

An investigation into the impact of indoor bouldering on psychological state
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AIMS AND METHOD

THE PRIMARY OBJECTIVE IS TO CONDUCT A THOROUGH EXAMINATION OF THE IMPACT OF BOULDERING ON DIFFERENT EMOTIONAL STATES, INCLUDING DEPRESSION, ANGER, VIGOUR, FATIGUE, AND CONFUSION. THIS WILL BE EVALUATED USING THE WELL-ESTABLISHED BRUNEL MOOD SCALE (BRUMS). SIMULTANEOUSLY, THE STUDY SEEKS TO IDENTIFY ANY SIGNIFICANT ALTERATIONS IN PARTICIPANTS' REPORTED STRESS LEVELS PRIOR TO AND DURING THEIR PARTICIPATION IN BOULDERING SESSIONS, EMPLOYING THE REPORTED STRESS SCALE (PSS) AS A QUANTITATIVE ASSESSMENT.

THE STUDY COMMENCED BY DISTRIBUTING INFORMATION REGARDING THE RESEARCH'S NATURE TO PARTICIPANTS THROUGH AN INFORMATION SHEET PRESENTED ON THE MICROSOFT FORM PLATFORM. PARTICIPANTS WERE OBLIGATED TO VERIFY THEIR UNDERSTANDING OF THIS MATERIAL BEFORE TO CONTINUING. AFTERWARDS, THE PARTICIPANTS WERE REQUESTED TO FILL OUT A PARTICIPANT CONSENT FORM, EXPRESSING THEIR READINESS TO PARTICIPATE IN THE STUDY, ANSWER QUESTIONS TRUTHFULLY, AND ALLOW THEIR DATA TO BE USED FOR RESEARCH PURPOSES. PARTICIPANTS HAD THE CHANCE TO ASK QUESTIONS OR SEEK CLARIFICATION FROM THE RESEARCHER BEFORE AND THROUGHOUT THE STUDY. THE RESEARCHER ADMINISTERED THE QUESTIONNAIRES AT THE BOULDERING CENTRE DURING THEIR FREE TIME, ENSURING CONVENIENCE FOR PARTICIPANTS. CRUCIALLY, PARTICIPANTS HAD THE RIGHT TO WITHDRAW FROM THE STUDY AT ANY POINT WITHOUT INCURRING ANY ADVERSE IMPLICATIONS. ALTHOUGH A PILOT STUDY WAS NOT DONE, THE RESEARCHER'S SUPERVISOR SIGNIFICANTLY CONTRIBUTED TO THE CONCEPTION AND CREATION OF THE QUESTIONNAIRE, ENSURING ITS VALIDITY AND RELIABILITY.

REFLECTIONS:

IF SIMILAR RESEARCH IS TO BE CREATED RECOMMENDATIONS INCLUDE COLLATING A LARGER SAMPLE SIZE OF PARTICIPANTS FROM VARIOUS DEMOGRAPHICS. FOR EXAMPLE, DIFFERENT AGE GROUPS AND DIFFERENT EMPLOYMENT STATUSES MAY HAVE DIFFERENT RESULTS. ANOTHER RECOMMENDATION WOULD BE TO OBTAIN PARTICIPANTS FROM MULTIPLE DIFFERENT INDOOR BOULDERING CENTRES IN DIFFERENT LOCATIONS TO IDENTIFY IF THAT EFFECTS PARTICIPANT EXPERIENCE. FURTHER RESEARCH INTO MORE ASPECTS OF PSYCHOLOGICAL STATE COULD ALSO BE BENEFICIAL AND MAY PROVIDE A BROADER PERSPECTIVE. IT MAY ALSO BE BENEFICIAL TO ORGANISE PARTICIPANTS INTO DIFFERENT GENDER GROUPS TO ANALYSE THE DIFFERENCE IN PSYCHOLOGICAL STATE THAT INDOOR BOULDERING HAS ON THE DIFFERENT GROUPS.

