**Technical Report**

**Mind7+: Mindfulness-based program for emotional regulation and focus, for university students**

## 1. Research Team

Maria Paula Marinho Pinto, Professor; Instituto Politécnico de Santarém (IPSantarem); Life Quality Research Centre (CIEQV) (paula.pinto@esa.ipsantarem.pt) – Principal Investigator.

Isabel Barroso - Diretor of Social Services (SAS-IPSantarém; isabel.barroso@sas.ipsantarem.pt).

Patrícia Januário - Psychologist, SAS-IPSantarém (patricia.januario@sas.ipsantarem.pt).

Maria Barbas – Full Professor; Instituto Politécnico de Santarém (IPSantarem); Digital Literacy and Inclusion Hub, Centre for Research in Arts and Communication (maria.barbas@ese.ipsantarem.pt).

Susana Franco – Professor, IPSantarém (sfranco@esdrm.ipsantarem.pt).

Susana Alves – Professor, IPSantarém (salves@esdrm.ipsantarem.pt).

Vanda Andrade – Invited Professor, IPSantarém (vanda.andrade@esa.ipsantarem.pt).

## 2. Introduction

The raise in mental health problems is a general trend in our world, especially among young people. Underlying causes include climate anxiety, a highly competitive society, the uncertainty of working life, and a massive flood of information[1]. This trend was worsened by COVID-19 pandemic, which has led to about 25% increase of depression and anxiety disorders, with a higher incidence in people with ages of 20 to 24 years old[2]. Thus, there is an urgent need to promote mental health strategies to reverse this trend, and mindfulness-based interventions provide alternative and complementary approaches. Recent scientific evidence shows that mindfulness meditation interventions have successfully reduced depression in emerging adults[3]. Studies with university students have shown that mindfulness is related to decreased perceived stress by students, with a positive effect on academic performance[4]; and increased well-being and reduced rates of university dropout[5].

This study intended to:

1) Develop and apply a 8-week structured program, based on strategies of Mindfulness, to students enrolled in IPSantarem;

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[1] Sitra 2020. Megatrend cards: know your future. https://www.sitra.fi/en/publications/megatrend-cards-2020/

[2] World Health Organization 2022. WHO/2019-nCoV/Sci_Brief/Mental_health/2022.1 (https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1

[3] Reangsing C, Lauderman C, Schneider JK. Effects of Mindfulness Meditation Intervention on Depressive Symptoms in Emerging Adults: A Systematic Review and Meta-Analysis. J Integr Complement Med. 2022 Jan;28(1):6-24. doi: 10.1089/jicm.2021.0036. PMID: 35085023

[4] Lampe LC, Müller-Hilke B. Mindfulness-based intervention helps preclinical medical students to contain stress, maintain mindfulness and improve academic success. BMC Med Educ. 2021 Mar 5;21(1):145. doi: 10.1186/s12909-021-02578-y. PMID: 33663478; PMCID: PMC7934360.

[5] Wingert JR, Jones JC, Swoap RA, Wingert HM. Mindfulness-based strengths practice improves well-being and retention in undergraduates: a preliminary randomized controlled trial. J Am Coll Health. 2022 Apr;70(3):783-790. doi: 10.1080/07448481.2020.1764005. Epub 2020 May 20. PMID: 32432990.

2) Measure the impact of the intervention on subjective well-being, perceived vitality, emotional regulation, anxiety, depression, sleep quality, focus and healthy lifestyles.

## 3. Methodology

### 3.1. Study design and ethics

This was a non-controlled experimental study, approved by the Ethics Commission of IPSantarem (Parecer Nº27-ESAS), developed according to the principles of Helsinki Declaration and the European Data Protection Regulation. The intervention Mind7+ consisted of a 8 week program, with one 4h session per week (six presential sessions and two online sessions), starting at 19th of October 2022 and ending at 14th of December, 2022. Inclusion criteria were (1) adults ≥ 18 years old; (2) Portuguese speakers, (3) being a student in IPSantarem. No selection criterion was applied in terms of gender, educational level, health condition or social and cultural background. For enrolment, the program was advertised at the start of the semester in the institutional website (https://www.ipsantarem.pt/mind7-programa-de-auto-regulacao-emocional-e-foco/), through institutional email, and face to face contact with the researchers involved in the study. The participants enrolled in the program through an online form. All participants signed an informed consent in the first session of the program and were given a code to insert on the questionnaires for data collection (pseudo anonymization of data). Participation was voluntary, and unpaid. Questionnaires were self-filled at the first and the last week of the intervention, assuring confidentiality.

