

## Mood State Profiles and Motivations of Triathletes

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The present study examined the mood state, total mood disturbance and motivations of 160 male and 89 female triathletes who competed in an annual triathlon in Victoria, B.C. All subjects completed the profile of mood states (POMS) questionnaire and a motivational rating scale following the event. In addition 20 male and 20 female randomly selected competitors completed the POMS two months later. MANOVA results indicated significant differences in mood states only for groups based on ability and the two different times that the POMS was completed. Successful females had higher psychic vigor ( $p < 0.05$ ), lower tension ( $p < 0.004$ ), and lower total mood disturbance ( $p < 0.003$ ) over unsuccessful females while successful males had lower depression ( $p < 0.004$ ) than unsuccessful males. Results demonstrated higher confusion ( $p < 0.01$ ) and lower psychic vigor ( $p < 0.03$ ) for females on the test completed two months following the event. The study also discussed the different motivations for the performance and the "iceberg" profile of competitors.

Cette recherche étudie les tempéraments, le total de dérangements de tempérament et de motivations de 160 hommes et 89 femmes que ont participé comme athlètes à la compétition annuelle du triathlon à Victoria, Colombie Britannique. Tous les sujets ont complis le questionnaire de profile de l'état de tempéraments (POMS) et l'échelle d'évaluation de motivation après la compétition. De plus, 20 hommes et 20 femmes, choisis par hasard parmi les compétiteurs, ont complis le POMS deux mois plus tard. Les résultats de l'analyse de variance multiple ont démontré qu'il y a des différences significatives entre l'état de tempéraments basé sur l'abilité et les deux périodes différentes de temps que le POMS fut complis. Les femmes qui avaient réussi, démontraient plus de vigueur psychique ( $p < 0.05$ ), de tension inférieure ( $p < 0.004$ ), et le total de dérangements de tempérament ( $p < 0.003$ ) plus bas que celui des femmes qui n'avaient pas réussi. Tandis que les hommes ayant réussi avaient un taux inférieur de dépression ( $p < 0.004$ ) en comparaison de celui des hommes n'ayant pas réussi le triathlon. Les résultats ont démontré qu'il y a un taux élevé de confusion et un taux inférieur de vigueur psychique ( $p < 0.03$ ) pour les femmes ayant complis l'examen deux mois après la compétition. La recherche enquiert également les motivations différentes pour l'accomplissement et le profil "iceberg" des compétiteurs.

Positive mental health has been suggested as a prerequisite for high level athletic performance (Thomas, Zebas, Bahrke, Araujo, & Etheridge, 1983; Morgan, 1972). Further, it has been claimed (Morgan, 1980) that successful athletes consistently show fewer signs of psychopathology and lower levels of anxiety, neuroticism, and depression than less successful athletes. Current research work in this area has been aided by the development of the Profile of Mood States (POMS) questionnaire (McNair, Lorr, & Droppleman, 1971).

Use of the POMS test has consistently produced mood state profiles that differ from non-athletic samples. For example, Morgan (1977) observed an "iceberg-shaped" profile on the six mood state categories for world class athletes (rowers, runners, and wrestlers) that differed from college norms. This profile has been observed in other athletic populations (Riddick, 1984; Fuchs & Zaichowsky, 1983; Hagberg, Mullin, Bahrkem & Limberg, 1979). Further research in mood states has shown that successful athletes were less tense, depressed, fatigued, confused and possessed more psychic vigor than unsuccessful athletes (Nagle, Morgan, Hellickson, Serfass, & Alexander, 1975). Similar results have been attained for different levels of competition (Riddick, 1984; Wilson, Morley, & Bird, 1980). Furthermore, various player positions, red-shirt status and player classification within football teams have shown different mood profiles (Nation & LeUnes, 1983).

It has been proposed that the positive affective mood profiles shown by athletes may be the consequence of participating in athletics (Morgan, 1977). Folkins (1976) observed significant decreases in anxiety and depression (MAACL) with physical training. Wilson, Morley and Bird (1980) found the mood state profile of marathoners to differ from joggers suggesting that the extent of training may influence mood state. Town (1985) suggested that due to the added hours required to train for three events, triathletes may even score lower than other athletes in the areas of anxiety, anger, and psychic fatigue.

