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Research article

MOOD AND PERFORMANCE IN YOUNG MALAYSIAN

KARATEKA

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ABSTRACT

In an attempt to test the conceptual model by Lane and Terry, the purposes of this study were 1) to assess mood states in non-depressed and depressed young karate athletes; 2) to assess mood states in relation to performance in young karate athletes. The participants were recruited from the 2004 Malaysian Games (72 males, 19.20 ± 1.16 years; 37 females, 18.78 ± 0.88 years). The athletes were divided into winners (medalists) and losers. The Brunel Mood Scale (BRUMS) was administered prior to the start of competition. MANOVA was employed to treat the data, while Pearson correlations were calculated for mood states in each depressed mood group and by gender. In terms of non-depressed and depressed mood, tension in the females was higher in the depressed group (5.61 ± 3.02 vs. 3.11 ± 1.90 , $p = 0.026$, $\eta^2 = 0.133$), as was fatigue (3.64 ± 2.61 vs. 0.89 ± 1.69 , $p = 0.006$, $\eta^2 = 0.199$). Tension in the males was higher in the depressed group (4.41 ± 2.52 vs. 1.50 ± 1.55 , $p < 0.001$, $\eta^2 = 0.215$), as was anger (1.43 ± 1.88 vs. 0.25 ± 1.00 , $p = 0.019$, $\eta^2 = 0.076$). The highest associations among mood subscales were between anger and depression ($r = 0.57$), and between depression and fatigue ($r = 0.55$) in depressed males. The female winning karateka scored higher on anger (3.08 ± 2.96 vs. 1.29 ± 2.24 , $p = 0.046$, $\eta^2 = 0.109$). The highest correlations between mood dimensions in depressed females were between depression and anger ($r = 0.85$) and between depression and confusion ($r = 0.85$). Contrary to previous research on the influence of depression on anger, only the female winners scored higher on anger. Several negative mood dimensions were higher in both male and female depressed groups, lending some support to the conceptual model advanced by Lane and Terry.

KEY WORDS: Karate, mood, performance, Malaysian, martial arts.

INTRODUCTION

Interest from a psychological perspective in martial arts in general, and karate in particular, has grown since the early publications on personality of martial arts athletes and karate practitioners in the 1960's and 1970's (e.g., Duthie et al., 1978; Kroll and Carlson, 1967; Kroll and Crenshaw, 1970). More recent research was concerned with attributions of control and vulnerability in karate (Madden, 1990), self-esteem (Richman and Rehberg, 1986) and

anxiety (e.g., Layton, 2000; Williams and Elliott, 1999).

In line with similar research in other sports (e.g., Fazackerley et al., 2004; Morgan, 1985; Prapavessis et al., 1992), researchers have also sought to develop models to predict performance in martial arts from a psychological point of view. For instance, Chapman et al. (1997) found that winning male college taekwondo athletes showed higher self-confidence and lower cognitive and somatic anxiety than their losing counterparts.

McGowan and Miller (1989) compared karate semifinalists in fighting and forms with those placed lower using the Profile of Mood States (POMS) (McNair et al., 1971) and found no significant differences in any of the mood subscales of Tension, Depression, Anger, Vigor, Fatigue and Confusion. When year-long competitions were taken into account, however, the successful competitors scored higher on anger. The authors hypothesized that the successful athletes used angry imagery to “psych” themselves up for competition. In a follow-up study, McGowan et al. (1992) reported first degree black belts to score higher on anger compared to higher ranked colleagues. The investigators suggested that higher ranked black belts may be more self-confident, so they may not need to use anger as a coping mechanism.

Winning male karate athletes (karateka) reported higher levels of vigor and anger, while scoring lower on tension, depression, fatigue and confusion (Terry and Slade, 1995). Based on pre-competition mood, the authors were able to correctly classify 91.96% as winners or losers. To enhance the homogeneity of the sample, the subjects consisted of male brown and black belts. In addition, karate performance was considered of relatively short duration and, as an individual sport, no group influences would affect the outcome of the bouts.

Terry (1995) suggested that the effectiveness of mood in predicting performance would depend on the type and duration of the sport, the relative homogeneity of the participants’ skill and the performance marker. Lane and Terry (2000) extended this proposition by hypothesizing that the association between mood subscales and their relationship with performance was mediated by depression. To test this model, Lane et al. (1999) investigated male kickboxers and found tension and anger to be related to losing in the depressed group, while this was not the case in the non-depressed kickboxers. Similar to the study by Terry and Slade (1995), homogeneity was facilitated by including only men from an individual, short-duration sport.

