TRANSLATION AND VALIDATION OF BRUNEL MOOD SCALE FOR SERBIAN ATHLETE POPULATION

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Present study developed and validated the Serbian version (SERMS) of Brunel Mood Scale (BRUMS). BRUMS is 24 item questionnaire used to asses mood profile on six subscales (anger, confusion, depression, fatigue, tension and vigour). BRUMS was translated in to the Serbian using translation-back translation method, and administered to 354 athletes in Serbia and Montenegro. Exploratory factor analysis (EFA) and Cronbach's alpha were used to determine factor validity and internal consistency respectively of SERMS, and t-test and ANOVA were used to explore significant mean differences between different groups of athletes. Results showed that SERMS has good internal consistency with acceptable alpha values for each subscale. EFA results supported 24-item 6-factor model should be retained as the adequate, which is consistent with the theoretical model. Some statistically significant mean differences were found among the six mood subscales and different grouping variables (gender, age, a level of professionalism, data collection method, different testing time and type of sport). It is concluded that the SERMS is reliable instrument with acceptable psychometric characteristics and that it can be used with Serbian speaking population for future research and practical purposes. However further analysis and refinement of the instrument is recommended.

Keywords: mood scale, factorial validity, athletes, reliability

1 INTRODUCTION

Does mood influence performance? How can mood be measured? There have been numerous attempts to find answers to these questions, sometimes with more or less success (Beedie, Terry & Lane, 2000; Cervone, Kopp, Schaumann & Scott, 1994; Morris, 1992; Watson & Tellegen, 1985, Terry & Lane, 2000). Can Brunel Mood Scale be successfully transferred from the English language in to the Serbian language? This is an opportunity to get closer to an answer to these questions. There are many aspects of mood measuring that have been researched and written until the present day like definitions, theories, models, different measures etc. We should take a look in that plethora of the information with hope that some of them could be of importance for this particular research. A good start of this journey would be to look in to the definitions of mood and emotions.

1.1 Definition of mood and emotions

It is crucial to determine differences between these two constructs in order to define them well and develop an instrument that will measure mood in a successful manner (Beedie, Terry & Lane, 2005). Lane and Terry (2000) defined mood as ‘‘set of feelings ephemeral in nature, varying in intensity and duration, and usually involving more than one emotion’’ (p.17). Mood and emotions are correlated concepts, feelings are constitutional parts of both constructs and it is necessary to state distinctions among them, in order to define mood as precisely as possible (Beedie, Terry & Lane, 2005). Mood and emotions can influence each other and act as catalysts (Beedie, Terry & Lane, 2005). For instance piled up emotions of depression can intensify depressed mood, on the other hand, a person with aggressive mood tends to put himself in situations where aggressive emotion will be empowered. Emotions and moods are interdependent and which one will act as dominant force will be determined by the intensity of one of them at the point in time (Lane & Terry, 2000).

Davidson and Ekman (1994), Morris (1992) and Parkinson with his colleagues (1996) were exploring how mood can be differentiated from emotions. There are three clear distinctions that can be found between mood and emotions: first, duration, mood lasts longer than emotions; second, emotions are more intensive, while mood is less intense; third, research shows that mood relates to individual factors, while emotions are determined by situational factors and their cognitive appraisal (Ekman & Davidson, 1994; Morris, 1992; Parkinson, Totterdell, Briner & Reynolds, 1996).These distinctions

should provide help with getting more precise idea of what is the mood and what an emotion.

So far research on mood has been dealing with two major problems. It was already mentioned that there is lack of unified agreement upon definition of mood as a psychological construct. There is also there is a deficiency in the theoretical background of explaining effects of mood on performance (Beedie, Terry & Lane, 2000).

1.2 Theories of mood

Mood as a construct is presented either through two broad dimensions (e.g. positive and negative) or through a set of several dimensions that are more specific (Morgan, 1980; Crocker & Graham 1995). Numerous researches have been done with both models. The most popular measure for two-dimensional model is Positive and Negative Affect Schedule (PANAS) (Ekkekakis, 2012), later in the section which describes different measures of mood will be more information's about this measure. The other popular concept of mood is one with six dimensions; it has more solid theoretical background compared to the two-dimensional model (Ekkekakis, 2012) and most common measure is Profile of Mood States (POMS). In the six-dimensional model vigour presents the only positive mood dimension, opposed to five negative dimensions, depression, anger, fatigue, confusion and tension (McNair, Lon & Droppleman, 1971).

1.2.1 Six dimensions of mood

This part of text should depict some essential characteristics for each of six mood dimension. Vigour is the only positive mood dimension in this model. Some typical characteristics for vigour would be arousal, energetic behaviour, alertness and effort (Watson & Tellegen, 1985). Athletes who score high on vigour scale usually put more effort in reaching their goals (Lane & Terry, 2000). When highly alerted athletes feel energetic enough to perform, vigour can facilitate performance (Terry, 1995). It is found that vigour correlates negatively with all other mood dimensions while negative mood scales usually intercorrelate highly (Watson & Clark, 1997; Watson & Tellegen, 1985). Depressed mood is usually followed by feelings of hopelessness, deficiency and worthlessness (Watson & Tellegen, 1985). Depressed mood often affects the way other mood dimensions interact, and it is also influencing strength of those interactions (Brown & Mankowski, 1993). As a mood dimension, depression has high influence on

mood globally in a negative way, while other negative mood dimensions do not have the same global effect (Rokke, 1993). Other negative dimensions usually correlate with each other when the depressed dimension is present (McNair et al., 1992). It is stated that depression is the most important and influential mood dimension, simply because of its ability to act as a catalyst for other dimensions (Lane & Terry, 2000). Depressed mood is always debilitative for performance, on the other hand other negative mood dimension can appear separately of depression and they do not necessarily hinder performance (Terry, 1995).

Second mood dimension is tension and it is typically displayed with feelings of nervousness, apprehension, worry and anxiety (Watson & Tellegen, 1985). Effects of tension on performance show various results. Tension has its useful purpose, for example, tension can alert the athlete that some steps need to be taken in order to prevent difficulties in performance (Schwarz & Bless, 1991). Tension has a more significant effect if the importance of competition higher (Schwarz & Bless, 1991). Lane and Terry (2000) found that tension can affect performance in both positive and negative ways, and its effects depend on its correlation with the other mood dimensions. Tension can improve performance when it is not related with other negative mood dimensions, on the other hand, when tension acts together with confusion, fatigue, depression and anger it will debilitate performance (Lane & Terry, 2000). Tension increases attention, and if irrelevant cues are ignored, and important ones are under attention of an athlete, tension can increase performance results, because otherwise performance will decrease (Schwarz & Bless, 1991).

Emotions that characterize anger can differ from annoyance, aggravation and go as far as fury or rage (Watson & Tellegen, 1985). Anger can improve or debilitate performance depending on what way and with which other mood dimensions it interacts (Lane & Terry, 2000). Combined with depression anger will debilitate performance, Lane and Terry (2000) also suggested that depression and anger can increase frustration and therefore affect performance. Anger itself can be directed in two ways, inwards and outwards (Spielberger, 1988). When directed toward self, anger is usually appearing with other negative mood dimensions; together they provoke repressed anger to debilitate performance (Spielberger, 1988). Spielberger (1988) stated that anger can also be directed toward other people, objects or tasks, and in that case it can improve performance indirectly through a possible process of channelling energy to greater fortitude to success.

