is higher than usual or what the outcome of increased tension is likely to be. Once athletes understand the principles underlying POMS, their profile can serve as a type of independent intervention in its own right (e.g., helping the athlete to restructure tension into excitement or anger into determination).

Once built into the preparation routine of athletes at major international competitions, profiling helps in the early identification of problematic issues—interpersonal conflict, confusion over managerial decisions, acute self-doubt, or fatigue caused by overtraining. A mood profile will often reveal a change in mind-set before it shows itself in behavioral terms. Consequently, an opportunity

is gained to deal with the problem before energy is wasted on unproductive courses of action or misdirected toward uncontrollable variables.

The Olympic Games has the potential to generate problems not always encountered previously, such as strict accreditation procedures, frequent queuing, problems getting tickets for family and friends, increased media intrusion, and perhaps surprisingly, boredom waiting for competition to start. In the emotional melting pot of an Olympic environment, a strong case can be made for extending mood profiling to include team officials, coaches, and support staff. These people often bear the brunt of athlete frustration, and their resultant mood disturbance could, in turn, further threaten the mood stability of performers. Figure 6 shows a pattern of mood change for a group of British team officials at the 1992 Olympic Winter Games in Albertville, France. The profiles on Day 2 of the Games prompted a decision to allow each team official a daily period of “personal time” away from the seemingly endless list of problems. By Day 4, group mood had returned to a desirable iceberg profile.

Another potential use of mood profiling concerns the systematic monitoring of training load. This is particularly true in sports such as rowing, swimming, and distance running where athletes often function on the edge of a precarious balance between effective training and overtraining. Mood disturbance will usually accompany, and frequently precede, the negative physiological effects of overtraining. Indeed, an “inverse iceberg” POMS profile, incorporating low vigor with high fatigue, tension, anger, depression, and confusion, is regarded by staff at the British Olympic Medical Centre as an important diagnostic indicator of the overtraining syndrome. The process of rehabilitating athletes from an overtrained state (which usually necessitates a complete cessation of physical training) to full training involves a step-by-step introduction of progressively more demanding training loads. During this process, mood profiles provide an

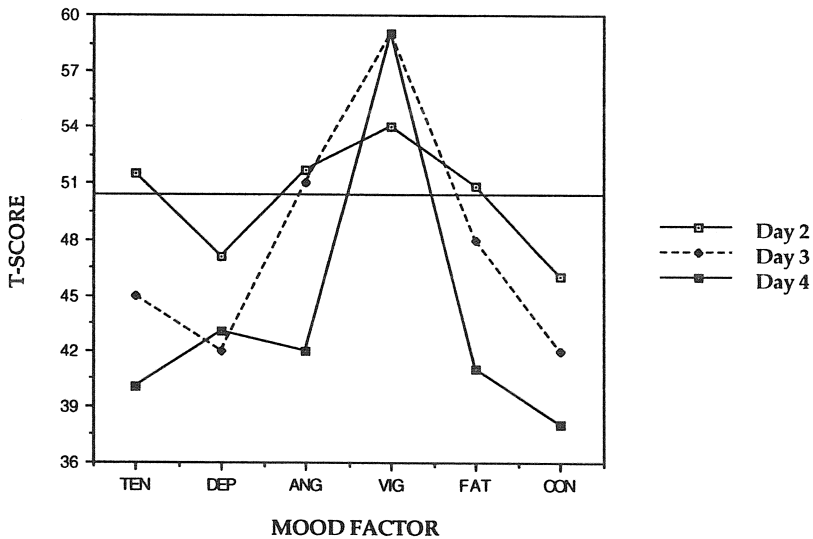


Figure 6 — Comparison of mood profiles for British team officials ($n = 5$) on Days 2 and 4 of the 1992 Olympic Winter Games (from Terry, 1992).

indication of the athlete's adaptation to these training load increases, with mood disturbance suggesting a delay in increasing training load or even a temporary load reduction.