Therefore, the purpose of this investigation was to determine a mood state profile of triathletes after competing in the Sri Chinmoy Triathlon in Victoria. Differences in mood profiles between gender, age groups, success, time of questionnaire completion and motivations to compete were also analyzed.

## **Method**

### ***Subjects***

Subjects were 160 male and 89 female triathletes who participated in a triathlon consisting of a 1-mile swim, 21-mile bicycling event, and a 6-mile run. The triathletes

were asked to complete two questionnaires: the POMS (McNair, Lorr, & Droppleman, 1971) and a questionnaire containing a motivational rating scale and information regarding sex, age, training habits, triathlon experience and finishing position. All competitors received the questionnaires and an informed consent form in the pre-race packages. The 249 subjects who completed the test represented 39% of the competitors. Subject characteristics and experience are shown in Table 1.

Table 1

Subject characteristics ( $\bar{x} \pm SE$ )

| Characteristics                     | Male<br>(n=160)  | Female<br>(n=89) |
|-------------------------------------|------------------|------------------|
| Age                                 | 31.55 $\pm$ 0.70 | 29.87 $\pm$ 0.84 |
| Number of training session per week | 6.94 $\pm$ 0.31  | 6.83 $\pm$ 0.35  |
| Number of Triathlons completed      | 3.79 $\pm$ 0.30  | 2.92 $\pm$ 0.34  |

The POMS contains a 65-item 5-point adjective rating scale designed to measure six mood factors; Tension-Anxiety (T), Depression-Dejection (D), Anger-Hostility (A), vigor-Activity (V), Fatigue-Inertia (F), and Confusion-Bewilderment (C) (McNair, Lorr, & Droppleman, 1971). The validity of the POMS for determining the mood state of elite athletes is well established (Nation & LeUnes, 1983; Morgan, 1980). Total Mood Disturbance (TMD) was obtained by summing all six POMS factors (weighting vigor negatively). TMD was used to attain a global estimate of the affective state (McNair, Lorr, & Droppleman, 1971).

The motivations of triathletes to compete were assessed by a 6-item scale to which the respondents were asked to rank their reasons for their participation from highest to lowest on a continuum for 1 to 6. The reasons for participating were to compete with oneself, compete with others, improve social interaction, obtain reinforcement from others, improve fitness, or obtain a feeling of enjoyment.

#### *Procedure*

The triathletes were asked to complete both questionnaires 24 hours following competition and return them in the pre-addressed envelopes provided (postage paid). Subsequently, 20 males and 20 females were randomly selected from initial respondents and asked to complete a second POMS two months later.

## Results

Male and female triathletes were compared on their response to the POMS by a one-way multivariate analysis of variance (MANOVA) utilizing the Wilks-Lambda criterion. No significant difference was found between gender on the six affective states described by POMS. However, females scored somewhat higher on tension, depression and confusion. No significant gender differences were found for TMD even though males scored slightly lower than females (see Table 2).

Table 2

Raw Scores for All Triathletes on Each POMS Variable ( $\bar{x} \pm SE$ )

| Variable               | Male<br>(n=160)  | Female<br>(n=89) |
|------------------------|------------------|------------------|
| Tension                | 9.07 $\pm$ 0.46  | 11.13 $\pm$ 0.76 |
| Depression             | 5.03 $\pm$ 0.46  | 5.69 $\pm$ 0.80  |
| Anger                  | 5.60 $\pm$ 0.47  | 5.47 $\pm$ 0.63  |
| Psychic Vigor          | 19.16 $\pm$ 0.47 | 19.03 $\pm$ 0.65 |
| Fatigue                | 7.46 $\pm$ 0.40  | 7.76 $\pm$ 0.59  |
| Confusion              | 4.99 $\pm$ 0.31  | 5.70 $\pm$ 0.48  |
| Total Mood Disturbance | 13.01 $\pm$ 1.69 | 16.74 $\pm$ 2.90 |

The motivational rating scale indicated that the primary response for males competing in the triathlon was to compete with oneself (39.4%) followed by fitness (38.1%), enjoyment (17.4%), and to compete with others (6.5%). In the female group, fitness was the primary response (48%) followed by competing with self (30.3%), enjoyment (16.3%), and to compete with others (3.8%). Minimal responses were found for social interaction and reinforcement from others in either gender (Table 3).

