

## HOW YOGA PRACTICE TIME IMPACT THE LEVELS OF DEPRESSION, ANXIETY, STRESS AND POSITIVE AND NEGATIVE AFFECT AMONG HUNGARIAN YOGA PRACTITIONERS

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### **Abstrakt**

*Stress, anxiety and depression are closely linked; depression is the leading cause of disability in adults under the age of 45. In the EU, Hungary is the Member State with the largest share of population reporting depressive symptoms (10.5%). Coping with stress is an important element in maintaining a healthy lifestyle. Yoga is a commonly used tool among mind-body practices to cope with depression. The purpose of our study is to examine the correlation between time spent with yoga practice and the practitioner's levels of depression, anxiety, stress, emotion regulation and positive and negative affect. Subjects were Hungarian yoga practitioners (N=555, 465 female), 18 years and older who filled the questionnaire between November 2015 and February 2016 nation-wide. Outcome Measures were the Depression Anxiety Stress Scales (DASS-21), Difficulties in Emotion Regulation Scale (DERS) and The Positive and Negative Affect Schedule (PANAS). The results revealed significant differences between Beginner, Intermediate and Expert Yoga groups. Experts had a lower level of depression and stress as Beginners and Intermediates. Positive affect was higher in Expert group as both other groups and Negative effect was the lowest in Expert group compared to the Intermediate and Beginner group. Based on the data of Hungarian yoga practitioners, it can be concluded that long-term yoga positively influences the practitioner's ability to cope with stress and can lead to a higher level of quality of life. Yoga could be recommended for healthy adults to manage stress and prevent depression and anxiety.*

### **Keywords**

*Depression, Anxiety, Stress, Yoga, Positive and Negative affect*

### **INTRODUCTION**

Stress and stress-related disorders such as anxiety and depression are leading sources of disability worldwide for adults (WHO, 2001; Shyn & Hamilton, 2010; Ventriglio, Gentile, Baldessarini, & Bellomo, 2015). Anxiety is the strongest predictor of depressive symptoms (Mathew, Pettit, Lewinsohn, Seeley & Roberts, 2011). Depression could be the world's leading health problem by 2020, the World Health Organization estimates, who reports that one in five people will experience depression at some time in their life (Marcus, Yasamy, Ommeren, Chisholm & Saxena, 2012). Stress, anxiety and depression are closely linked,

exposure to chronic stress can have a cumulative effect on the body as an "allostatic load (AL)" (McEwen, 2003). Permanent injury or disability could be the result of an allostatic load when the chronic stress exceeds the physical and mental capacity of the individual to cope (Taylor, Goehler, Galper, Innes, & Bourguignon, 2010). If the sympathetic nervous system is overstimulated, it can lead to reduced coping capacity and poorer long-term physical and psychological health. Inborn susceptibilities and learned coping strategies are important factors on the ability of an individual to respond to the chronic stressors associated with

depression and to individual life stressors (Kinser, Goehler & Taylor, 2012). Coping with stress is vital to modern humanity to maintain mental and physical health. Mind-body interventions are commonly used to cope with depression and yoga is one of the most commonly used mind-body interventions (Cramer, Lauche, Langhorst & Dobos, 2013).

Yoga is an important part of Eastern lifestyle and spiritual path that originated from India. The term originated from the Sanskrit word 'Yuj,' meaning unity/union (Feuerstein, 1998). Yoga can be considered as a connection with our true spiritual nature and the Supreme. On the other hand, yoga can be vital for aligning the body, mind, spirit and soul (Tornóczy, 2013). The yoga tradition has four paths (Sivananda, 2000): Karma Yoga (path of selfless action, service), Bhakti Yoga (path of devotion), Jnana Yoga (path of knowledge), and Dhyana Yoga (also known as Raja Yoga or Ashtanga yoga) - this yoga path is practiced today mainly in Western world yoga studios. Yoga as a mind-body practice includes elements of physical postures (asana), breathing techniques (pranayama), meditation (Dyana), and other practice (Iyengar, 1976). Yoga practice in the Western world increased its popularity by promoting physical and mental well-being (Cramer et al., 2016; Ding & Stamatakis, 2014) to members of society. Yoga practitioners usually perceive positive physical- and psychosocial changes and relatively few negative changes in their lives (Park, Riley & Braun, 2016) and yoga can be practiced cost-effectively and relatively safe.

Yoga practices offer regular physical exercise which has a positive impact on the physical, mental and social health (Reed & Buck, 2009 Eime, Young, Harvey, Charity & Payne, 2013). Greater amounts of these activities are generally associated with reduced symptoms of depression (Dunn, Trivedi, & O'Neal, 2001).