Fatigue as mood dimension is characterized with mental and physical tiredness (Watson & Tellegen, 1985). The effect of fatigue is always affecting performance in a negative way, either alone or in relation with other negative mood dimensions (Terry, Potgieter & Fogarty, 2003). Terry et al. (2003) found that fatigue combined with tension, depression and confusion, will diminish the athlete's confidence in his abilities to perform successfully on physical level. Antecedents of fatigue are lack of sleep, deficiency in rest followed by increased physical activity and practice (Terry & Lane, 2000).

Lastly presented in this chapter is confusion, mood dimension that usually triggers feelings of bewilderment and uncertainty (Watson & Tellegen, 1985). Confusion is causing poor performance, and combined with other negative mood dimensions it will infringe athlete's attentiveness, and take away focus from the task (Lane & Terry, 2000). Poor information processing and attention inefficiency are two main causes of decrease in performance (Terry & Lane, 2000).

All these six factors coexist and interact among each other's. Theoretical and research background suggested that negative factors anger, confusion, depression, fatigue and tension inter-correlate positively (Terry, Lane, Lane & Keohane, 1999). They all also correlate negatively with vigour the only positive dimension (Terry et. al., 1999). Next logical step is to take a look at some theoretical models, and see how theory used different measures in the research and to sum up conclusions they extracted from it.

1.2.2 Morgan's model of mood

One pioneer approach to connecting mood profiling with performance has been done by Morgan. In his research Morgan (1985) used several personality traits measures and one of them was POMS, which he found to be most predictive for performance. He made a breakthrough with so called ``iceberg profile´´, which predicted successful performance of athletes in cases where vigour scored higher than average and all the other subscales scored below the 50^{th} percentile (Morgan, 1980). It needs to be said that support for this prediction did not came from theory; it emerged from the data of Morgan's research (Morgan, 1980). Morgan's (1985) mental health model says: "positive mental health enhances the likelihood of success in sport, whereas psychopathology is associated with a greater incidence of failure" (p. 79). Even though his research presented strong backup for his model, some future research shoed issues with the measures of mental health, the

measures of performance, the time span between the measurement of these variables, the interpretation of the findings, and the design methodology (Rowley, Landers, Kyllo, & Etnier, 1995).

1.2.3 Conceptual model of mood with focus on depression subscale

Measuring mood and connecting its effects, of all six dimensions, on performance gave chance to Lane and Terry (2000) to develop their ``conceptual model of mood´´. They were looking for details of each mood dimension and the way in which they coexist and behave with each other (Lane & Terry, 2000).

Lane and Terry (2000) developed a conceptual model, which should be able to foresee athletes performance based on mood before competition. In this model depressed mood has a function of *''catalyst for reduced vigour and increased anger, confusion, fatigue and tension, thereby debilitating performance''* (p.23).

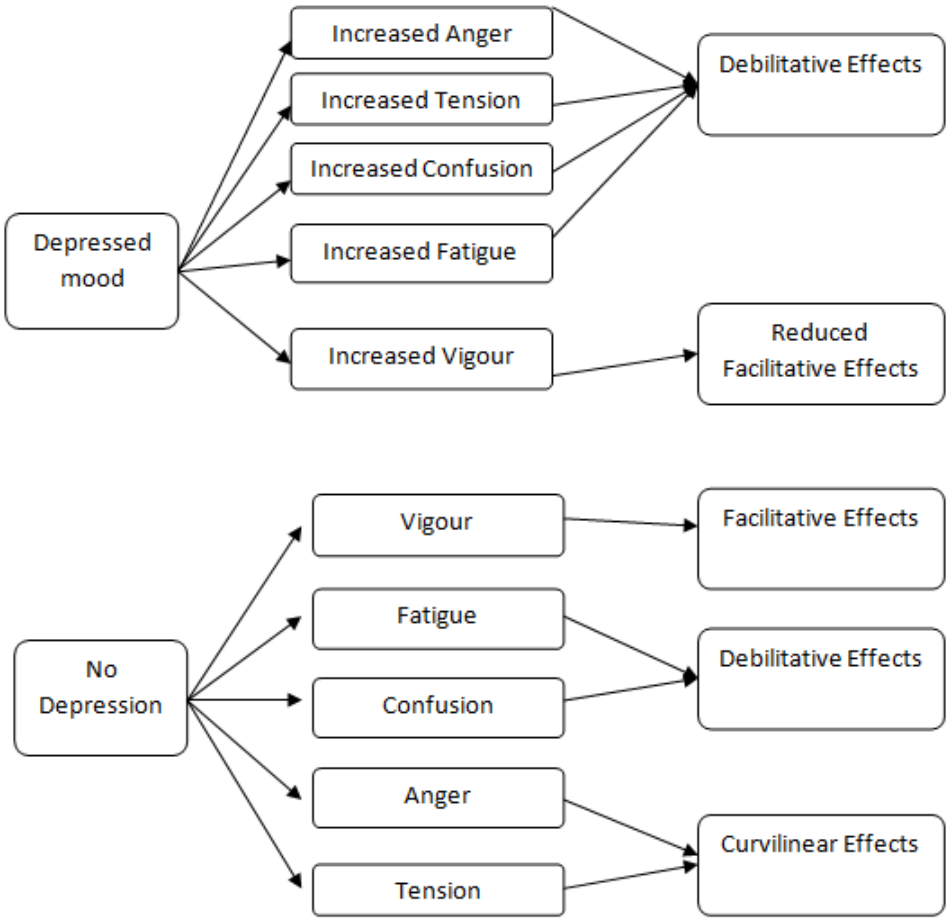


Figure 1.Conceptual model to predict performance from pre-competition mood.

Depressed mood is believed to be the most important mood dimension which is affecting all other dimensions and affecting performance in negative way (Lane & Terry, 2000). The model differentiates two different statuses of depressed mood presence, no depressed mood and depressed mood reported at even minimal level. It is important to notice that tension and anger have a special status in this model; in the case of depressed mood they have debilitative effects on performance while in the case of no feelings of depressed mood effects of performance follow a curvilinear trend (Lane & Terry, 2000). The reason why depressed mood is stated as the most influential mood dimension is based on Beck and Clarks (1988) observation that it is characterised with a negative self-schema. Negative self-schema is proposing the inability to achieve goals while that incompetence derives from the internal, personal factors (Bandura, 1990). Important aspect of the depressed mood is that it is disabling people to regulate negative mood, which later affects reduction of vigour and increased value for other negative mood dimensions (Terry & Lane, 2000). The model itself is suggesting that it is essential to differentiate mood without any depression symptoms and one with even a slightest level of depressed mood (Lane & Terry, 2000). The reasoning for this aptitude can be found in previous research, where it was found that athletes normally reported no signs of depressed mood (Lane & Terry, 1998; Terry & Lane, 2000; Terry et. al., 1999). It is important to notice that depressed mood is not attributed to clinical depression (Terry & Lane, 2000).

Depression increases tension either by decreasing one's belief in personal competence or by perceived difficulty of the task (Lane & Terry, 2000). This effect triggers one of two mechanisms. The first one is reduction of effort that one is putting in obtaining its goals. Second mechanism is using tension to support negative self-schema and supporting further depressed feelings (Bandura, 1990; Terry & Lane, 2000).