### 3.2. Data collection

The following validated scales for Portuguese language were used: 9-item SWB (Subjective Well Being) to assess subjective well-being[6,7]; 14-MEDAS (Mediterranean Diet Adherence Screener) to assess adherence to Mediterranean Diet[8]; IPAQ (International Physical Activity Questionnaire), short version, to assess physical activity[9],[10]; scale of perceived vitality[11]; PSQI (Pittsburg Sleep Quality Index), short version to assess sleep quality[12]; EADS-21 (Scale of Anxiety, Depression and Stress) to assess anxiety, depression and stress[13]. An online questionnaire was constructed on Google forms with six sections:

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[6] Andrade V, Quarta S, Tagarro M, Miloseva L, … Conesa M-TG, Pinto P. Exploring Hedonic and Eudaimonic Items of Well-Being in Mediterranean and Non-Mediterranean Countries: Influence of Sociodemographic and Lifestyle Factors. International Journal of Environmental Research and Public Health. 2022; 19(3):1715. https://doi.org/10.3390/ijerph19031715

[7] Quarta S, Levante A, García-Conesa M-T, Lecciso F, Scoditti E, Carluccio MA, Calabriso N, Damiano F, Santarpino G, Verri T, Pinto P, Siculella L, Massaro M. Assessment of Subjective Well-Being in a Cohort of University Students and Staff Members: Association with Physical Activity and Outdoor Leisure Time during the COVID-19 Pandemic. International Journal of Environmental Research and Public Health. 2022; 19(8):4787. https://doi.org/10.3390/ijerph19084787

[8] Andrade, V., Jorge, R., García-Conesa, M.-T., Philippou, E., Massaro, M., Chervenkov, M., . . . Pinto, P. (2020). Mediterranean Diet Adherence and Subjective Well-Being in a Sample of Portuguese Adults. Nutrients, 12(12), 3837. doi: doi:10.3390/nu12123837

[9] International Physical Activity Questionnaire – Downloadable questionnaires: https://sites.google.com/site/theipaq/questionnaire_links

[10] Craig, Cora L.1; Marshall, Alison L.2; Sjöström, Michael3; Bauman, Adrian E.4; Booth, Michael L.5; Ainsworth, Barbara E.6; Pratt, Michael7; Ekelund, Ulf3; Yngve, Agneta3; Sallis, James F.8; Oja, Pekka9. International Physical Activity Questionnaire: 12-Country Reliability And Validity. Medicine & Science In Sports & Exercise: August 2003 - Volume 35 - Issue 8 - P 1381-1395 Doi: 10.1249/01.Mss.0000078924.61453.Fb

[11] Moutão, Cid, Leitão & Alves (2011) Translation and Validation of the Perceived Autonomy Support: Exercise Climate Questionnaire in a Sample of Portuguese Exercisers. Psicologia: Reflexao e Critica 25(4):701-708 DOI:10.1590/S0102-79722012000400009

[12] Buysse,D.J., Reynolds,C.F., Monk,T.H., Berman,S.R., and Kupfer,D.J. of the University of Pittsburgh using National Institute of Mental Health Funding. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ: Psychiatry Research, 28:193-213, 1989. Translated in 2008, by Mapi Linguistic.

[13] Pais-Ribeiro, J., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão e stress (eads) de 21 itens de lovibond e lovibond. Psicologia, Saúde & Doenças, 5 (2), 229-239.

section 1) information about the study, authorization for the use of collected data and a question for the individual code insertion; section 2) demographic and health data (age, gender, local of residence, weight, height, smoking habits, diagnosed pathologies); section 3) questions of the 9-SWB; section 4) questions for the perceived vitality scale; section5) questions for the 14-MEDAS; section 6) questions for the IPAQ. The two other questionnaires (EADS-21 and PSQI) were filled on paper. All questionnaires were filled at the beginning of the first session and at the end of the last session.

### 3.3. Intervention

The program consisted of 8 sessions, based on Jon Kabat Zin MBSR (mindfulness based stress reduction) program[14, 15], with the following topics: 1) concept of Mindfulness; formal and non-formal practices, diaphragmatic breathing; 2) the 9 Mindfulness attitudes; body scan; 3) dealing with stress and anxiety; scientific evidence of mindfulness effects; guided meditation; 4) flipping limiting thoughts to empowering thoughts; 10 Yoga movements and relaxing the body; guided meditation; 5) goal setting (DARe); anchoring tranquility and focus; walking meditation; 6) Yoga class; sitting meditation; values; 7) Neurologic levels; loving-kindness meditation; 8) personal impact statement; mindfulness state meditation. Session 3 and 6 were online; all other sessions were presential. At the end of each session, the participants were introduced to the daily practices for the week (10 to 15 minutes in the first two weeks, 15 to 30 minutes the following four weeks, and 30 to 45 min the last two weeks). All course materials were available for the participants at the institutional e-learning platform (https://eraizes.ipsantarem.pt/moodle/). All the research team was involved in the design and organization of the program.