Research shows that the practicing yoga reduces the symptoms of perceived

stress (West, Otte, Geher, Johnson & Mohr, 2004). It means yoga practice could be also a treatment for patients with depressive disorders and individuals with elevated levels of depression (Cramer, Lauche, Langhorst & Dobos, 2013) and anxiety (Butterfield, Schultz, Rasmussen & Proeve, 2017), and can reduce the stress of healthy adults (Chong, Tsunaka, Tsang, Chan & Cheung, 2011). The biological explanation of the positive effects of yoga practice could be that yoga can reduce the symptoms of depression and anxiety by its effect on the regulation of the sympathetic nervous system (SNS) and the hypothalamic-pituitary-adrenal (HPA axis) system (Pascoe & Bauer, 2015).

In the European Union, "6.8% of the adult population (18 years and over) report experiencing current depressive symptoms. 2.9% say their symptoms are major. Depression causes persistent sadness, a loss of interest in activities that you normally enjoy and an inability to carry out daily activities. The Member State with the largest share of population reporting depressive symptoms is Hungary (10.5%), followed by Portugal (10.4%) and Sweden (9.0%). These symptoms are less common in the Czech Republic (3.2%) and Slovakia (3.5%)" (Eurostat, 2017). Based on these facts, it is particularly important to recommend and learn methods that can help the Hungarian population prevent and treat depression. Testing the effects of yoga practice in Hungary on mental health can provide useful data for Hungarian people and health professionals.

## **OBJECTIVE**

Our research is the first in Hungary with a national sized sample on these markers of mental health among Hungarian yoga practitioners. The objective of the present study was to investigate the correlation of different yoga practice time on the level of depression, anxiety, stress, emotion regulation and positive and negative

affect and also investigate the possible differences between genders in the examined parameters.

## MATERIALS AND METHODS

### Participants

In the research 562 yoga practitioners participated, 416 person completed an online 146 person paper-based questionnaire. We excluded from the survey those respondents, who evaluated their health status to be bad (5 persons) or they were under 18 years of age (2 persons).

In the sample 83,8% were females and 16,2% males. The distribution of age categories was quite large: 18 to 79 years ( $M=42.76$ ,  $SD=11.93$ ). Their educational background was 70,9% university degree, 29,3% secondary school. Their marital status was: 23,0% unmarried, 46,9% married, 1,4% not living with spouse, 10,8% divorced, 3,0% widow, 15,0% living in a relationship.

Among the trials 73.1% were yoga practitioner and 26.9% yoga teacher. Years of yoga practice (without break): less than 1 month 5.0% ( $n=28$ ), 2-6 months 13.7% (76), 7-12 months 9.0% (50), 1-2 years 19.1% (106), 3-5 years 23.6% (131), more than 5 years 29.5% (164). For further analysis, three yoga practice groups were examined based on years of yoga practice without break: Beginners 18.7% ( $n=104$ ), intermediate 28.1% ( $n=156$ ), experts 53.2% ( $n=295$ ).

### Procedure

Participants of our survey were recruited from all over the country by inviting emails to yoga studios, creating our website ([www.jogakutatas.hu](http://www.jogakutatas.hu)), official support from the Hungarian Association of Yoga Educators, and paper-based questionnaires at two yoga studios in Eastern part of Hungary, in Debrecen for the cross-sectional study between 2015 November and 2016 February. The questionnaire assessed socio-demographic data of yoga practitioners,

their yoga practice characteristics, and health behaviours. Additionally, we examined in detail a variety of mental health characteristics, of which the present study focuses on (stress, anxiety, depression, emotion regulation, and positive and negative affect). The reliability of the measuring instruments was good for each questionnaire.

The Research Ethics Committee approved the research of the Faculty of Pedagogy and Psychology of Eötvös Loránd University with approval number 2015/224.

### Measures

Depression Anxiety Stress Scales-21 (DASS; Lovibond & Lovibond, 1995a): Developed by Australian researchers (Lovibond & Lovibond, 1995b) as an abbreviation from the original 42-item questionnaire. The questionnaire assesses three negative emotional states: depression, anxiety and stress, each with 7-7 questions. The authors of the self-characterizing questionnaire evaluate on a four-point Likert scale how much they agree with their content based on the experience of the past week. Categories on the Likert Scale: 0-3, where (0) Not at all characteristic of me; a (3) It was very remarkable to me or very often. The scale is used both in the normal population (da Silva et al., 2016; Willemsen, Markey, Declercq, & Vanheule, 2011) and in the clinical sample (Randall, Thomas, Whiting, & McGrath, 2017), translated the international questionnaire into the world. The results show that the questionnaire is reliable and has a high internal consistency (Antony, Bieling, Cox, Enns, & Swinson, 1998; Bottesi et al., 2015). The questionnaire is currently validated on a national sample.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Bjureberg et al., 2016): The questionnaire contains 36 items that the filler must judge according to how often the statement is true. The filler must indicate on a five-point