Depression has moderating effects on anger mood dimension, which affects performance by reducing perceived ability and goal attainment, which eventually leads to frustration and decreasing performance (Cervone, Kopp, Schaumann & Scott, 1994). Feeling of low ability, increased tiredness and other feelings connected with fatigue dimension can be reinforced through presence of depressed mood and will lead to lower self-efficacy and decrease performance (Lane & Terry, 2000). Depressed mood is affecting cognition, causing irrational thinking and giving support for negative self-image, this way it is increasing feelings of confusion and its negative effects on

performance (Beck & Clark, 1988).Vigour is facilitative to performance despite presence of depressed mood, although presence of depressed mood can reduce values of vigour (Terry & Lane, 2000). In order to check their model Lane and Terry (2000) it was necessary to use certain measure from large variety.

1.3 Measures of mood

Some of measures have already been mentioned and now is the time to review them, in order to get better picture about their characteristics.

Positive and Negative Affect Schedule (PANAS), was developed to represent two opposite dimensions of positive and negative affect (Watson, Clark, & Tellegen, 1988). It is consistent from 20 items, 10 for each dimension, with response on a 5-point scale. On one side it is brief and much research has been done using this measure, but on the other it has mixed concept of emotions, moods and affect, therefore it was subject criticism.

Lane and Terry (2000) developed their model based on research data from previous research with Profile Mood Scale (POMS). POMS was originally developed as a mood inventory for clinical population, but it became popular in sport and exercise based research (Ekkekakis, 2012). It is a scale that measures the six mood subscales with 65 items (McNair, et al, 1971). The six factors are derived from 65 adjectives with intention to reflect exactly those six factors.

Brunel Mood Scale (BRUMS) was shorter version of mood scale based on POMS with intention to be appropriate for usage in sport and exercise conditions for several reasons (Terry & Lane, 2010). BRUMS is 24 item self-report questionnaire that measures the same six dimensions of mood (vigour, depression, tension, anger, confusion and fatigue) as POMS. First of all compared to POMS, BRUMS has fewer items and it requires less time to be completed. Another advantage of BRUMS is that it is originally developed for athlete population (Terry & Lane, 2010). On the other hand, BRUMS has been used and validated by far less researchers compared to POMS or PANAS, but this should not be used as support not to use BRUMS in future research, since much research in which a certain instrument was used does not necessarily reflect the quality of the instrument itself (Ekkekakis, 2012). Yet again BRUMS showed good enough psychometrical qualities, in its original form (Terry, Lane & Fogarty, 2003) and as translated and validated measure in different languages and cultures like Chinese

(Zhang, Si, Chung, Du & Terry, 2014) Hungarian and Italian (Lane, Soos, Leibinger, Karsai & Hamar, 2007), Afrikaans (Terry, Potgieter & Fogarty, 2003), Farsi (Terry, Malekshahi & Delva, 2012), and Malay (Hashim, Zulkifli & Ahmad, 2010).
Self-report measures are simple to use and convenient, they are cheap to use and minimally invasive for participants (Terry, 1995). Further, self-reports are direct and most convenient way to express personal feelings (Terry, 1995). On the other hand there are always issues in use of self-report mechanisms. Social desirability, lack of insight or faking answers can influence respondents and their answers (Terry, 1995). Many issues occur due to psychometrical problems, like validity and reliability of the measure (Terry, 1995). In this particular case, there is an English language issue of appropriate measuring of desired construct and its exact intended effects (Terry, 1995). Earlier in the text it is mentioned that emotions and mood are very similar but yet different constructs. There is no mood and emotion measure which can exactly measure these constructs (Ekkekakis, 2012). For example, POMS or Positive or Negative Affect Schedule (PANAS) will not present clear distinction between mood and emotion simply because it is unclear if responses refer to something that happened recently or they reflect general feelings (Lane & Terry, 2000). It is known that when measuring mood response time frame plays significant role (Watson & Clark, 1997; Terry, Stevens & Lane, 2005). Responses on mood measures usually have response time frames that concern either their feelings during last week with the present moment, or they focus only at the present moment. BRUMS response set is targeting present moment (Lane and Terry, 2005). Watson and Clark (1997) found that higher inter-correlations between mood dimensions are higher when ‘’right now’’ timeframe was used. If it is needed to follow mood during certain period of time it is better to measure mood several times during that period than just to ask it in a single time frame, for example ‘’ how did you feel last week’’. This way more detailed data can be obtained (Lane & Terry, 2000). BRUMS is using items like depressed, unhappy etc., which are straightforward in order to clearly differentiate depressed mood from other constructs (Terry & Lane, 2010).

1.4 Influences of mood on performance

Certainly the main reason for developing a questionnaire would be its practical use. For some time now researchers are trying to make clear relationship between pre-performance mood measuring and performance, yet great achievement in that area of

research is not accomplished so far (Terry, 1995). Research has vague information on influence of individual dimensions on performance. In previous research it was not clearly distinguished how mood affects performance with different level of performance (Terry, 1995). Terry (1995) argued that due to the transient nature of mood there should be no reason to differentiate influence of mood on different levels of performance. On the other hand task and personal characteristics might have confounding influence in research (Terry, 1995). Therefore, there is question of how complexity, number of performers, personal characteristics, skill etc.; influence performance and how can it be measured (Terry, 1995). Morgan (1980) is one of the pioneers who explored influence of mood on athlete performance. Using POMS, Morgan (1980) proposed iceberg profile as desired mood prior athletes' performance. Iceberg profile is typified with high score value for vigour and low score values for depression, tension, anger, fatigue and confusion (Morgan, 1980). Later, Terry and Lane (2000) proposed that iceberg profile is representative mood profile for athlete population regardless of professionalism level. Meta-analysis showed that it is possible to predict performance outcome, but not able to predict level of achievement (Beedie, Tarry & Lane, 2000). Beedie et al. (2000) found moderate effects for confusion, depression and vigour, and small effects for tension and anger while least effect on performance had fatigue. Ability of predicting performance with mood profiling was grater with athletes who participated in short duration sports and in sports involving open skills (Beedie, Tarry & Lane, 2000). Terry and Lane (2000) suggested that moods are highly influenced by different situational factors. Findings showed that athletes can score better when their pre competition mood is characterised with higher vigour and lower anger, depression, confusion and fatigue (Hall & Terry, 1995). Hall and Terry (1995) also found that underperforming athletes had more instability in their mood compared with athletes who performed up to their expectations and had more stable and steadily improving mood profiles. One of the situational factors that underperforming athletes reported as significant in their mood fluctuations of anger, depression and confusion was their inability to meet up to physical demands of training (Hall & Terry, 1995).

1.5 Influences of various factors on the mood

Apart from exploring connection of performance and mood profiling, it is also important to find out how different variables influence mood of athletes (Terry et al. 1999). For instance research done on POMS mood scale showed no differences among

male and female participants (McNair, et al, 1971; Huddleston, Kamphoff, Suchan, Mack, Bian, Bush & Wee, 2002) while in development and adaptation of Farsi Mood Scale it was showed that male participants scored higher on vigour scale (Terry et al., 2012). Age can play important role in the way coping and managing mood, for instance statistically significant differences were found when groups of adolescent and adult athletes and adolescent and adult students were compared (Zhang et al., 2010; Terry et al., 2010). There is no previous data about mood management and motivation toward exercise, modern sport psychology is trying to put focus on recreational and athletes who exercise for health, not only on professional athletes (Weinberg & Gould, 2011). Nowadays internet and social networks present fast and economical way of delivering service in world of sport psychology (Lonsdale, Hodge & Rose, 2006), hence significance of finding out if online and classic methods of collecting mood data differ and how. It is already proven that athletes reported different mood before competition compared to environment other than competitive (Terry et al., 1999). Abele and Brehm (1993) reported decline of tension from the beginning to the end of competition. There is a wide variety of different sports that require different intensity and skills (Slanger & Rudestam, 1997), as an example, mood for optimal performance for parachute jumpers and chess players could be different.