Subsequently, a 2 X 3 MANOVA was utilized to determine if male and female individuals who competed for the motivations of competition with self, enjoyment or fitness differed on their response to POMS and TMD. Other motivations were excluded due to the minimal response. No significant differences were found between the main or interaction effects of gender and motivational groups for POMS or TMD.

Table 3

Percent Response for Motivation to Compete for Male and Female Triathletes (n=249)

| Motivation for Competing  |        | Motivation Rating Scale (%) |      |      |      |      |      |
|---------------------------|--------|-----------------------------|------|------|------|------|------|
|                           |        | 1                           | 2    | 3    | 4    | 5    | 6    |
| To compete with self      | Male   | 39.4                        | 26.5 | 19.3 | 9.6  | 5.2  | 0.0  |
|                           | Female | 30.3                        | 25.3 | 25.3 | 10.1 | 7.7  | 1.3  |
| To compete with others    | Male   | 6.5                         | 12.3 | 16.8 | 27.0 | 17.4 | 20.0 |
|                           | Female | 3.8                         | 6.3  | 6.3  | 30.3 | 27.7 | 25.6 |
| For social interaction    | Male   | 0.0                         | 3.3  | 15.6 | 25.9 | 36.4 | 18.8 |
|                           | Female | 2.5                         | 5.0  | 18.8 | 27.5 | 32.5 | 13.7 |
| Reinforcement from others | Male   | 0.6                         | 2.6  | 2.6  | 12.2 | 31.0 | 51.0 |
|                           | Female | 1.2                         | 6.3  | 6.3  | 10.0 | 21.2 | 55.0 |
| For enjoyment             | Male   | 17.4                        | 20.6 | 31.6 | 18.2 | 7.1  | 5.1  |
|                           | Female | 16.3                        | 27.5 | 30.0 | 18.7 | 5.0  | 2.5  |
| For fitness               | Male   | 38.1                        | 34.8 | 14.2 | 7.7  | 2.6  | 2.6  |
|                           | Female | 48.7                        | 28.7 | 15.0 | 2.6  | 3.7  | 1.3  |

\*p &lt; 0.05

Three 2 X 2 MANOVA designs were used to determine if any differences in POMS and TMD existed between gender and two age groups (median age), gender and success in the triathlon (which was defined as those athletes who finished either above or below the median finishing position), and gender and two different completion times (within 24 hours and after 2 months of competition). No significant gender or age-group effects were found on any factor or TMD score. Also, no significant gender effect was discovered in the time or finishing position comparisons. However, significant differences in time of administration and finishing position effects were found,  $F(6,33) = 3.61$ ,  $p < 0.01$  and  $F(2,240) = 3.86$ ,  $p < 0.001$ , respectively.

Subsequently, paired and unpaired t-tests were applied to determine which POMS variables yielded the significant differences. No significant differences were

found for the males, however, the results suggest that the males were more tense and less depressed, angered, and confused two months after the triathlon than they were 24 hours following the event. The females showed significant lower psychic vigors [ $t(19) = 2.44$ ,  $p < 0.03$ ] and higher confusion [ $t(19) = -3.43$ ,  $p < 0.01$ ] between the two times on the POMS. TMD was not significantly different between age groups or when compared between the 24-hour and 2-month groups (see Table 4). both genders who finished in the first 50% of the competitors scored consistently higher

Table 4

Differences in POMS Response 24 Hours and Two Months  
After the Triathlon for Male and Female Competitors ( $\bar{x} \pm SE$ )