A further test of the conceptual model by Lane and Terry (2000) was recently reported by Pieter (2006), who showed that even though anger and fatigue were higher in Caucasian male aikidoka exhibiting depressed mood, the differences were not statistically significant anymore after applying a Bonferroni correction. However, had the sample size of 45 men been larger, the effect sizes of 0.72 (anger) and 0.74 (fatigue) would have been statistically significant. The depressed mood males reported a higher association between tension and confusion ($r = 0.91$) than those in the non-depressed group ($r = 0.55$). No other relationships among mood dimensions were found in the depressed mood

group.

Research on mood and performance in martial arts has focused on adult Caucasian subjects (Lane et al., 1999; McGowan and Miller, 1989; McGowan et al., 1990; 1992; Pieter, 2006; Terry and Slade, 1995). Few studies have used Asians martial arts athletes (e.g., Ampongan and Pieter, 2005; Pieter et al., 2000). Asian athletes may respond more openly about their feelings than their Western counterparts who might wish to convey the image of being confident competitors (Andrew Lane, personal communication, August 15-19, 2005). In addition, the mood-performance relationship may be different in females, as was found in the state anxiety-performance association (e.g., Ampongan and Pieter, 2005).

Pieter et al. (2000) reported that in male Filipino varsity taekwondo athletes, 78.6% were correctly classified as winners and 66.7% as losers, but this was not significant. Depression ($r = 0.72$) and fatigue ($r = 0.77$) were most influential in distinguishing between winners and losers. In the women, 80% were correctly classified as winners and 73.9% as losers, but this was also not significant. None of the mood predictors was significantly related to the discriminant function in the females. The small sample sizes for both the men and the women ($n = 38$ for each) may have contributed to the findings.

In a follow-up study, Pieter et al. (2006) found that in 15-year old Filipino boys, 55.6% were correctly classified as winners and 64.9% as losers. Taekwondo experience ($r = 0.71$) and anger ($r = 0.67$) were most influential in distinguishing between winners and losers. In the girls (14 years), 60.0% were correctly classified as winners and 78.7% as losers. Competition experience ($r = 0.86$) and anger ($r = 0.44$) were most influential in distinguishing between winners and losers. A possible explanation for the difference between this study (Pieter et al., 2006) and the one on varsity athletes (Pieter et al., 2000) may be the larger sample size in the former: 123 boys and 88 girls. It is also suggested that the mood-performance relationship might be different in children compared to their adult counterparts.

For instance, Ampongan and Pieter (2004) took into account the level of depression when investigating the relationship between mood and taekwondo performance in 13-year old Filipino children. Only 3 boys and 2 girls out of 45 child athletes reported no score for the depression subscale, so the analysis was done comparing winners and losers on mood states in the depressed group only. Although 70% in the boys and 65.0% in the girls could be classified as winners or losers, this was not statistically significant, which may have

been due to the small sample size (a total of 23 boys and 22 girls). Statistically significant relationships were found between depression and tension ($r = 0.67$) and depression and vigor ($r = -0.61$) in the losing boys. In the girl losers, there were correlations between depression and tension ($r = 0.81$) and depression and confusion ($r = 0.74$). It is suggested that Filipino children may report depression more freely than western counterparts, or that there are research conditions that influence how depressed mood is reported that are not being considered by the methods used in this. Both arguments could be used to explain the higher incidence of depressed mood in this sample (Andrew Lane, personal communication, August 15-19, 2005).

Lane and Terry (2000), among other things, suggested that those exhibiting some symptoms of depression will score high on tension, anger, fatigue and confusion, while scoring low on vigor. The authors put forward that depressed mood is likely to activate anger and confusion, to increase fatigue as well as to increase the associations between negative mood dimensions.

To date, no information about the relationship between mood and martial arts performance exists in Malaysian athletes. To test the conceptual model proposed by Lane and Terry (2000), the purposes of this study, therefore, were threefold: 1) to assess whether anger, tension, fatigue and confusion were higher, and vigor lower, in young Malaysian karate athletes experiencing some symptoms of depressed mood compared to those who did not; 2) to assess whether the interrelationships among anger, tension, vigor, fatigue and confusion were stronger in young Malaysian karate athletes experiencing some symptoms of depressed mood; and 3) to assess whether vigor was facilitative and fatigue and confusion debilitating of performance regardless of depressed mood in young Malaysian karate athletes. However, it is realized that the distinction made by Lane and Terry (2000) between no-depression and exhibiting some symptoms of depressed mood might not be appropriate for the current sample, similar to what was alluded to above regarding the Filipino young and adult taekwondo athletes.