INTRODUCTION:

IN 2018 THE BMC ANNOTATES BOULDERING AS A 'DISTILLATION OF CLIMBING MOVEMENT; CUTTING OUT THE ROPE-WORK AND PARAPHERNALIA TO TACKLE "PROBLEMS" NO MORE THAN A FEW METRES ABOVE THE GROUND' (LONG). REPORTS SUCH AS THOSE BY PUBLIC HEALTH ENGLAND (OFFICE FOR HEALTH IMPROVEMENT AND DISPARITIES) AND NHS DIGITAL (NHS DIGITAL) SHED LIGHT ON THE CURRENT LANDSCAPE, EMPHASIZING THE SIGNIFICANCE OF REGULAR PHYSICAL ACTIVITY FOR MAINTAINING OVERALL HEALTH AND WELLBEING. EXTENSIVE EVIDENCE, AS OUTLINED BY WARBURTON (WARBURTON ET AL.) AND THE WORLD HEALTH ORGANIZATION (WORLD HEALTH ORGANIZATION), UNDERSCORES THE IMPORTANCE OF PHYSICAL ACTIVITY IN REDUCING THE RISK OF CHRONIC DISEASES AND IMPROVING OVERALL HEALTH OUTCOMES. WITHIN THIS CONTEXT, CLIMBING EMERGES AS A MULTIFACETED ACTIVITY OFFERING BOTH PHYSICAL AND PSYCHOLOGICAL BENEFITS. RESEARCH EXPLORES THE PSYCHOLOGICAL IMPACTS OF CLIMBING, HIGHLIGHTING ITS POTENTIAL TO ENHANCE MENTAL WELLBEING (HRUŠOVÁ). FURTHERMORE, STUDIES SUCH AS THAT DELVE INTO THE THERAPEUTIC EFFECTS OF CLIMBING ON MENTAL HEALTH (LUTTENBERGER ET AL.), PARTICULARLY IN MITIGATING SYMPTOMS OF DEPRESSION. AS DISCUSSED IN AN ARTICLE, CLIMBING OFFERS A RANGE OF BENEFITS FOR ADULTS, INCLUDING IMPROVED FITNESS, AND REDUCED ANXIETY (GALLOTTA ET AL.). UNDERSTANDING THESE BENEFITS NOT ONLY EMPHASIZES THE IMPORTANCE OF PROMOTING CLIMBING AS A MEANS OF ENHANCING OVERALL HEALTH AND WELLBEING BUT ALSO UNDERSCORES THE NEED FOR BROADER RECOGNITION OF CLIMBING AS A VALUABLE ACTIVITY DESERVING OF INCREASED PARTICIPATION. BY ADOPTING A MULTIDIMENSIONAL APPROACH, ENCOMPASSING QUESTIONNAIRES INVESTIGATING MOOD AND STRESS, THIS RESEARCH ASPIRES TO UNRAVEL THE INTRICATE INTERPLAY BETWEEN INDOOR CLIMBING AND MENTAL WELL-BEING. AS THE GLOBAL COMMUNITY GRAPPLES WITH RISING CONCERNS RELATED TO MENTAL HEALTH (WHO), UNDERSTANDING THE POTENTIAL THERAPEUTIC BENEFITS OF NOVEL RECREATIONAL ACTIVITIES SUCH AS INDOOR CLIMBING BECOMES CRUCIAL FOR PROMOTING HOLISTIC WELL-BEING.

DISCUSSION

THE STUDY'S FINDINGS ARE SIGNIFICANT, AS THEY CONFIRM THE IMPACT OF BOULDERING ON PSYCHOLOGICAL WELL-BEING. SIMILAR STUDIES HAVE FOUND THAT BOULDERING CAN BE MORE EFFECTIVE IN TREATING DEPRESSION (KARG ET AL.) AND REDUCING STRESS (GALLOTTA ET AL.) THAN MORE MAINSTREAM PHYSICAL ACTIVITIES. ONE ARTICLE HAD A SIMILAR LACK OF SIGNIFICANCE WITH EXHAUSTION AS THEIR MOOD SUBSCALE (HRUŠOVÁ) WHICH CORRELATED WITH THE RESULT FROM THIS STUDY'S SUBSCALE FATIGUE. THE STUDY'S STRENGTHS INCLUDE THE USE OF VALIDATED MEASURES LIKE BRUMS AND PSS SCALES, WHICH ENHANCE THE RELIABILITY AND VALIDITY OF THE DATA COLLECTED (KUPHANGA). THE STUDY ON BOULDERING AND PSYCHOLOGICAL WELL-BEING HAS SIGNIFICANT IMPLICATIONS FOR THEORY DEVELOPMENT AND FUTURE RESEARCH. IT PROVIDES EMPIRICAL EVIDENCE OF THE POSITIVE IMPACT OF BOULDERING ON MOOD STATES AND PERCEIVED STRESS LEVELS, SUPPORTING EXISTING THEORETICAL FRAMEWORKS. FUTURE RESEARCH COULD EXPLORE DEMOGRAPHIC INFLUENCES ON THE PSYCHOLOGICAL EFFECTS OF BOULDERING, ELUCIDATING DIFFERENTIAL RESPONSES AMONG DIVERSE POPULATIONS AND INFORMING THE DEVELOPMENT OF TAILORED MENTAL HEALTH PROMOTION STRATEGIES. AGE AND GENDER DIFFERENCES, AS WELL AS EMPLOYMENT STATUS, COULD BE CONSIDERED IN FUTURE RESEARCH. THE STUDY'S LIMITATIONS INCLUDE A SMALL SAMPLE SIZE AND THE NEED FOR PARTICIPANTS TO COME FROM A VARIETY OF LOCATIONS. POLICYMAKERS MAY ALSO CONSIDER INTEGRATING BOULDERING PROGRAMS INTO PUBLIC HEALTH INITIATIVES AIMED AT ENHANCING PSYCHOLOGICAL WELL-BEING AND REDUCING THE BURDEN OF MENTAL HEALTH DISORDERS. OVERALL, THE STUDY'S CONTRIBUTIONS TO THE EXISTING KNOWLEDGE BASE AND IMPLICATIONS FOR PRACTICE AND POLICY HIGHLIGHT THE POTENTIAL OF BOULDERING AS A VALUABLE TOOL FOR PROMOTING PSYCHOLOGICAL WELL-BEING.