1.6 Summary of the literature review

In conclusion, there are benefits of using mood profiling in practice, if some standards are met, like the individuality of an athlete, inclusion of the situational factors etc. Brunel Mood Scale showed satisfactory psychometric characteristics, it is brief and it has already been translated in to several languages, therefore it is chosen to be the first measure of mood translated in to the Serbian language. Serbian Mood Scale (SERMS) will hopefully show acceptable psychometric characteristics and will be good starting point for further research and practical application. In order to get there, it is necessary to follow methodological and recommendations for statistical analysis from previous experiences.

2 PURPOSE

Purpose of this study was to translate Brunel Mood Scale (Terry & Lane, 2010) and check validity of its psychometric properties for Serbian athlete population. Primary aim was to examine reliability and factor structure of new scale named SERMS.
First hypothesis was that Serbian version of Brunel Mood Scale have acceptable reliability values.
Second hypothesis was that five negative mood subscales of Serbian version of Brunel Mood Scale correlate among each other and that fatigue and vigour correlate negatively.
Third hypothesis was that Serbian version of Brunel Mood Scale is consisted of 6-factor structure reflective of 24-item structure of English version.
Secondary purpose of the study was to explore if mood subscales' scores differ significantly among different groups. Therefore, fourth hypothesis was that there is no statistically significant mean difference between male and female athletes, two age groups, professional and amateur athletes, different data collection methods and different sport type groups on any of the six mood subscales.

3 METHODS

3.1 Participants

Participants were 354 Serbian speakers who have been recruited to complete the Serbian Mood Scale (SERMS). SERMS was validated on athlete population of Serbia and Montenegro. Both counties speak the same langue. Sample was consisted of 193(54.5%) of males and 161 (45.5%) of female participants. Youngest participants were 18 years old, while oldest were 50 years old. Variable ‘’Age’’ was binned in two groups: younger adults <=23 (53.9%), and older adults 24+ (46.1%). Athletes were asked to report from which sport they come, and what is the level of professionalism that is required from them in their sport. As end result participants were divided in these groups: Basketball 25.4%, Handball 24 %, Football 14.7%, Body Fitness 11%, Volleyball 8.5%, Extreme sports (Climbing and Parkour and Martial Arts) 8.5%, Water sports (Swimming and Water polo) and other kind of sports were grouped in one (7.9%). Concerning professionalism level data reported that our sample contains 58.2% of professional athletes and 41.8 % of amateur-recreational athletes. All the sport in Serbia and Montenegro is club based. Therefore it was easy to determine level of professionalism since that is regulated by sport association of certain sport. Some of the athletes are not members of sport clubs, they were instructed to either select amateur-recreational level, or to explain how is their level different.

3.2 Data collection

Data was collected during autumn of 2013. Participants came from different surroundings. They were informed about purpose of the study. Study was anonymous and participants were informed about confidentiality. Participation was voluntary and participants could withdraw at any time. Since all the athletes were adults no special permission from parents or coaches was necessary. Data was collected in two different ways n=354. One part of data, n=174 (49.2 %) participants, was collected in person, and questionnaire was spread on paper. Other part n=180 (50.8 %) of participants were contacted online via social networks (twitter and facebook). Online questionnaire form was made and shared to substantial amount of athletes.

Data collection time is another variable that was taken in consideration. Data was collected in athletes non-sport related activities (free time, classroom) 23.3%, before

practice (up to two hours before) 32.1% after practice (up to two hours after) 32.1% before competition 12.5% (up to two hours before).
Form also contained information's about purpose of the research, consent form, questionnaire itself and feedback box where participants were invited to leave their comments, impressions, ask questions and leave contact information in order to get results of their testing.

3.3 Measure

The Brunel Mood Scale is the scale that measures mood (Terry & Lane, 2010). It is 24-item scale consisted of different terms describing mood states. Participants had to give answers on a 5 point scale (0-4) how much each mood description is related to them. ''How do you feel right now'' is response timeframe that was used in developing and standardizing questionnaire. Timeframe can be changed, but data may not be relevant for different timeframe. Questionnaire is divided in six subscales: anger (items 7, 11, 19, 20), confusion (items 3, 9, 17, 24), depression (items 5, 6, 12, 16), fatigue (items 4, 8, 10, 21), tension (items 1, 13, 14, 18) and vigour (items 2, 15, 20, 23). The scale was developed from POMS-A (Terry, Lane & Keohane, 1999) which is a longer version (64 items) of a mood scale, and it is developed for use with adolescents, but it can be used with adults (Terry, Lane & Keohane, 1999).

3.4 Translation and back-translation

BRUMS was translated and back-translated by four Serbian speaking professionals who have master degree in English language and literature from two different universities in Serbia (Terry, Malekshahi & Delva 2012). After this process translators have agreed upon their differences (with 100% agreement) and came with final version of translation. Name of that scale with agreement of original authors will be SERMS. Additional help was given to the translators by creator of the questionnaire Peter Terry, especially with the items that translators didn't match in back-translation process, or with items that translators couldn't agree up on.

3.5 Data analysis

Statistical analysis was performed with SPSS software ver.21. Descriptive statistics was performed in order to analyse independent variables, check for outliers, missing data and check if data is appropriate for further statistical analysis. Internal consistency for

all six subscales was checked with Cronbach alpha coefficient and inter-correlations were calculated between subscales. Exploratory factor analysis was conducted, using principal component analysis with oblimin rotation, in order to determine factor structure of Serbian Mood Scale. In order to further explore data, SERMS scores were compared with different independent variables. T-test was used to compare means of variables such as gender, age, athlete's level of professionalism and data collection method with SERMS scores. Furthermore, variance was analysed between data collection time and different sports were compared with SERMS scores using ANOVA with Tukey and LSD Post Hoc test.

4 RESULTS

4.1 Data screening

The data was screened for univariate outliers, and no outliers were found. The minimum amount of data for factor analysis was satisfied, with a final sample size of 354, with over 14 cases per variable which is suitable sample size for factor analysis (Pallant, 2010).

4.2 Internal consistency and construct validity

Cronbach alpha values showed that internal consistency of all subscales was at satisfactory level from .61 to .84 (table 3). At some of subscales internal consistency could be improved if some items would be removed. Anger subscale would improve to .79 if item 22 ‘bad tempered’ would be removed. Depression factor internal consistency would improve to the level at .64 if item 16 ‘miserable’ would be removed. Internal consistency of fatigue subscale would improve .887 if item 10 ‘sleepy’ would be removed, and for vigour it would be .76 without item 23 ‘alert’. Cronbach alpha values for tension and confusion are .68 and .78 respectively.

Subscale inter-correlations showed that mood subscales correlate among each other in an expected manner (Terry et al., 1999) ‘’Negative mood’’ subscales correlated significantly with other ‘’negative mood’’ subscales, while only positive mood subscale vigour negatively correlated significantly with fatigue (table 3). This data presents good fit with hypothesised model by Terry et al. (1999), and supports good construct validity of the measure.