Likert scale how correct the statements are (1: almost never, 5: almost always). The model distinguishes six factors: (1) the unacceptability of emotional reactions, (2) difficulties in maintaining targeted behaviour, (3) impulse control difficulties, (4) lack of emotional awareness, (5) reduced access to emotional control strategies, and (6) lack of emotional purity. The statistical indicators of the questionnaire are also suitable for international and Hungarian samples (Gratz & Roemer, 2004; Kökönyei, Urbán, Reinhardt, Józán, & Demetrovics, 2014). The reliability and validity indicators of the questionnaire were tested on an American university student sample (N = 367; mean age: 23.10 (SD = 5.67); 73% increased). Each of the subscales showed adequate reliability (Cronbach  $\alpha$  = 0.80 to = 0.89), the test retention was good ( $r$  = 0.88). The questionnaire has been translated and used in several European languages (Gomez-Simon, Penelo, & de la Osa, 2014; Medrano & Trogolo, 2014; Mitsopoulou, Kafetsios, Karademas, Papastefanakis, & Simos, 2013). A shortened version of the Emotion Control Difficulty questionnaire (DERS-16) was developed and validated by Bjureberg et al. (Bjureberg et al., 2016). The internal consistency of the short version was excellent (Cronbach  $\alpha$  = 0.92) and the reliability of the test latch proved to be good ( $\rho$  = 0.85;  $p$  < 0.001). = 0.01 to  $r$  = 0.04).

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988): To explore the positive and negative emotional aspects, Watson et al. (1988) developed a measuring instrument consisting of 20 items. The method includes ten positive (e.g. enthusiastic, attentive, devoted) and ten negatives (e.g. distracted, irritable, tense) personality traits that the filler has to evaluate on a five-grade scale for himself. The evaluation can be based on several time intervals: e.g. right now, last week, last month, last year, or how you feel. In

this research, we asked him about feelings about the last month. Cronbach-alpha indicators that estimate the reliability of different scales (state, trait, positive, and negative affinity) of the instrument vary from 0.85 to 0.90 based on the research results of those are developing the method (Watson et al., 1988). Factor analyses on the measuring instrument support the independence of the dimensions of positive and negative affinity. According to research results, the interaction between positive and negative affinity fluctuates between low, -0.12 and 0.25 (Chen, Dai, Spector, & Jex, 1997; Joiner & Blalock, 1995; Mehrabian, 1998; Watson et al., 1988). The questionnaire has been translated into many languages of the world, and the results confirm the reliability and reliability of the questionnaire (de Carvalho et al., 2013; Merz et al., 2013; Terracciano, McRae & Costa, 2003). Sándor Rózsa and Natasa Kő made the translation and validation of the Hungarian version. The psychometric indicators of the Hungarian questionnaire also correspond to the international results (Rózsa et al., 2008).

### Statistical Analyses

Descriptive statistics (Mean, SD, Frequencies) were reported in the text. Examining the difference between yoga practice time groups in the measurements (depression, anxiety, stress; emotional regulation; positive and negative affect) 3x2 factorial ANCOVA was used. In this model, independent variables were the following: 3 (yoga practice time groups: beginner, intermediate, experts) x 2 (gender: female, male), age was used as a covariate. Covariate (age) in models appearing at the following value: 42.76 years. Bonferroni post-hoc tests were conducted as follow-up tests.

Statistical analyses were performed using IBM SPSS Statistics for Windows, v25.0 (IBM Corp. Released 2017 Armonk, NY: IBM Corp.). In statistical analyses, the fixed level of significance was  $p$  = 0.05.