| Variable               |        | 24 Hours         |                  | Two Months |        | t | p |
|------------------------|--------|------------------|------------------|------------|--------|---|---|
|                        |        | (n=20)           |                  | (n=20)     |        |   |   |
| Tension                | Male   | 7.85 $\pm$ 1.28  | 6.60 $\pm$ 1.03  | 0.81       | 0.431  |   |   |
|                        | Female | 11.80 $\pm$ 1.83 | 9.70 $\pm$ 1.70  | 1.04       | 0.311  |   |   |
| Depression             | Male   | 3.30 $\pm$ 1.49  | 5.40 $\pm$ 2.20  | -0.86      | 0.403  |   |   |
|                        | Female | 6.95 $\pm$ 2.00  | 9.75 $\pm$ 1.76  | -2.04      | 0.056  |   |   |
| Anger                  | Male   | 3.05 $\pm$ 1.23  | 5.80 $\pm$ 1.67  | -1.99      | 0.061  |   |   |
|                        | Female | 6.25 $\pm$ 1.65  | 6.65 $\pm$ 1.80  | -0.22      | 0.829  |   |   |
| Psychic Vigor          | Male   | 17.95 $\pm$ 1.32 | 18.35 $\pm$ 1.27 | -0.24      | 0.812  |   |   |
|                        | Female | 20.85 $\pm$ 1.43 | 17.55 $\pm$ 1.51 | 2.44       | 0.025* |   |   |
| Fatigue                | Male   | 7.30 $\pm$ 1.29  | 6.25 $\pm$ 1.28  | 0.68       | 0.505  |   |   |
|                        | Female | 7.60 $\pm$ 1.43  | 8.40 $\pm$ 1.30  | -0.69      | 0.498  |   |   |
| Confusion              | Male   | 4.25 $\pm$ 0.64  | 5.10 $\pm$ 1.01  | -0.92      | 0.369  |   |   |
|                        | Female | 4.70 $\pm$ 1.21  | 8.05 $\pm$ 1.31  | -3.43      | 0.003* |   |   |
| Total Mood Disturbance | Male   | 7.80 $\pm$ 4.98  | 10.80 $\pm$ 7.51 | -0.40      | 0.697  |   |   |
|                        | Female | 16.45 $\pm$ 8.19 | 25.00 $\pm$ 7.41 | -1.53      | 0.142  |   |   |

\*  $p < 0.05$

on psychic vigor and lower on all other affective states on the POMS. However, significance was shown only on the depression scale [ $t(158) = -3.02, p < 0.004$ ] and tension scale [ $t(87) = 2.03, p < 0.05$ ] for males and for females on the psychic vigor scale [ $t(87) = 2.03, p < 0.05$ ]. The depression score for males increased from a mean of 8.52 to 9.63 between groups, whereas the mean score for tension increased from 8.89 to 13.36 and psychic vigor decreased from 21.87 to 17.77 for the females.

There was also a significant main group effect [ $F(1,245) = 14542, p < 0.001$ ] for TMD between the triathletes finishing in the top 50% when compared to the bottom 50%. Subsequent paired t-tests revealed that the difference occurred in the female population only,  $t(87) = -3.25, p < 0.003$  (see Table 5). The females who were more successful produced a lower mean TMD score of 7.84 compared to 25.84 for the less successful group. However, the male TMD score (10.03) was also lower in the more successful group than the less successful males (15.98).

## Discussion

Results of the present investigation yielded a mood profile of athletes and their motivations to compete in a triathlon of swimming, cycling and running. These results were similar to the typical findings of other investigators who have shown this profile to exist in elite swimmers, cyclists and runners (Riddick, 1984; Hagberg, Mullin, Bahrke, & Limburg, 1979; Morgan, 1977). The mood profile of these athletes has been shown to be different from normal college populations (Morgan, 1977) and sedentary controls or untrained individuals (Riddick, 1984; Wilson, Morley, & Bird, 1982). Athletes also have been observed to have a significantly lower total Mood Disturbance than non-athletes (LeUnes & Nation, 1982).

It has been theorized that these positive affective profiles (states) reflect the consequence of involvement in athletics rather than an antecedent or a selection factor (Wilson, Morley, & Bird, 1980; Morgan, 1977; Folkins, 1976). This suggests that the amount of activity may promote positive mood profiles. Since the triathlon involves the performance of three activities, the extra training required may further promote the affective state (Town, 1985). A non-statistical comparison among different athletic groups indicate that triathletes scored lower on tension, depression, anger, fatigue and confusion than elite swimmers and runners but were similar to cyclists (see Figure 1). Swimmers scored higher on psychic vigor while runners, cyclists and triathletes did not differ. Caution is advised in interpreting these results as statistical comparisons cannot be made.