Table 3.*Summary of Inter-correlations, Means, Standard Deviations, and Cronbach alpha for all six mood subscales.*

	M	SD	Alpha	CON	DEP	FAT	TEN	VIG
Anger	1.05	2.29	.776	.476**	.426**	.226**	.595**	.072
Confusion	.87	2.09	.780	-	512**	.268**	.577**	-.013
Depression	.56	1.45	.611		-	.248**	.544**	-.004
Fatigue	4.09	4.05	.846			-	.254**	-.191**
Tension	1.11	1.90	.679				-	.086
Vigour	7.26	3.48	.639					-

Note. ** p< 0.01

4.3 Factor analysis

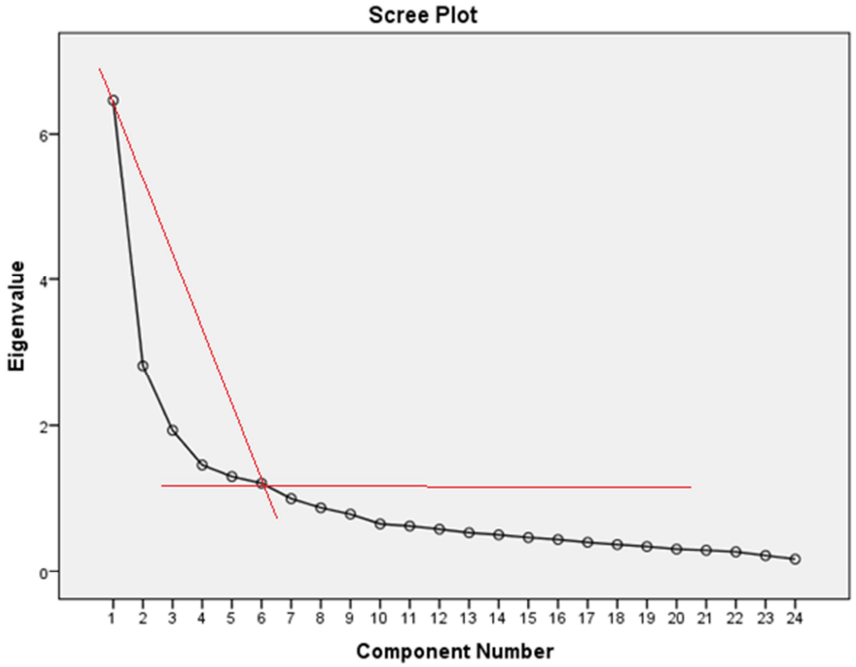
Results of Factor Analysis should reveal if the factor structure of Serbian Brunel Mood Scale (SERMS) is consistent with factor structure of BRUMS (Terry et al., 1999). Initially, the factorability of the translated scale was checked, the 24 SERMS items were subjected to principal component analysis (PCA) using SPSS ver.21. Several well-recognised criteria for the factorability of a correlation were used. Firstly, all 24 out of the 24 items correlated at least .3 with at least one other item, suggesting reasonable factorability. Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy was .838, above the recommended value of .6 (Field, 2009). Bartlett's test of Sphericity was significant (χ^2 (276) = 3200.35, $p < .001$). The diagonals of the anti-image correlation matrix were all over .6, supporting the decision to include each item in the factor analysis (Field, 2009). Finally, the communalities were all above .4 (see Table 2), confirming that each item shared some common variance with other items. Given these overall indicators, exploratory factor analysis was conducted with all 24 items. Principle components analysis was used because of the primary purpose which was to identify and compute mood score for the factors underlying the Serbian version of the BRUMS. The initial eigenvalues showed that the first factor explained 27% of the variance, the second factor 12% of the variance, and a third factor 8% of the variance. The fourth factor 6%, fifth and sixth factors had eigenvalues of just over one, each factor explaining 5%. The six factor solution, which explained 63% of the variance, was preferred because of its previous theoretical support, and value of explained variance was acceptable (Terry et al., 2012). Scree plot also suggested that six factors should be retained. ''Elbow'' or brake in the plot starts with third and ends in sixth point (Figure 1). Third and last technique determining number of factors retained was parallel analysis (Kahn, 2006; Lance, Butt, &Michels, 2006). List of eigenvalues was compared with random eigenvalues obtained from Marley Watkins software called ''Monte Carlo PA''(Watkins, 2000). Results suggested that first four factors should be retained and to add a dose of caution when accepting fifth and sixth factor (table 1).

Table 1. *Parallel Analysis of Actual eigenvalues and randomly computed eigenvalues.*

Factor number	Actual eigenvalue from PCA	Criterion value from parallel analysis	Decision
1	6.46	1.50	Accept
2	2.82	1.42	Accept
3	1.93	1.36	Accept
4	1.46	1.31	Accept
5	1.30	1.26	Accept (with caution)
6	1.21	1.21	Accept (with caution)
7	.99	1.17	Reject
8	.87	1.13	Reject

Note: Parallel analysis was shown for first 8 factors, rest of the factors were rejected.

Figure 1.*Scree plot with possible point of inflexion suggesting 6 extractable factors.*



Oblimin rotation was performed as an aid in interpretation of six factors. Rotated solution revealed complex structure (Sass & Schmitt, 2010), with only one clear and strong factor loading and five where variables load substantially on several factors (Table 2). Each of these four factors aggression, confusion, depression and fatigue had four items loadings (Table 2) as predicted with previous research (Terry & Lane, 2000; Terry, Lane & Fogarty 2003; Terry, Lane &Keohane, 1999) and Lane's and Terry's model (Lane & Terry, 2000). Tension item 'Panicky' did not loaded at all on tension factor, instead it loaded both on depression and fatigue factors strongly at .54 and 4.5 respectively. Vigour item 'Alert' loaded on tension scale with extremely strong value of .73.

Table 2.*Pattern and Structure Matrix for PCA with Oblimin Rotation of Six Factor Solution for SERMS Items.*

Subscale	Item	Pattern coefficients						Structure coefficients						Communalities
		1	2	3	4	5	6	1	2	3	4	5	6	
	7 Annoyed	-.793						-.798	.326					.70
Anger	11 Bitter	-.701		.330				-.741	.358	.346				.60
	19 Angry	-.859						-.880	.389					.79
	22 Bad tempered	-.649		-.455				-.630						.61
	3 Confused		.783					-.428	.819	.308				.71
	9 Mixed up		.690						.729					.55
Confusion	17 Muddled		.875					-.400	.830					.76
	24 Uncertain		.629			-.382		-.325	.739			-.559		.69
	5 Depressed			.392				-.446	.455	.503	-.355	-.319		.51
	6 Downhearted		.378	.361					.508	.466				.41
Depression	12 Unhappy			.456		-.569				.546		-.639		.65
	16 Miserable			.732						.738				.56

Table 2 (cont.)

Subscale	Item	Pattern coefficients						Structure coefficients						Communalities
		1	2	3	4	5	6	1	2	3	4	5	6	
	4 Worn out				-.838						-.855			.75
	8 Exhausted				-.936						-.905			.83
Fatigue	10 Sleepy				-.576						-.628			.45
	21 Tired				-.865						-.871			.77
	1 Panicky		.326	.439				-.346	.457	.541				.43
	13 Anxious					-.550			.423	.376		-.639		.54
Tension	14 Worried	-.368	.301			-.443		-.553	.484			-.591		.59
	18 Nervous	-.702						-.756	.362			-.308		.61
	2 Lively						.780						.789	.63
	15 Energetic						.852						.849	.73
Vigour	20 Active						.816						.816	.70
	23 Alert					-.773						-.728		.62

4.4 Between group comparison

Means of all six SERMS subscales (anger, confusion, depression, fatigue, tension and vigour) were examined for significant differences according to gender, age, professionalism level of athletes and data collection method. They were also tested for differences according to sport and different testing time.