There is also justification for including mood profiling as a regular feature of training with any athlete—even those without a history of overtraining—to raise awareness of mood fluctuations and their possible impact upon performance. This is a strategy I have recently used successfully with an Olympic sculler and a leading professional horse race jockey. The link between mood fluctuations and physiological fluctuations is presently under investigation by Mahoney and colleagues (Mahoney & Kremer, 1993) who make small adjustments to the training intensity of elite swimmers on the basis of mood profiling, building on the strategies developed by Morgan et al. (1987).

An injured athlete undergoing rehabilitation treatment may also benefit from mood profiling. The emotional response to injury is often extremely acute, not unlike the classic five-stage grief response of denial, anger, depression, acceptance, and hope. POMS provides both a general measure of the emotional response and also an indicator of the response “stage.” It could be predicted that in the period immediately following injury, an inverse iceberg profile would be evident. It could also be predicted that subsequently, in the period immediately prior to reentering competition, an iceberg profile would be evident. POMS profiles, therefore, should be very useful when counseling injured athletes, and may even serve to speed the athlete through to the hope stage, which is associated with a more motivated approach to rehabilitation.

Perhaps the most salient use of mood profiling with elite performers is to predict forthcoming performance. Using an intraindividual approach and a self-referenced performance criterion, the “ideal” profile for a particular athlete may be identified within 6–8 performances. Thereafter, a preperformance profile that is substantially less positive than the ideal suggests that performance is threatened and that intervention may be advantageous. Due to the idiosyncratic nature of individual mood profiles (and their idiosyncratic link to effective performance), a judgment by the sport psychology consultant that the athlete requires an intervention is subjective. Certainly, applied sport psychology sometimes shifts from a science to an art—a source of challenge for the relatively inexperienced practitioner.

Clearly the mood profiling process is both individual and sport dependent. However, having utilized mood profiling with hundreds of international performers, it is notable to me that almost all performed best when their profile was iceberg shaped. Superior performance was (almost always) associated with high vigor scores, occasionally with above average levels of tension or anger, but rarely with above average depression, fatigue, or confusion. On those few occasions when athletes have performed well with high depression, fatigue, or confusion scores, they invariably concluded that they succeeded despite their mood and not because of it. It should equally be emphasized that there are also many occasions when athletes perform below expectations even though they exhibit an iceberg profile. This suggests that any claim that mood profiling is the “test of champions” (Morgan, 1980) is misleading. It also highlights the urgent need for POMS tables of normative data relating specifically to elite athletes (see Terry & Hall, *in press*). An iceberg profile plotted against athletic norms should

prove more predictive of athletic performance than one plotted against student or psychiatric outpatient norms (as is the case at present).

In the absence of athletic norms, perhaps the best single indicator of superior performance is what could be termed an "Everest" profile, with vigor at least one standard deviation above average (i.e., a *T* score of 60 or more) and the remaining factors at least one standard deviation below average (i.e., a *T* score of 40 or less). When such a profile is evident, underperformance is rare. It is even rarer for an athlete showing a preperformance "Everest" profile to attribute underperformance to mood-related factors.

In those instances when a POMS profile suggests mood disturbance, the decision of whether to initiate an intervention must be made. On the basis of available research (and some intuition), it seems reasonable to suggest that more weight should be given to the vigor, depression, fatigue, and confusion scores than to the tension and anger scores where a wider range of scores is associated with good performance. At the intervention stage, mood state profiles may contribute to the individualization of mental training (Power, 1986). For example, an athlete who characteristically shows high anger may benefit from strategies aimed at transferring anger into vigor, whereby one who shows low vigor might work at developing activation skills.

Conclusions

From the evidence reviewed, it can be concluded that mood profiling has little utility in differentiating between sporting groups of heterogeneous ability and only a limited capacity to distinguish the athlete from the nonathlete. It is also possible to conclude that, in certain specific elite sport environments, the pre-performance mood profile has been shown to significantly discriminate between successful and unsuccessful performances with some consistency. Further research is needed to fully understand the moderating effects of the nature and duration of the activity upon mood-performance relationships, to understand how intraindividual mood fluctuations influence athletic performance, and to understand the impact of preperformance and intraperformance mood trends upon performance. To achieve these aims, the development of a POMS version for children and the establishment of POMS norms for athletic samples can be important forward steps.

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