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# RELATIONSHIP BETWEEN TRAINING EXPERIENCE AND PRE-COMPETITION MOOD STATES IN CADET WRESTLERS

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## ABSTRACT

It is a general assumption that training experience and mood states correlate, so that more experienced competitors are better in keeping pre-competition negative moods under control. This article addresses the issue of whether the same is assumption is valid for adolescent wrestlers. The aim of the study was to establish the correlation between training experience and pre-competition mood states in adolescent wrestlers. The sample consisted of 75 adolescent wrestlers (age  $16.04 \pm 0.83$ ) divided in two groups depending on their training experience: the less experienced wrestlers ( $n=33$ ) had  $2.88 \pm 1.04$  years of experience and the more experienced wrestlers ( $n=42$ ) had  $6.86 \pm 1.60$  years of wrestling training experience. All the participants completed the psychological questionnaire for mood assessment (Brunel Mood Scale – BRUMS) half an hour before the national championship. The Vigor variable ( $F(1,75) = 8.78$ ;  $p=0.004$ ) was the only variable in which the two groups differed. The less experienced wrestlers self-reported to have more energy, but they also connected their mood states with competition placement and body mass reduction, which clearly indicated a different structure of emotions control between these groups. The body mass reduction among the less experienced wrestlers was strongly connected to negative emotions, primarily anger ( $r=0.60$ ) and depression ( $r=0.47$ ). Competition placement was negatively connected to anger ( $r=-0.41$ ) and positively to vigour ( $r=0.34$ ). No significant correlations between the variables were established among the more experienced wrestlers. We may conclude that, although only one significant association was found (energy) in mood states, the more experienced U17 wrestlers can better control their negative pre-competition mood states than those less experienced wrestlers whose negative mood states are connected to body mass reduction and performance.

**Key words:** Greco-Roman wrestling, psychology, Brunel Mood Scale

## INTRODUCTION

Previous work indicates that sport-specific training experience is an important performance factor in wrestling. Higher-standard wrestlers significantly differ from those lower-ranked wrestlers in years of training experience (Karnincic, Tocilj, Uljevic, & Erceg, 2009; Lopez-Gullon et al., 2011; Pallares, Lopez-Gullon, Torres-Bonete, & Izquierdo, 2012). Long-term wrestling training causes several adaptation changes, one of them being the adaptation to high acid base disorders caused by wrestling bouts, and also as a sort of training phenomenon (Barbas et al., 2011; Kraemer et al., 2001). The issue arises whether these adaptation changes, caused by the competition experience, exist also at the psychological level.

It is well-known that a high-level competitive sport has potential to provoke a high level of stress and anxiety in athletes (Ford, Ildefonso, Jones, & Arvinen-Barrow, 2017). This is especially valid for combat sports, in particular, which are characterised, apart from their high intensity and loads, by very rough bodily contacts (throwing, punches, bars, chokings, etc.). Body mass reduction imposes an additional physical load and psychological pressure (Irfan, 2015; Karnincic, Baic, & Slacanac, 2016; Koral & Dosseville, 2009; Martinen, Judelson, Wiersma, & Coburn, 2011) as does high expectations from the athletes' environment. Additionally, adolescence is a very sensitive age due to the phase of intensive growth and development the young are experiencing. It is well-established that a huge diversity in psycho-physiological development levels exist among adolescents, caused mostly by the differences that might occur between the chronological and the biological age (Malina, Bouchard, & Bar-Or, 2004). How are young wrestlers coping with the psychological loads of competitions; is their performance impeded by the reflections of psychological loads; and does their training experience contribute to the facilitated mood control? These are the main questions addressed in this research.

## METHODS

The sample of participants consisted of 75 cadet male wrestlers (age  $16.04 \pm 0.83$ ) divided into two groups according to their wrestling training experience: the less experienced wrestlers ( $n=33$ ) had  $2.88 \pm 1.04$  years of experience and the more experienced wrestlers ( $n=42$ ) had  $6.86 \pm 1.60$  years of experience. The participants' parents and/or guardians signed the consent form for the participation in this research activity, which was voluntary.