METHODS

Participants (72 males, 19.20 ± 1.16 years; 37 females, 18.78 ± 0.88 years) were recruited from the 2004 Malaysian Games. Informed consent/assent was obtained from all competitors prior to testing. The Brunel Mood Scale (BRUMS) (Terry et al., 1999) was administered 1 hour before competition. The BRUMS is a 24-item questionnaire consisting of six subscales: Tension, Depression, Anger, Vigor,

Fatigue and Confusion. The karateka ranked each descriptor on a 5-point Likert-type scale, ranging from 0 = "not at all" to 4 = "extremely", using the "How are you feeling right now?" format.

To assess whether anger, tension, fatigue and confusion were higher and vigor lower in young Malaysian karate athletes experiencing depressed mood compared to those who did not, analyses were carried out within gender: a 1-way MANOVA for the males and 1-way ANOVA with a Bonferroni correction for the female athletes.

To assess whether the interrelationships among anger, tension, vigor, fatigue and confusion were stronger in young Malaysian karate athletes experiencing depressed mood a Pearson correlation within gender was used with a Bonferroni-adjusted alpha.

To assess whether vigor was facilitative and fatigue and confusion debilitating of performance regardless of depressed mood in young Malaysian karate athletes within gender, a 1-way MANOVA was employed for the males, while a 1-way ANOVA with a Bonferroni correction was used for the female karateka. The competitors were divided into winners (those placing first, second and third) and losers (those who did not place; see e.g., Terry and Slade, 1995).

Normality was assessed with the Kolmogorov-Smirnov test. For non-normal, skewed and/or kurtotic distributions, the L statistic (e.g., Thomas et al., 1999) was utilized to analyze the data. The level of significance for the MANOVA's was set at 0.05.

Table 1. Means (\pm SD) of mood by non-depressed and depressed mood groups in Malaysian female karateka.

Mood	Non-depressed mood (n = 9)	Depressed mood (n = 28)
Tension	3.11 (1.90)	5.61 (3.02)
Depression	--	3.68 (2.82)
Anger	.56 (.88)	2.36 (2.84)
Vigor	9.11 (4.57)	8.71 (2.69)
Fatigue	.89 (1.69)	3.64 (2.61)
Confusion	1.33 (1.58)	3.36 (2.73)

RESULTS

Depressed versus non-depressed mood

Table 1 shows the descriptive data for depressed and non-depressed mood in female karateka. Tension in the females was higher in the depressed group ($p = 0.026$, $\eta^2 = 0.133$), as was fatigue ($p = 0.006$, $\eta^2 = 0.199$) and confusion ($p = 0.043$, $\eta^2 = 0.112$). Table 2 displays the interrelationships among mood dimensions in the depressed group. In the non-depressed female karateka, no associations were found.

Table 2. Correlations (r) among mood subscales in depressed female Malaysian karateka.

	Tension	Depr	Anger	Fatigue
Depr	.76 ***	--		
Anger		.85 ***	--	
Fatigue	.72 ***	.80 ***	.71 ***	--
Confusion	.63 **	.85 ***	.79 ***	.74 ***

** p = 0.005, *** p < 0.001. Depr = Depression.

Table 3 depicts the descriptive data for depressed and non-depressed mood in male karateka. Tension was higher in the depressed group (Wilks' lambda = 0.823, $F_{6,65} = 2.331$, multivariate p = 0.042, multivariate $\eta^2 = 0.177$, univariate p < 0.001, $\eta^2 = 0.215$), as was anger ($\eta^2 = 0.076$), fatigue (p = 0.050, $\eta^2 = 0.054$) and confusion (p = 0.020, $\eta^2 = 0.075$). Table 4 shows the interrelationships among moods in the depressed group. In the non-depressed male karateka, no associations were found.

Table 3. Means (\pm SD) of mood by non-depressed and depressed mood groups in Malaysian male karateka.

Mood	Non-depressed mood (n = 16)	Depressed mood (n = 56)
Tension	1.50 (1.55)	4.41 (2.52)
Depression	--	2.54 (1.95)
Anger	.25 (1.00)	1.43 (1.88)
Vigor	10.75 (3.73)	9.75 (3.17)
Fatigue	1.06 (1.73)	2.41 (2.53)
Confusion	1.63 (1.89)	3.02 (2.10)

Mood-performance relationship

Tables 5 (females) and 6 (males) depict the descriptive statistics of mood by performance. The female winning karateka scored higher on anger (p = 0.046, $\eta^2 = 0.109$). No differences were found between winning and losing male karateka.

Table 4. Correlations (r) among mood subscales in depressed male Malaysian karateka.

	Tension	Depression	Anger
Anger	--	.57 ***	--
Fatigue	--	.55 ***	.40 *
Confusion	.39 *	--	--

* p < 0.05, *** p < 0.001.