REFERENCES:

GALLOTTA, MARIA CHIARA, ET AL. "PSYCHOPHYSICAL BENEFITS OF ROCK-CLIMBING ACTIVITY." PERCEPTUAL AND MOTOR SKILLS, VOL. 121, NO. 3, DEC. 2015, PP. 675–689, [HTTPS://DOI.ORG/10.2466/30.PMS.121C26X9](https://doi.org/10.2466/30.PMS.121C26X9).

HRUŠOVÁ, DAGMAR. "EXPERIENCING IN CLIMBING AND PSYCHOLOGICAL EFFECTS OF SPORT CLIMBING." THE EUROPEAN PROCEEDINGS OF SOCIAL & BEHAVIOURAL SCIENCES, VOL. 56, NO. 1, 28 FEB. 2019, [HTTPS://DOI.ORG/10.15405/EPSBS.2019.02.02.14](https://doi.org/10.15405/epsbs.2019.02.02.14).

KARG, NINA, ET AL. "BOULDERING PSYCHOTHERAPY IS MORE EFFECTIVE IN THE TREATMENT OF DEPRESSION THAN PHYSICAL EXERCISE ALONE: RESULTS OF A MULTICENTRE RANDOMISED CONTROLLED INTERVENTION STUDY." BMC PSYCHIATRY, VOL. 20, NO. 1, 12 MAR. 2020, [HTTPS://DOI.ORG/10.1186/s12888-020-02518-y](https://doi.org/10.1186/s12888-020-02518-y). ACCESSED 30 MAR. 2020.