An independent sample t-test was conducted to compare values of SERMS subscales with male and female athletes (table 4). Significant difference occurred in scores of fatigue (equal variances not assumed) and vigour (equal variances assumed). Female athletes (M= 4.76, SD = 4.52) reported higher values for fatigue than male athletes (M= 3.52, SD= 3.53; $t_{(299)}$= -2.82; P= .005). On the other hand males (M= 7.70, SD=3.39) reported higher values on vigour then female athletes (M= 6.74, SD=3.53; $t_{(352)}$ = 2.60; P=.010).

Table 4.*Results for t-test for mood scales by gender*

	Gender							
	Male			Female				
	M	SD	N	M	SD	N	T	Df
Anger	1.25	2.60	193	0.82	1.85	161	1.82	342
Confusion	0.80	2.07	193	0.96	2.11	161	-.69	352
Depression	0.62	1.34	193	0.50	1.56	161	.81	352
Fatigue	3.53	3.54	193	4.76	4.52	161	-2.82**	352
Tension	1.12	1.77	193	1.09	2.06	161	.15	352
Vigour	7.70	3.39	193	6.74	3.53	161	2.6**	299

Note. ** p< 0.01

All of the participants were adult athletes. Age of participants was grouped in two groups (<=23 and 24+), groups were made based on recommendations for more appropriate statistical analysis (Field, 2009). Since previous research showed differences between adolescent and adult athletes (Zhang et al., 2010; Terry et al. 2010), there was a question whether this difference can be found only among adult athletes, and see if life experience can help in mood regulation. Means comparison showed no statistically significant difference between the two age groups in SERMS scores on any subscale. An independent sample t-test was used as mean comparison technique.

Table 5.*Results for t-test for mood scales by age.*

	Age							
	Younger adults			Older adults				
	M	SD	N	M	SD	N	T	Df
Anger	1.15	2.18	187	.92	2.40	160	.96	345
Confusion	1.01	2.22	187	.72	1.96	160	1.26	345
Depression	.57	1.52	187	.52	1.35	160	.31	345
Fatigue	4.45	4.23	187	3.67	3.82	160	1.78	345
Tension	1.27	1.96	187	.88	1.81	160	1.92	345
Vigour	7.02	3.65	187	7.52	3.30	160	-1.32	345

Note: no statistically significant data

Same test (independent sample t-test) also compared if professional and amateur athletes differentiated significantly on mood subscales. Only on fatigue subscale professional athletes showed some significant difference (*M*= 4.62, *SD*= 4.21), they seem to be more exhausted than amateur athletes (*M*= 3.35, *SD*= 3.72; $t_{(337)}$= 2.99; *p*= .003, equal variances are not assumed in this case).

Table 6.*Results for t-test for mood scales by level of professionalism.*

	Level of professionalism							
	Professional			Amateur				
	M	SD	N	M	SD	N	T	Df
Anger	1.11	2.41	206	0.98	2.13	148	.53	352
Confusion	.89	2.06	206	.84	2.19	148	.21	352
Depression	.54	1.21	206	.60	1.74	148	-.40	352
Fatigue	4.62	4.21	206	3.51	3.72	148	2.99**	337
Tension	1.04	1.21	206	1.21	1.94	148	-.83	352
Vigour	7.19	3.57	206	7.36	3.36	148	-.47	352

Note. ** p< 0.01

Interestingly, data collection method is one variable where two groups (paper and online) significantly differentiated from each other on four out of six SERMS subscales. Data was collected in two ways, paper-pen method was one and the other one was online questionnaire. Means were compared with independent sample t-test. On these

four subscales (anger, depression, tension and vigour) athletes who answered their questions on a paper reported higher values than athletes who filled in questionnaire online. Athletes who answered paper based questionnaire (*M*=1.53, *SD*=2.74) reported higher values on anger scores from online answered questionnaires (*M*=0.60, *SD*=1.66; $t_{(283)}$=3.84; *P*=.000). Participants who filled in paper questionnaire (*M*=0.76, *SD*=1.58) reported more depressed mood than athletes who answered online (*M*=0.38, *SD*=1.30; $t_{(334)}$=2.48; *P*=.014). Same trend happened when tension was reported via paper (*M*=1.44, *SD*=2.10) compared to online answering (*M*=0.79, *SD*=1.63; $t_{(325)}$=3.20; *P*=.001). All these previous mood subscales fall in to the group of ‘’negative’’ moods, but athletes who were tested with paper-pen method (*M*=8.09, *SD*=3.06) also reported higher means on ’positive’’ vigour scale (*M*=6.46, *SD*=3.68; $t_{(344)}$=4.50; *P*=.000) compared to online tested athletes. In any of these cases equal variances were not assumed.

Table 7.*Results for t-test for mood scales by data collection method.*

	Data collection							
	Paper			On-line				
	M	SD	N	M	SD	N	T	Df
Anger	1.53	2.73	174	0.60	1.66	180	3.84**	283
Confusion	0.94	1.96	174	0.81	2.22	180	0.564	352
Depression	0.76	1.58	174	0.38	1.29	180	2.48*	334
Fatigue	4.1	3.43	174	4.1	4.6	180	0.01	331
Tension	1.44	2.1	174	0.79	1.62	180	3.20**	325
Vigour	8.1	3.1	174	6.5	3.68	180	4.50**	344

Note. ** p< 0.01; * p<0.05

A one-way between-groups analysis of variance was conducted to explore the impact of the different testing time on athlete’s mood state, measured with SERMS. Data was collected in four different situations (free time, before practice, after practice and before competition). There was a statistically significant difference between means of different testing times and three SERMS subscales (anger, tension and vigour). Equal variances were not assumed.

Different testing times had statistically significant influence on anger at *p*<.05 level for the four conditions $F_{(3, 348)}$ = 6.32, *p* = 0.000. Post-hoc comparisons using the Tukey

HSD test showed that the mean score of anger obtained before competition (*M*=.2.09, *SD*=3.52) is significantly higher from ones obtained in free time (*M*=0.61, *SD*=1.52) and after practice (*M*=0.64, *SD*=1.55). Other testing time scores didn't significantly differ from each other.

Tension score $F_{(3, 348)} = 6.39$, $p = 0.000$ also showed that there was significant difference at p<.05 level between testing times. Post-hoc comparisons using the Tukey HSD test imply that score of tension obtained before competition (*M*=2.16, *SD*=2.24) was significantly higher from ones obtained in free time (*M*=0.97, *SD*=1.78), before practice (*M*=1.19, *SD*=1.82) and after practice (*M*=4.76, *SD*=4.21).

It is interesting that vigour values $F_{(3, 348)} = 4.77$, $p = 0.003$ showed statistically significant difference at *p*<.05 level between before practice (*M*=8.07, *SD*=3.29) compared to lower values in both free time (*M*=6.60, *SD*=3.37) and after practice (*M*=6.70, *SD*=3.68). This data was also indicated by Post-hoc comparisons using the Tukey HSD test. Other testing time didn't correlate significantly among each other.

One-way between-groups analysis of variance was also conducted to explore de impact of the different sports of our athletes, on their mood state, measured with SERMS. Participants were grouped in Basketball, Handball, Football, Body Fitness, Volleyball, Extreme sports (Climbing and Parkour and Martial Arts) and Water sports & others. Statistically significant variance, at *p*<.05 level, was found between different sports and fatigue $F_{(6, 347)} = 2.02$, $p = 0.010$ subscale of Serbian Mood Scale. Equal variances were not assumed. LSD post-hoc test was used in this case because it makes no attempt to control type I error, while Tukey HSD is designed to control it(Field, 2009). Comparisons indicated that the mean score of body fitness (*M*=2.49, *SD*=2.88) significantly differ from these three variables Basketball (*M*=4.61, *SD*=4.13), Handball (*M*=4.53, *SD*=3.88) and Volleyball (*M*=5.17, *SD*=5.16). They didn't differ between each other. LSD test showed that Extreme sports (*M*=2.30, *SD*=2.74) also significantly differ from same three variables Basketball (*M*=4.61, *SD*=4.13), Handball (*M*=4.53, *SD*=3.88) and Volleyball (*M*=5.17, *SD*=5.16). Field All the other variables did not significantly differ among themselves.