**RESULTS AND DISCUSSION**  
**Depression, Anxiety and Stress (DASS)**

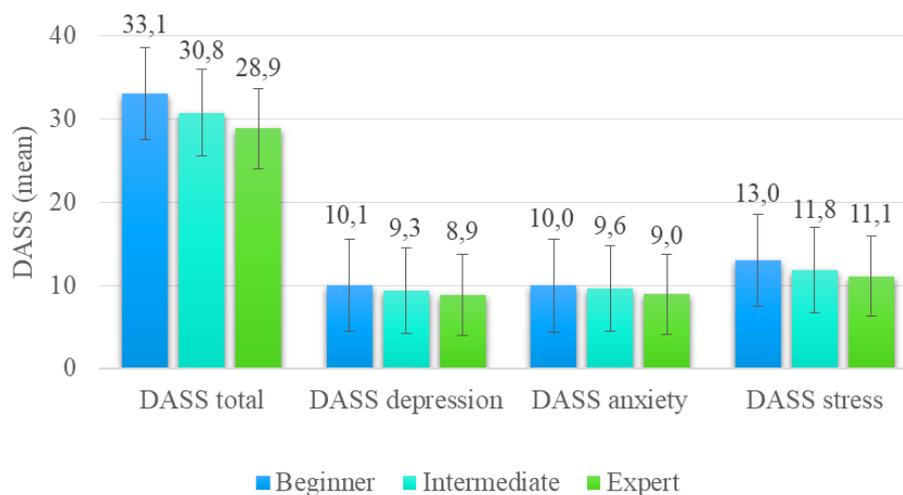
In the case of DASS total and subscales of Depression, Anxiety and Stress, the main effect of gender and the interaction effect of Gender x Yoga practice time were non-significant. Total score and the three subscales yielded a significant Yoga practice time main effect, indicating significant differences between Beginner, Intermediate and Expert (Table

1.). Based on the Bonferroni post-hoc test, Expert group showed lower scores than Beginner group and Intermediate group revealed in-between scores in DASS total and Depression and Stress subscales. After considering the Anxiety subscale, the data showed that there are no significant pairwise comparisons (Figure 1.).

**Table 1. The main effect of Gender, Yoga practice time and Gender x Yoga practice time (ANCOVA) in the scales of DASS, DERS and PANAS**

	Gender			Yoga practice time			Gender x Practice time		
	F	p	$\eta^2_p$	F	p	$\eta^2_p$	F	p	$\eta^2_p$
DASS total	0,341	0,560	0,00	4,540	0,011	0,02	0,058	0,944	0,00
DASS depression	2,647	0,104	0,01	3,999	0,019	0,01	0,241	0,786	0,00
DASS anxiety	0,672	0,413	0,00	3,216	0,041	0,01	0,209	0,811	0,00
DASS stress	0,491	0,484	0,00	3,084	0,047	0,01	0,611	0,543	0,00
DERS total	0,565	0,453	0,00	1,950	0,144	0,01	2,519	0,082	0,01
PANAS positive affect	7,233	0,007	0,01	4,501	0,012	0,02	0,787	0,456	0,00
PANAS negative affect	2,716	0,100	0,01	3,565	0,029	0,01	4,371	0,013	0,02

**Figure 1. Differences between Beginner, Intermediate and Expert yoga groups**



**Emotional Regulation (DERS)**

All effects were statistically non-significant at the .05 significance level

(Table 1.). It is worth to mention that Expert group (M=31,84, SD=10,57) showed a comparatively lower score than

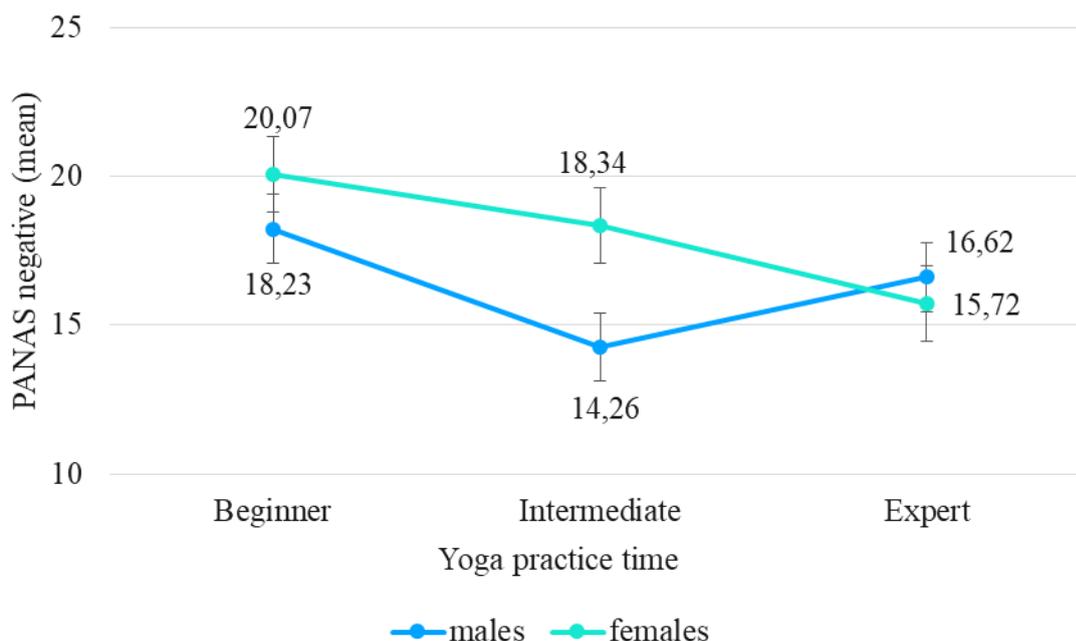
Beginner group (M=37,47, SD=11,59), the mean score in the Intermediate group was 33,66 (SD=9,88). s