Assessment of the motivations of the participants revealed that the desire to

Table 5

Differences in POMS Response Between Male (n=80) and Female (n = 44)  
Triathletes Who Finished Either Below or Above the Median Finishing Position

| Variable               | Sex    | Below            | Above            | t     | p      |
|------------------------|--------|------------------|------------------|-------|--------|
| Tension                | Male   | 8.52 $\pm$ 0.63  | 9.62 $\pm$ 0.45  | -1.20 | 0.230  |
|                        | Female | 8.89 $\pm$ 0.66  | 13.36 $\pm$ 1.19 | -3.07 | 0.003* |
| Depression             | Male   | 3.69 $\pm$ 0.45  | 6.39 $\pm$ 0.77  | -3.02 | 0.003* |
|                        | Female | 4.44 $\pm$ 1.14  | 7.56 $\pm$ 1.32  | -1.79 | 0.078  |
| Anger                  | Male   | 4.90 $\pm$ 0.56  | 6.30 $\pm$ 0.75  | -1.49 | 0.138  |
|                        | Female | 4.78 $\pm$ 1.70  | 7.11 $\pm$ 1.08  | -1.47 | 0.146  |
| Psychic Vigor          | Male   | 19.43 $\pm$ 0.64 | 18.89 $\pm$ 0.69 | 0.59  | 0.558  |
|                        | Female | 21.87 $\pm$ 1.77 | 17.77 $\pm$ 0.97 | 2.03  | 0.047* |
| Fatigue                | Male   | 7.90 $\pm$ 0.59  | 7.03 $\pm$ 0.53  | 1.09  | 0.279  |
|                        | Female | 8.57 $\pm$ 2.00  | 8.77 $\pm$ 0.89  | -0.09 | 0.929  |
| Confusion              | Male   | 4.46 $\pm$ 0.38  | 5.52 $\pm$ 0.49  | -1.70 | 0.092  |
|                        | Female | 6.46 $\pm$ 1.96  | 6.76 $\pm$ 0.79  | -0.16 | 0.877  |
| Total Mood Disturbance | Male   | 10.04 $\pm$ 1.99 | 15.98 $\pm$ 2.71 | -1.77 | 0.079  |
|                        | Female | 7.84 $\pm$ 2.88  | 25.84 $\pm$ 4.68 | -3.25 | 0.002* |

\* p < .005

improve within oneself, the fitness benefits gained, and enjoyment were high motivators for participation and competition by all competitors. Motivations to compete against other, social interaction and need for peer reinforcement received much less support. The high motivators of improvement, fitness and enjoyment previously have been shown to exist in younger sport participants (Gould, Feltz, & Weiss, 1985; Gill, Gross, & Huddleston, 1983).

No significant gender differences were observed in the present study. This reflects very homogeneous characteristics in the triathletes even though the mood