5 DISCUSSION

Purpose of this study was to test reliability and factor validity of the Serbian translated Brunel Mood Scale. This study also aimed to research what are the relations between six mood subscales and different grouping variables, for the benefit of practical use of the instrument.

5.1 Reliability and construct validity of SERMS

In general results showed satisfactory alpha values at 3 out of 6 subscales. Other three values were on the lower limit from .61 to .68 which is lower but yet acceptable value having in mind that only four items are used to explain one factor (Field, 2009). Bad tempered, miserable, sleepy and alert were the items that in case of removal would improve reliability of the SERMS. It is interesting to point out that these four items loaded on desired factors in exploratory factor validity process. It is obvious that further reviewing of these items, exploring their meaning and possible variations in translations and substitutions is necessary (Albrecht & Ewing, 1989), since this is the first version of Serbian Mood Scale. Altogether SERMS showed satisfactory internal consistency. Therefore first hypothesis is confirmed. Serbian version of Brunel Mood Scale has acceptable reliability characteristics.

Values on each scale are in concurrence with previous research findings (Terry et al., 1999). Above all it is expected that normal healthy population scores high on vigour scale and low on anger, confusion, depression, fatigue and tension (McNair, 1971). Depression as the most important mood dimension (Lane & Terry, 2000) has low values. Thayer, Newman and McCain (1994) explained that low values on depression subscales among athlete population is expected since athletes are able to self-regulate depressive thoughts by anticipating the mood enhancing effects of physical activity. Subscales among each other showed expected relations. Depressed mood, as expected, highly correlated with other negative mood dimensions (Terry et al., 1999). All of negative mood dimensions statistically significant correlated positively with each other. Vigour as the only positive mood dimension significantly correlated in a negative direction with fatigue. This data is in concurrence with previous research (Terry et al., 1999) and proves second hypothesis: five negative mood subscales of Serbian version of Brunel Mood Scale correlate among each other and that fatigue and vigour correlate negatively between them.

5.2 Factor structure of SERMS

Factor structure of SERMS was as previously stated complex, which means that items loaded on more than one factor and thereby presented not as clear factor structure. Complex structure appeared in previous research form (Terry, Lane & Fogarty, 2003) and the way Terry et al. (2003) dealt with this issue was the use of a combined exploratory factor analysis with confirmatory factor analysis techniques. In this particular research only exploratory factor analysis was performed. Results of principal component analysis showed that all six factors should be retained, which is in agreement with theoretical model (Lane & Terry, 2000). All six factor explained 63% of variance, which was satisfactory result compared previous research (Terry et al., 2012) Subscales aggression, confusion, depression and fatigue each had four items loadings (Table 2) as predicted with previous research (Terry & Lane, 2000; Terry, Lane & Fogarty 2003; Terry, Lane & Keohane, 1999) and Lane's and Terry's model (Lane & Terry, 2000). Tension and vigour factors loaded only 3 items each. Tension item 'Panicky' did not loaded at all on tension factor, instead it loaded both on depression and fatigue factors strongly at .54 and 4.5 respectively. Vigour item 'Alert' loaded on tension scale with extremely strong value of .73. Larger attention need to be focused on possible cultural differences (Triandis, 1994). Also there is difference in language, meaning and translation that need to be explored. For instance 'Alert' translated in to Serbian language can maybe be closer to concept of tension, while model predicted its connection with vigour. Can alertness bring tension? It is possible to find different items that can produce better fit to certain factors (Albrecht, & Ewing, 1989). Terry et al. (1999) suggested that loading of items on 'wrong' subscales could mean that they measure unique but similar constructs. Another way to improve SERMS would be to proceed with Confirmatory Factor Analysis. At this point six factor model with all 24 items is found to be acceptable. Overall results supported hypothesized six factor structure of theoretical model (Lane & Terry, 2000), with exception of two items that need to be excluded and revisited in future research.

5.3 Between group analysis

Gender as a grouping variable did show significant statistical difference among males and females on fatigue subscale. Women scored higher in fatigue, while men scored higher in vigour. Some of previous research showed similar results and some had completely different results (McNair et al, 1971; Huddleston et al., 2002; Terry et al. 2012). Previous research done on POMS mood scale showed no differences among

male and female participants (McNair, et al, 1971; Huddleston, Kamphoff, Suchan, Mack, Bian, Bush & Wee, 2002). When developing and adapting Farsi Mood Scale on Iranian population Terry et al. (2012), between group comparisons showed that male participants scored higher on vigour scale, which was consistent with preset findings.This data can be explained with possibility that modern professional and amateur sport requires higher physical effort from female athletes compared to requirements from men athletes. Future research on this topic is needed.

There was no mood difference reported among different age groups, which is in agreement with initial assumption that mood affects humans with no difference of their age. Zhang et al. (2010) and Terry et al. (2010) found statistically significant differences when they compared groups of adolescent and adult athletes and adolescent and adult students. Differences between present and previous research could be explained with the fact that all the participants were adults there were no adolescents. Need to be said that the present research was also consisted only from athlete population, while previous research had athlete and participants' from general population (Zhang et al., 2010; Terry et al. 2010). This research was performed only with athletes of different age and perhaps differences would appear in different age groups if non-athletic participants were also included. Thayer, Newman and McCain (1994) argued that athletes have ability to self-regulate depressive thoughts by anticipating the mood enhancing effects of physical activity.

Professional athletes scored higher on fatigue scale then amateur athletes, which can be explained with simple fact that professional athletes spend more time and energy during the day on their physical activities, and hence increase feeling of fatigue. No data could be found that could be related to this result therefore, future research could include time spent on practice and maybe some kind of burnout or overtraining effect.

Also no previous data was found on testing method and mood with athletes. On these four subscales anger, depression, tension and vigour athletes who filled questionnaires on a paper reported higher values than athletes who filled in questionnaire online. This phenomenon could be caused by the fact that paper-pen data was collected mainly prior or after practice, or before performance which in previous research showed to be the time of increased tension, anger and vigour (Terry et al., 1999), while majority of on-line questionnaires were filled in free time which was usually time when those values were reduced. Also there is possibility that mood of athletes in their free time can be completely unrelated to mood during their athletic mind set (e.g. before, during and just

after practice). This kind of information is difficult to acquire, especially using online questionnaires.

Majority of athletes scored higher on anger subscale just before competition. For successful performance in some sports it is necessary to feel some dose of anger, often athletes and coaches try to induce anger with athletes just before performing time. Tension values raises before competition and after practice. It is understandable that tension can be higher before competition simply because there is dose of nervousness, performance jitters and pressure to fulfil expectations and perform on a satisfactory level. On the other hand higher tension after practice is difficult to reason. It is possible that their satisfaction with practice performance caused this data, but at present research this kind of information was not collected. Information about satisfaction after performance and after practice seems like reasonable idea for further exploration and special attention in some of upcoming research. This result supports results in Terry's et al. (1999) research which also found that athletes reported higher tension scores before competition than when away from the competition environment. Abele and Brehm (1993) reported that tension is decreasing in competitive sport from the beginning to the end of competition. Other testing time scores didn't significantly differ from each other. Higher vigour scores before practice compared to after practice and spare time activities can be explained with athletes preparation for practices and good mood caused by enjoyment of doing favourable activity.