The sample of variables consisted of mood variables (Brunel's Mood Scale – BRUMS) and two sport-specific variables (the amount of the reduced body mass in kg and final placement at the end of the national championship). Brunel's Mood Scale consists of 24 items assessing eight subscales: tension (panicky, anxious,

worried, nervous), depression (depressed, downhearted, unhappy, miserable), anger (annoyed, bitter, angry, bad-tempered), vigour (lively, energetic, active, alert), fatigue (worn out, exhausted, sleepy, tired), confusion (confused, muddled, mixed-up, uncertain), calmness (calm, composed, relaxed, restful) and happiness (cheerful, content, happy, satisfied). To the question: "How do you feel now?", the participant selects, on a numerical Likert-type scale (0 = not at all, 1 = a bit, 2 = moderate, 3 = enough; 4 = extremely), the option he believed best represented his current mood states.

All the data were processed by the Statistica 13.3 software package (Statistica, Inc.) and the descriptive statistics (mean, standard deviation, minimum and maximum value) were computed. The BRUMS's reliability on our sample of participants was tested by computing reliability parameters (Cronbach's alpha) and average inter-item correlation, whereas factor analysis (with varimax Raw rotation) was used to test factorial validity of the questionnaire. Differences between the two experience groups were tested using the one-way ANOVA test. Partial eta-squared (partial  $\eta^2$ ) was used as an effect size assessment. Pearson correlation coefficient was used to establish correlations between mood states, body mass reduction and championship ranking. Type I error was set at  $\alpha=5\%$ .

## RESULTS

**Table 1.** Reliability parameters (Cronbach's alpha –  $\alpha$ , average inter-item correlation – IIC) for the variables on BRUMS as well as BRUMS factor validity of the sample

	Less experienced (n=33)		More experienced (n=42)		Factor 1	Factor 2
	$\alpha$	IIC	$\alpha$	IIC		
Anger	0.81	0.56	0.84	0.58	<b>0.80</b>	-0.19
Tension	0.83	0.57	0.87	0.63	<b>0.84</b>	-0.19
Depression	0.75	0.70	0.75	0.63	<b>0.91</b>	-0.06
Vigor	0.62	0.30	0.86	0.61	-0.03	<b>-0.86</b>
Fatigue	0.73	0.42	0.82	0.57	0.63	-0.09
Confusion	0.88	0.65	0.66	0.33	<b>0.83</b>	-0.17
Happiness	0.66	0.34	0.92	0.75	-0.33	<b>-0.78</b>
Calmness	0.48	0.21	0.67	0.34	-0.44	-0.67
Average	0.72	0.47	0.80	0.55	Explained variance = 5.49	

As one can see from Table 1, the validity criterion was fulfilled for all the variables in the more experienced group of wrestlers, whereas among those less experienced only the calmness variable did not meet the validity criterion. Two factors that explained 50% of the variance were extracted in the factor analysis. The first factor was the factor of negative mood states (depression, tension, confusion, anger). The second factor was the factor of positive mood states (vigor, happiness). The variables fatigue and calmness, which were not significant for any factor, were omitted from further data analysis.