## 4. Preliminary Results (ongoing analysis).

Forty students enrolled in the program between 9th of September and 7th of October. Before the beginning of the program, 10 students cancelled their inscription. At the first session (19th October), 24 participants attended the session and filled the starting questionnaires. Two other participants joined the second session but did not fill the starting questionnaires. Before the end of the program seven participants dropped out and did not fill the ending questionnaires. The frequency of attendance is presented in figure 1. More than half of the participants (53.9%) attended from 5 to 8 sessions out of 8.

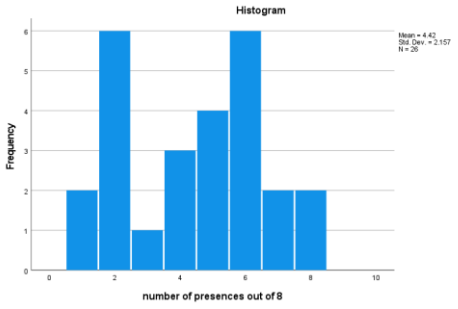


Figure 1: Frequency of attendance to the sessions of Mind7+

[14] Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. Clinical Psychology: Science and Practice, 10(2), 144–156. https://onlinelibrary.wiley.com/doi/full/10.1093/clipsy.bpg016

[15] Kabat-Zinn, J. (2013). Full Catastrophe Living (Revised Edition): Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. Ed Random House Publishing Group, 720 pg, ISBN 0345539729, 9780345539724.

Analysis of SWB data and sleep quality data (paired samples t-test), show a significant improvement globally in subjective well-being (9-SWB), with an increase in the positive dimension and a decrease in the negative dimension (Figure 2), as well as an improvement in sleep quality (Table 1). Analysis of the individual items of SWB indicate a significant decrease in feelings of depression and a significant increase in life meaning and global life satisfaction. Regarding sleep quality, a significant decrease was observed in the calculated PSQI indicating an improvement.

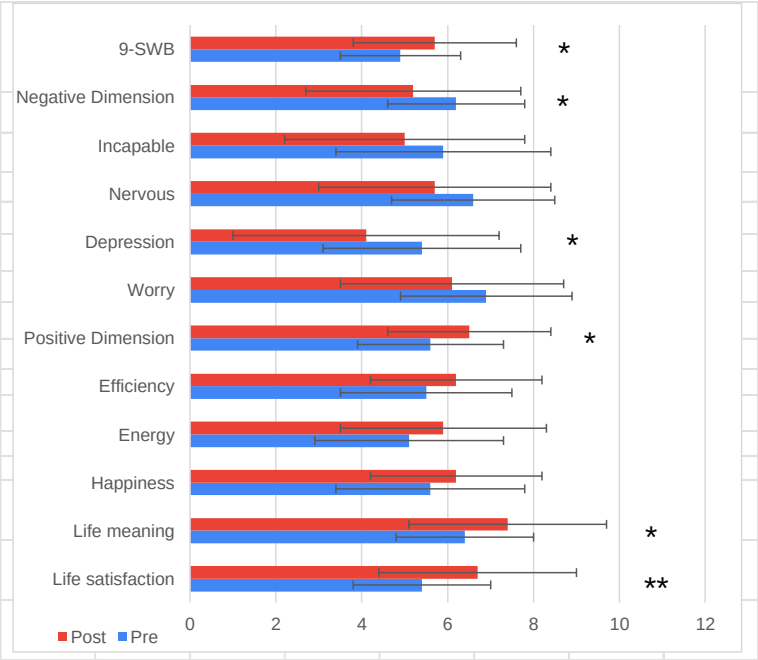


Figure 2: Impact of Mind7+ program in subjective well-being. Analysis was performed by paired samples test (N=18, number of participants who filled the starting and ending questionnaires); 9-SWB, global subjective well-being = mean of the nine items, with negative items inverted for calculation; positive dimension = mean of feelings of efficiency, energy, happiness, and evaluation of life meaning and global life satisfaction; negative dimension = mean of feelings of being incapable of leading with everything in hands, feeling nervous and stressed, feeling depressed and feeling worried. All items were assessed in a Likert scale of 0 to 10. Significance: * $p<0.05$; ** $p< 0.01$ (one-sided p-value).

Table 1: Impact of Mind7+ on sleep quality

| | Sleep quality PSQI Mean ± sd | One sided P- value for paired t-test | Effect size Point estimate (95%CI) |
|---|---|---|---|
| **Pre-intervention** | 4.9 ± 3.4 | 0.01 | 0.602 (0.096, 1.092) |
| **Pos-intervention** | 3.0 ± 2.0 | | |

N= 17 (number of participants that filled correctly the starting and ending questionnaires). PSQI score: 0= better sleep quality; 15= worse sleep quality.