Extreme sports and body fitness scores were lower on fatigue compared to handball, basketball and volleyball. This could be explained by intensity and number of practices that these athletes have during a week. This should also be checked in some of future research, by additional question that will cover this information.

Fourth hypothesis was that there is no statistically significant mean difference between male and female athletes, two age groups, professional and amateur athletes, different data collection and different sport groups on any of six mood subscales. It is partially confirmed.

5.4 About limitations, recommendations for future research and implications for practice

During data analysis there were some problems with the participant's sample. There were more than twenty different sports that athlete reported, they were grouped in to more or less meaningful groups, but those groups did not have balanced number of participants. Data was not normally distributed, that was also the case in some of

previous research (Terry et al., 1999).There is a tendency for a large proportion of athletes to report very low scores for depression and anger scales and for relatively few to report high scores (see Terry et al., 1999, 2003) not normally distributed data was expected. This should be also expected in future research, and for dealing with this type of data there are statistical procedures to be followed (Field, 2009).

Considering low reliability on some subscales and complex factor loadings in exploratory factor analysis it is obvious that it is needed to review and rebuilt scale. Some 'problematic' items could be replaced (Albrecht, & Ewing, 1989), or translated differently so that they can present desired factor more precisely. It is also suggested to perform Confirmatory Factor Analysis, and try to find clear factor loading that make best fit for the six subscales model (Terry et al., 1999). As already mentioned, sample should be selected with more balanced groups of participants, in order to have better base for statistical analysis.

Future research should include information of intensity level and individual feeling of energy consumption during sport activities and free time. Information about objective and subjective performance results should be included in future research. This way results from between group analysis could drown conclusions based on this data.

Serbian version of BRUMS can make theoretical and practical contribution to sport psychology and different branches of life and science (Terry, Malekshahi & Delva 2012). For example, cross-cultural comparison between Serbian population and other cultures in influence of mood on sport and exercise performance. There is also influence of sport and exercise on mood of athletes and general public (Thayer, Newman & McClain, 1994). SERMS as a version of the BRUMS scale showed initial encouraging results in terms of reliability and validity but further changes needs to be done to get a fully acceptable version of the Serbian Mood Scale for athletes.

5.4.1 Impressions about online data collection method compared to paper-pen

The data collection process brought a lot of experiences that should be mentioned and shared, especially since in present day use of internet and social media became more popular and is used more frequently in sport psychology practice (Lonsdale, Hodge & Rose, 2006). Both ways of data collection have their advantages and disadvantages. There were more missing data with paper based data collection method so some of the participants had to be excluded from the research. Internet based questionnaire does not

allow missing data, because one cannot submit their answers unless all the fields are checked and questionnaire is complete. On the other hand selection and recruiting participants was easier. With permission from coach data could be collected from a whole team or a club, while with online data collection method responsiveness was lower. Online based questionnaire saved some time and effort, because all the initial contacts and recruiting was made from home. Many athletes reported it as very convenient. Some athletes also might consider this as invasion to their private space, so there was another concern. Some of participants reported lower computer skills and asked for more clarification about filing in and submitting questionnaire. This also had to be taken in to concern while designing online based questionnaire, since the aim was to get proper data with easy access. There were some difficulties in data collection time wise. When it was done in person, some of coaches were afraid to spread the mood questionnaire to their athletes prior a competition. Their fear was that questions from the questionnaire could affect athlete's routine and mood and affect their performance. With online collection method it was easier to get more participants to fill in the questionnaire prior their competition, but on the other hand it is impossible to be certain about exact time of completion, even though clear instructions were given.

5.5 Conclusion

In conclusion adequate-to-good internal consistency of the six subscales was found. Factorial validity of the SERMS supported 22 items, with six factor model. Significant and substantial correlations among subscales were consistent with theoretical predictions. This measure can be used as a starting point with future adjustments. It also represents a good measure for use with Serbian speaking athletes. Finally, between groups comparison showed some significant information. These results show that sport psychologist could follow athlete's levels on mood subscales in order to recognize and deal with performance jitters, over training, burnout effect, prevent injuries etc.

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APPENDIX A: Research questionnaire in Serbian

SrpskaSkalaRaspolozenja

Pol:M | Ž **Godinarodjenja**_____ **Sport**_____**fudbal**_____

Godinetreniranja_____

Sportom se bavim: X Profesionalno**Uslovitestiranja**: X Učionica
X Poluprofesionalno X Pre treninga
X Amaterski X Nakontreninga
X Pre meča

	Neuopšte	Malo	Umereno	Prilično	Krajnje
1. Panično					
2. Živahno					
3. Zbunjeno					
4. Istrošeno					
5. Depresivno					
6. Potišteno					
7. Iznervirano					
8. Iscrpljeno					
9. Zbrkano					
10. Pospano					
11. Ogorčeno					
12. Nesrećno					
13. Anksiozno					
14. Zabrinuto					
15. Energično					
16. Jadno					
17. Nejasno					
18. Nervozno					
19. Ljuto					
20. Aktivno					
21. Umorno					
22. Lošenaravi					
23. Oprezno					
24. Kolebljivo					

Ispredvasje lista reči koje opisujuosećanja. Molimovaspročitajtesvakurečpažljivo i označitejedanodponuđenihodgovorakojinajboljeopisujekako se TRENUTNO OSEĆATE.

APPENDIX B: Brunel Mood Scale Questionnaire

The Brunel Mood Scale

Name: _____ Age: ____ Gender: M / F Date: / /

Below is a list of words that describe feelings. Please read each one carefully. Then mark the box that best describes HOW YOU FEEL RIGHT NOW. Make sure you answer every question.

		Not at all	A little	Moderately	Quite a bit	Extremely
1.	Panicky	❑	❑	❑	❑	❑
2.	Lively	❑	❑	❑	❑	❑
3.	Confused	❑	❑	❑	❑	❑
4.	Worn out	❑	❑	❑	❑	❑
5.	Depressed	❑	❑	❑	❑	❑
6.	Downhearted	❑	❑	❑	❑	❑
7.	Annoyed	❑	❑	❑	❑	❑
8.	Exhausted	❑	❑	❑	❑	❑
9.	Mixed-up	❑	❑	❑	❑	❑
10.	Sleepy	❑	❑	❑	❑	❑
11.	Bitter	❑	❑	❑	❑	❑
12.	Unhappy	❑	❑	❑	❑	❑
13.	Anxious	❑	❑	❑	❑	❑
14.	Worried	❑	❑	❑	❑	❑
15.	Energetic	❑	❑	❑	❑	❑
16.	Miserable	❑	❑	❑	❑	❑
17.	Muddled	❑	❑	❑	❑	❑
18.	Nervous	❑	❑	❑	❑	❑
19	Angry	❑	❑	❑	❑	❑
20.	Active	❑	❑	❑	❑	❑
21.	Tired	❑	❑	❑	❑	❑
22.	Bad tempered	❑	❑	❑	❑	❑
23.	Alert	❑	❑	❑	❑	❑
24.	Uncertain	❑	❑	❑	❑	❑

For official use only:

Ang: ____ Con: ____ Dep: ____ Fat: ____ Ten:____ Vig: ____

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