DISCUSSION

As suggested by Lane's and Terry's (2000) conceptual model, anger, confusion, fatigue and tension are higher and vigor lower in depressed mood athletes. In the current study, confusion, fatigue and tension were higher in the female depressed mood athletes but there were no differences in anger and vigor, thereby partially

confirming the model. A possible explanation may be cultural differences, as alluded to above, with regard to the Malaysians being more open in reporting depression.

Table 5. Descriptive statistics for mood by performance in Malaysian female karateka. Data are means (\pm SD).

Mood	Winners (n = 13)	Losers (n = 24)
Tension	5.00 (2.35)	5.00 (3.31)
Depression	3.46 (2.73)	2.42 (3.01)
Anger	3.08 (2.96)	1.29 (2.24)
Vigor	8.69 (2.93)	8.88 (3.37)
Fatigue	3.00 (2.80)	2.96 (2.68)
Confusion	3.46 (2.79)	2.54 (2.54)

A recent investigation of 13-year old male and female Filipino taekwondo athletes revealed associations between depression and tension and an inverse relationship between depression and vigor in the losing boys, while significant correlations were found between depression, tension, and confusion in losing females (Ampong and Pieter, 2004). Among individuals who reported depressed mood, depression was highly related to fatigue (r = 0.91) and confusion (r = 0.86) in the winning boys, but only with tension in the winning girls (r = 0.74). However, anger was not used as a 'psyching' technique: there were no differences in anger among groups (Ampong and Pieter, 2004). Anger might not be related to performance until martial arts athletes become older.

Table 6. Descriptive statistics for mood by performance in Malaysian male karateka. Data are means (\pm SD).

Mood	Winners (n = 20)	Losers (n = 52)
Tension	4.45 (3.32)	3.50 (2.30)
Depression	2.05 (1.93)	1.94 (2.07)
Anger	1.00 (1.59)	1.23 (1.86)
Vigor	9.00 (3.45)	10.35 (3.20)
Fatigue	1.75 (1.86)	2.25 (2.62)
Confusion	2.00 (1.69)	2.98 (2.23)

Anger was suggested to psych up karate athletes for competition (e.g., Lane et al., 1999; McGowan & Miller, 1989; McGowan et al., 1992). Previous research seemed to indicate that anger may have been used to augment self-confidence (McGowan and Miller, 1989), while anger may also have been utilized to cope with increasing tension in experienced karateka (McGowan et al., 1990). On the other hand, McGowan et al. (1992) also suggested that less experienced female karateka may employ anger as a coping mechanism.

Research on Filipino taekwondo athletes seems to point to the importance of self-confidence in females, in that it accounted for 53% of the variance in pre-competition somatic state anxiety (Ampongan and Pieter, 2005). It may very well be, then, that anger in the female winners was indeed used to enhance self-confidence as proposed by McGowan and Miller (1989) and supported by Terry and Slade (1995), who found male winning karateka to score higher on pre-competition anger as well as self-confidence. If karateka experience success using anger as a coping mechanism, they may decide to continue "psyching" themselves by employing angry imagery (McGowan et al., 1992). McGowan et al. (1990) reported that successful karateka exhibited high tension and/or fatigue prior to competition, which may be a result of pre-competition restlessness, while high fatigue may be a result of rising tension as competition nears.

High anger in the female winners was accompanied by high depression, but not significantly. Although not statistically significant, male winners scored low on anger, but high on tension. This is contrary to the high anger-high tension relationship advanced by McGowan et al. (1990) for experienced karateka. Based on the results of this study, it is suggested that relationships among mood dimensions may depend on whether the sample is compared to athletes or non-athletes in addition to the effect of depression on these moods.

Future research should routinely assess various components of the conceptual model advanced by Lane and Terry (2000). Inclusion of female athletes for comparative purposes is encouraged, especially those from Asian populations. Different skill levels and athletes from various age groups should also be studied. For instance, Terry and Slade (1995) suggested mood to be more strongly related to performance in karate among those more homogeneous in skill, while Ampongan and Pieter (2004) seemed to indicate that age might be involved in the model.

CONCLUSION

Contrary to previous research on the influence of depression on anger, only the female winners scored higher on anger. Several negative mood dimensions were higher in both male and female depressed groups, lending some support to the conceptual model advanced by Lane and Terry (2000).

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KEY POINTS

- To date, there is no information about the relationship between mood and martial arts performance in Malaysian athletes.
- There might be cultural differences in the way Malaysian athletes respond to psychological questionnaires.
- The mood-performance and depressed mood-non-depressed mood relationships might be mediated by age.

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