**Table 2.** Descriptive statistics parameters and for the differences between the two groups of wrestlers.

Variables	Less experienced (n=33)		More experienced (n=42)	
	Mean $\pm$ SD	MIN/MAX	Mean $\pm$ SD	MIN/MAX
Age (years)	15.76 $\pm$ 0.82*	15.00/17.00	16.26 $\pm$ 0.79*	15.00/17.00
Body mass (kg)	67.51 $\pm$ 14.9	41.70/101.10	63.60 $\pm$ 13.76	40.70/102.00
Body height (cm)	173.76 $\pm$ 9.22	148.00/188.00	173.60 $\pm$ 6.83	155.00/190.00
BMI (kg/m <sup>2</sup> )	21.61 $\pm$ 3.26	16.85/29.45	20.56 $\pm$ 3.29	14.77/31.12
Experience (years)	2.88 $\pm$ 1.04*	1.00/4.00	6.86 $\pm$ 1.60*	5.00/11.00
Placement (rank)	6.82 $\pm$ 3.78*	1.00/14.00	4.93 $\pm$ 3.73*	1.00/17.00
BM reduction (kg)	1.80 $\pm$ 1.80	0.00/6.00	2.16 $\pm$ 1.89	0.00/7.00
Anger	2.53 $\pm$ 3.44	0.00/12.00	3.23 $\pm$ 3.54	0.00/15.00
Tension	2.18 $\pm$ 2.58	0.00/10.00	2.98 $\pm$ 2.81	0.00/9.00
Depression	1.12 $\pm$ 2.66	0.00/9.00	2.02 $\pm$ 2.89	0.00/14.00
Vigor	10.44 $\pm$ 2.78*	0.00/16.00	8.05 $\pm$ 4.01*	0.00/14.00
Confusion	2.41 $\pm$ 2.57	0.00/8.00	2.98 $\pm$ 3.18	0.00/13.00
Happiness	5.21 $\pm$ 1.51	0.00/8.00	4.74 $\pm$ 2.00	0.00/8.00

\*significant at 0.05

Table 2 reveals the differences between the two groups of wrestlers in their age ( $F(1,75)=7.11$ ;  $p=.009$ ), training experience ( $F(1,75)=157.38$ ;  $p=.009$ ), and competition placement ( $F(1,75)=4.84$ ;  $p=.03$ ), the more experienced group being significantly better ranked at the end of the championship; only one significant between-group difference (vigor) was established in the analysis of variables assessing mood states ( $F(1,75)=8.78$ ;  $p=0.004$ ).

**Table 3.** Correlation between the sports-specific variables (experience, competition placement and the amount of the reduced body mass) with mood states as assessed by BRUMS

Less experienced group (n=33)	Anger	Tension	Depression	Vigor	Confusion	Happiness
Competition placement	<b>-0.41</b>	-0.13	-0.23	<b>0.34</b>	0.17	0.17
BM reduction	<b>0.60</b>	0.33	<b>0.47</b>	-0.01	0.13	0.10
More experienced group (n=42)						
Competition placement	0.02	-0.06	-0.08	-0.09	-0.05	0.10
BM reduction	0.14	0.08	0.29	0.04	0.28	0.16

Table 3 makes it clear that only among the less experienced wrestlers the final competition placement correlated negatively with anger ( $r=-.41$ ) and positively with vigour ( $r=.34$ ), whereas body mass reduction correlated positively with anger ( $r=0.60$ ) and depression ( $r=0.47$ ).

## DISCUSSION

Researchers have stated that BRUMS is a highly variable 'state' construct (Marttinen, Judelson, Wiersma, & Coburn, 2011), thus suggesting its questionable reliability; however, the present study rejects that assumption. The BRUMS reliability for all the mood dimensions, apart from calmness (among the less experienced wrestlers) was satisfactory (the less experienced wrestlers average  $\alpha=.72$ ; the more experienced wrestlers average  $\alpha=.80$ ). Two factors were extracted by means of factor analysis. Vigour and calmness were the two leading positive mood state factors. On the other hand, depression was the highest negative mood state factor, while fatigue was the lowest negative mood state factor that, due to its lack of significance, was not included into further data analysis despite the fact that numeric values listed it on the negative mood state factor scale.

We may assume that the lack of significant difference in the variable fatigue might be attributed to the fact that fatigue may be perceived as either a physical or mood state. A similar factor structure of BRUMS was confirmed in a study of Malaysian adolescent athletes (Hashim, Zulkifli, & Yusof, 2010). The obtained results suggest that BRUMS is a reliable and valid tool for estimating moods of adolescent wrestlers.