### Positive and Negative Affect (PANAS)

Examining the Positive Affect, the Gender main effect was significant, indicating significant differences between males (M=35,15, SD=5,98) and females (M=36,89, SD=6,10). The main effect of Yoga practice time was also significant such that Positive Affect was significantly higher for Expert group (M=37,2, SD=5,99) than for Beginner group (M=34,94, SD=6,67), and Intermediate group (M=36,62, SD=5,77) showed in-between score. Gender x Yoga practice time interaction was non-significant (Table 1.).

In the case of Negative Affect, the main effect of gender was not significant. The main effect of Yoga practice time yielded significant differences between Yoga practice time groups. Expert group (M=15,88, SD=5,69) showed a lower score than Intermediate group (M=17,7, SD=6,12) and Beginner group (M=19,77, SD=7,1) showed the highest score (Table 1.). The interaction effect was significant, revealing that the difference between males and females could not be experienced in Expert group while this difference was identified in Beginner and Intermediate group (females showed a higher score than males) (Figure 2.).

Figure 2. Gender x Yoga practice time in PANAS negative



### DISCUSSION

Our results showed that there is a correlation between yoga practice time and depression, anxiety, stress, negative affect and positive affect among yoga practitioners. Both male and female sample showed that long-time practiced yoga seems to have positive results on

the level of depression, anxiety and stress, and also positively impact the positive and negative affect of the practitioners.

Our findings confirm that yoga practice reduces the value of the practitioners levels of stress and depression and it is concurrent with

literature based on clinical sample (Cramer, Lauche, Langhorst & Dobos, 2013; Saeed, Antonacci & Bloch, 2010) and healthy adults (Chong, Tsunaka, Tsang, Chan & Cheung, 2011).

Our results stated too that yoga practice has the potential to reduce the somatization score and scores related to mental health indicators, such as anxiety, depression, anger, and fatigue, like in a 12-week yoga training program in Japan. Their findings suggest that yoga has implications for the prevention of psychosomatic symptoms in healthy women (Yoshihara, Hiramoto, Oka, Kubo & Sudo, 2014).

Also in the national survey from the United States showed that stress relief is one of the primary reasons among motivations to adopting and maintaining yoga and depression/anxiety relief is among the other reasons (Ross, Friedmann, Bevans & Thomas, 2013). Yoga practitioners in Australia reported similarly that stress and anxiety management is a more important reason for practice as back, neck or shoulder problems suggesting that mental health may be the primary health-related motivation for practicing yoga (Penman, Cohen, Stevens & Jackson, 2012). One hand, it can be seen that literature reviews and original articles verify the positive effects of yoga exercise on depression, anxiety and stress and the other hand the practical experiences of yoga practitioners themselves are a sign of the effectiveness of practice.

Our research has shown that long-term yoga provides stable positive effects on these markers of psychological health as it can be seen according to the findings of international research (Yoshihara, Hiramoto, Sudo & Kubo, 2011; Ross, Friedmann, Bevans & Thomas, 2013).

In our survey we recognized also some limitations to testify the stress anxiety relieving benefits of yoga similar to other studies (Li & Goldsmith, 2012).

The difference between the benefits

of female and male practitioners are significant at the beginners, but at the experts it is no longer typical.

We agree on the opinions of other researchers, that further data collection is needed for further comparisons (Pucsok et al., 2018). According to experiences and results yoga practice can serve as a useful tool for treatment of patients with stress, anxiety, and depression symptoms.

## CONCLUSION

Yoga practice is recommended for healthy adults to manage stress and prevent depression and anxiety. Long-term yoga positively influences the practitioner's ability to cope with stress and can lead to a higher level of quality of life. Given the high proportion of the population in Hungary suffering from depression, it is particularly worthwhile to recommend and promote mind-body methods such as yoga to treat and prevent these symptoms.

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