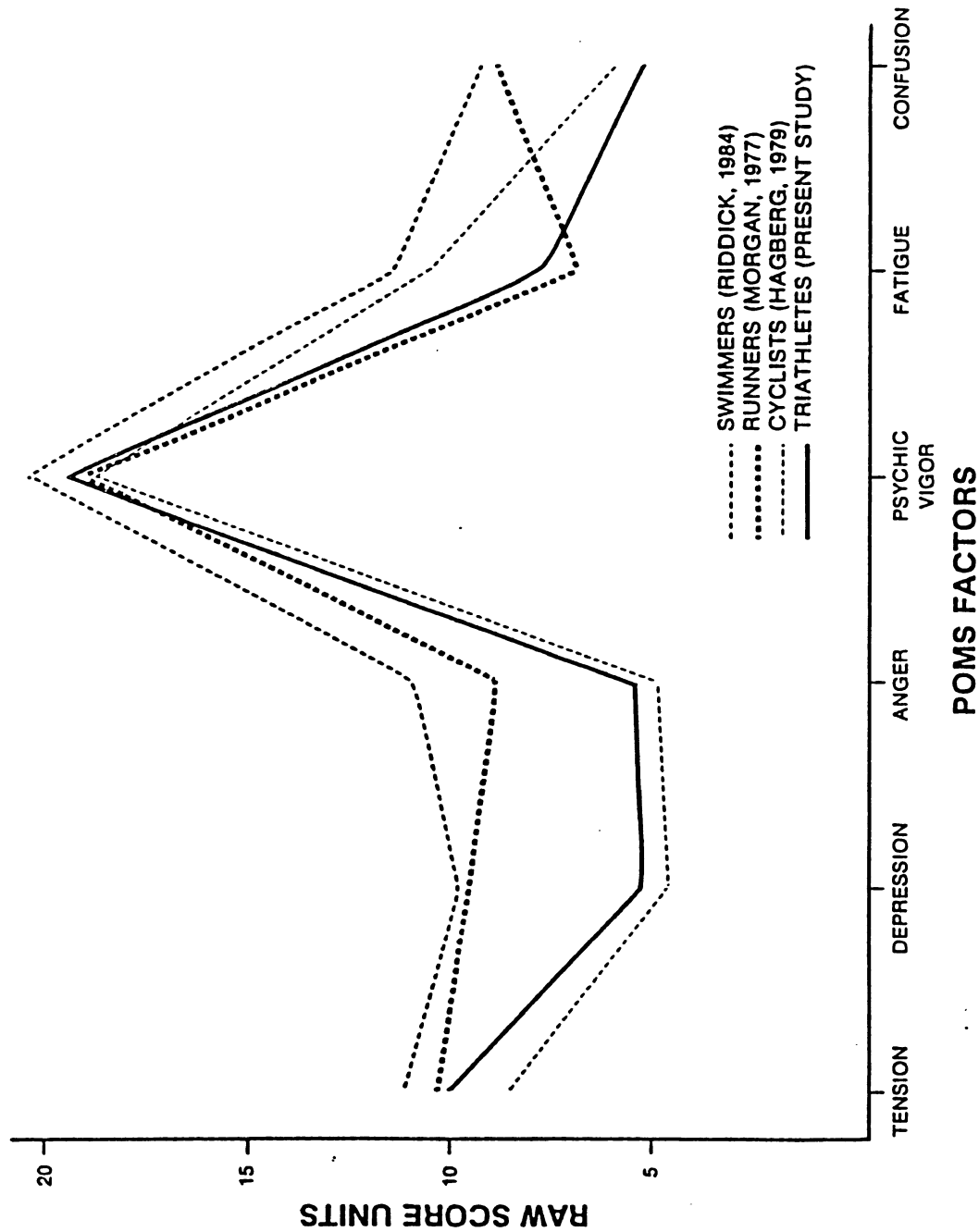


Figure 1. Mood profiles of various athletic populations.

profiles of these categorical groupings showed slight differences. Fuchs and Zaichkowsky (1983) also observed no significant differences between gender in elite body builders which further supports the notion by Williams (1978) that competitive female athletes have psychological profiles that are similar to their male counterparts.

The two different times in which the POMS were completed (24 hours and 2 months post) indicated slight but non-significant differences in the males which indicated higher tension, anger, and vigor and lower depression, fatigue and confusion 24 hours after the triathlon than 2 months later. Females had significantly higher vigor and lower confusion after the triathlon when compared to two months later. This would suggest that the experience of the triathlon influenced the mood state of the participants but assessment prior to competition would be necessary for conclusive evidence. Riddick (1984) has suggested that the pre-competition state of athletes may differ from their normal state due to the intense preparation involved. The present results indicate that the post-competition state was indeed different especially in the female triathletes and thus support the notion that mood states may be temporarily altered due to a prestigious event. However, since there was no way of controlling the activity of the subjects during the two month period, caution is advised in interpreting the observed differences.

Success of the triathletes and the effect on the mood state was analyzed resulting in a significant difference occurring between those that finished in the top or bottom 50%. The females who finished in the more successful group had significantly higher vigor, lower tension and lower TMD than less successful individuals. The males in the top group scored significantly lower on tension only. In general, the more successful males and females were less tense, depressed, angered, fatigued or confused and had higher vigor than the less successful group. This effect was also observed in the TMD score. Nagle, Morgan, Hellickson, Serfass and Alexander (1975) showed successful wrestlers to be less tense, confused and possess more precompetitive vigor than those wrestlers who subsequently failed in competing for Olympic berths. In relation to success, Nation and LeUnes (1983) showed red-shirt status induced significant effects in players' mood profiles. Red-shirted players had significantly higher anger and slightly higher tension and TMD scores than non-red-shirted players. thus, this study supports the finding that success may also be an important factor in determining the mood state of the athlete.

The differences in mood profiles of athletes can be regarded as beneficial from a mental health standpoint (Hagberg, Mullin, Bahrke, & Limburg, 1979) and seems to be consistently superior to the general population. The mood states of triathletes

have been shown to follow this trend of affective state enhancement. The present results indicate that POMS may be influenced by post-competition feelings and success in achieving goals through athletic endeavors. However, caution is advised in interpreting data from the POMS as demonstrating inherent and desirable qualities in the athletes themselves.

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