Numerical values of wrestlers' pre-competition mood states are somewhat perplexing. Namely, the less experienced wrestlers manifested a tendency for higher scores on negative mood states and slightly lower scores on all the positive mood states, whereas in the variable vigour, even the significant difference was established between the groups ( $p=0.004$ ). Emotions and anxiety are related; some newer theories include anxiety among emotions (Spielberger, 2013). Anxiety and emotional disorders are characterized by a long-lasting powerful negative emotion (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). Research on competition anxiety has ascertained that absence of anxiety is not a desirable pre-competition mood state (Lavalley, Kremer, Moran, & Williams, 2008; Tišma, 2008). A certain level of pre-competition psychological arousal is necessary to prevent athletes from entering a bout too relaxed or careless. We can assume that this provides an acceptable answer to the question why the less experienced wrestlers had a slightly "better" emotional profile. Further, they reduced a greater amount of body mass, which is a procedure that is negatively correlated with mood states (Karninčić, Baić, & Slaćanac, 2016).

The more experienced wrestlers in this study tended to score higher on the negative mood states, while, at the same time, they performed significantly better in competitions, i.e. they were higher ranked ( $p=0.03$ ). Similar results have been found among adolescent karatekas – the winners were higher on negative and lower on positive mood states (Wong, Thung, & Pieter, 2006). The sample of adolescent athletes from China scored lower on the scale of anger and energy. We may assume that the lower values of Chinese karatekas were connected with the fact that they did not reduce body mass, but also with the time the questionnaire was applied – in our study it was before a competition, whereas in the Chinese study it was before a training session (Zhang, Si, Chung, Du, & Terry, 2014).

Poor mood states should not reflect on the wrestlers' competition performance. The conducted correlation analysis demonstrated that in the less experienced wrestlers anger had a hindering impact on competition placement ( $r=-.41$ ). On the other hand, anger was among the experienced wrestlers slightly higher, but it did not correlate with the competition placement. It is feasible to conclude that the wrestlers of both groups were

under the influence of the situation (pre-competition), but a greater experience facilitated emotion control in the more experienced wrestlers, so their mood states did not reflect negatively on their championship performance. Apart from a direct experience with pleasant and/or unpleasant emotions during a lifetime, an individual may approach, on his/her reflexive level, to knowledge of his/her own and other peoples' mood states developed and gained through experiences which enables him/her to monitor, validate and control emotions (Takšić, 2003). Experienced wrestlers somehow channel their negative mood states into useful work, or they have developed defensive mechanisms that help them block mood impact on their performance. That might be the outcome of a frequent exposure to stressful situations, competitions being one of them. An individual who comes across such a situation, in which his/her negative mood states are aroused, selects from his/her prior experiences those outcomes that will improve his/her current mood state. This is called maintaining pleasant and improving unpleasant mood states (Mayer & Stevens, 1994). Highly emotional and intelligent athletes tend to have such ability (Lane, Thelwell, & Devonport, 2009). Mood states control, therefore, depends on emotional intelligence and experience. Young adolescent wrestlers are apparently not experienced enough to improve their mood states, but, nevertheless, having experience can help them to avoid having their hampering mood states reflect on their performance.

In order to determine when the needed psychological skills are gained, how many matches and how much training experience is needed to acquire those skills, future studies should include more age categories. To get a broader insight, the correlation between emotional intelligence and experience might be investigated.

## CONCLUSIONS

In this study we examined the relations between training experience and pre-competition mood states of cadet wrestlers. After the BRUMS' validity and reliability had been confirmed on the sample of adolescent wrestlers, further analyses were done. The more experienced adolescent wrestlers still cannot control their mood states, but, fortunately, their negative mood states do not correlate with their competition placement. However, we dare to assume that their longer experience empowered them to channel their negative emotions into beneficial work. Negative mood states among the less experienced wrestlers negatively correlate with their competition placement, but positively correlate with the body mass reduction. Therefore, we may conclude that training experience plays an important role in mental stability (even at this age), thus confirming the hypothesis that one should get involved in sports early enough so that defensive mechanisms can be developed adequately.

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