RESULTS

THE STUDY FOUND THAT BOULDERING CAN SIGNIFICANTLY DECREASE CONFUSION, DEPRESSION, AND TENSION LEVELS IN PARTICIPANTS AFTER A SINGLE SESSION. HOWEVER, ANGER AND PERCEIVED STRESS DID NOT SHOW SIGNIFICANT IMPROVEMENTS, FURTHERMORE FATIGUE AND VIGOUR INCREASED. THE STUDY ANALYSED THE EFFECTS OF CLIMBING ON PARTICIPANTS' MOOD AND PERCEIVED STRESS LEVELS. THE MEAN STRESS DECREASED AFTER CLIMBING, WITH A MEAN OF 25.28 (SD 4.02) AND A PERCEIVED STRESS MEAN OF 24.08 (SD 4.44). THE SUBSCALES OF ANGER, CONFUSION, DEPRESSION, TENSION, AND FATIGUE SHOWED A DECREASE IN THEIR MEAN SCORES BEFORE AND AFTER CLIMBING. PAIRED TESTS WERE CONDUCTED USING SPSS SOFTWARE TO IDENTIFY ANY SIGNIFICANCE IN THE VALUES. A SIGNIFICANT DIFFERENCE WAS FOUND FOR CONFUSION (P=0.01), WITH A MEAN SCORE OF 2.44 (SD 3.25) AND 0.84 (SD 1.40) AFTER CLIMBING. DEPRESSION ALSO SHOWED A SIGNIFICANT DIFFERENCE (P=<0.01) BEFORE AND AFTER CLIMBING, WITH A MEAN DECREASE FROM 3.32 (SD 3.48) TO 1.20 (SD 1.44). TENSION ALSO SHOWED A SIGNIFICANT DIFFERENCE (P=<0.01) BEFORE AND AFTER CLIMBING, WITH A MEAN DECREASE FROM 2.88 (SD 3.27) TO 1.00 (SD 1.44). THE PAIRED T TEST CONCLUDED THAT THE DIFFERENCE IN PERCEIVED STRESS BEFORE AND AFTER CLIMBING WAS NOT SIGNIFICANT, THE MOOD SUBSCALE ANGER SHOWED NO SIGNIFICANT DIFFERENCE BETWEEN RESULTS BEFORE AND AFTER CLIMBING. FATIGUE LEVELS INCREASED WITH A MEAN OF 5.96 (SD 3.85) TO 6.60 (SD 3.22) WHICH LED TO AN INSIGNIFICANT DIFFERENCE DURING THE PAIRED T TEST (P=0.563). AN INCREASE IN VIGOUR LEVELS ALSO OCCURRED WITH THE MEAN BEFORE BEING 8.32 (SD 4.11) AND AFTER BEING 9.72 (SD 2.54) WHICH AGAIN LED TO AN INSIGNIFICANT RESULT FROM THE PAIRED T TEST (P= 0.106). DESPITE THE DECREASED MEAN SCORES IN ANGER AND PERCEIVED STRESS, THE CHANGES WERE NOT IDENTIFIED AS SIGNIFICANT THROUGH THE PAIRED T TEST, THE MOOD SUBSCALE ANGER EMERGED WITH A SIGNIFICANCE SCORE OF P=0.83 AND THE PERCEIVED STRESS SIGNIFICANCE SCORE.

KUPHANGA, DALITSO. *QUESTIONNAIRES IN RESEARCH: THEIR ROLE, ADVANTAGES, AND MAIN ASPECTS*. MAR. 2024, PP. 1–7. RESEARCHGATE, [WWW.RESEARCHGATE.NET/PUBLICATION/378868278_QUESTIONNAIRES_IN_RESEARCH_THEIR_ROLE_ADVANTAGES_AND_MAIN_ASPECTS](https://www.researchgate.net/publication/378868278_QUESTIONNAIRES_IN_RESEARCH_THEIR_ROLE_ADVANTAGES_AND_MAIN_ASPECTS), [HTTPS://DOI.ORG/10.13140/RG.2.2.15334.64325](https://doi.org/10.13140/RG.2.2.15334.64325), ACCESSED 24 APR. 2024.

LONG, STEVE. "THE BASICS: CLIMBING INDOORS." [WWW.THEBMC.CO.UK](http://www.thebmc.co.uk), 11 JULY 2018, [WWW.THEBMC.CO.UK/THE-BASICS-CLIMBING-INDOORS](http://www.thebmc.co.uk/the-basics-climbing-indoors).

LUTTENBERGER, KATHARINA, ET AL. "INDOOR ROCK CLIMBING (BOULDERING) AS A NEW TREATMENT FOR DEPRESSION: STUDY DESIGN OF A WAITLIST-CONTROLLED RANDOMIZED GROUP PILOT STUDY AND THE FIRST RESULTS." *BMC PSYCHIATRY*, VOL. 15, NO. 1, 25 AUG. 2015, [HTTPS://DOI.ORG/10.1186/s12888-015-0585-8](https://doi.org/10.1186/s12888-015-0585-8).

NHS DIGITAL. "HEALTH SURVEY FOR ENGLAND 2019 [NS]." *NHS DIGITAL*, 15 DEC. 2020, [DIGITAL.NHS.UK/DATA-AND-INFORMATION/PUBLICATIONS/STATISTICAL/HEALTH-SURVEY-FOR-ENGLAND/2019](https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2019).

OFFICE FOR HEALTH IMPROVEMENT AND DISPARITIES. "PHYSICAL ACTIVITY: APPLYING ALL OUR HEALTH." *GOV.UK*, 1 APR. 2015, [WWW.GOV.UK/GOVERNMENT/PUBLICATIONS/PHYSICAL-ACTIVITY-APPLYING-ALL-OUR-HEALTH](http://www.gov.uk/government/publications/physical-activity-applying-all-our-health).

WARBURTON, DARREN E.R., ET AL. "HEALTH BENEFITS OF PHYSICAL ACTIVITY: THE EVIDENCE." *CANADIAN MEDICAL ASSOCIATION JOURNAL*, VOL. 174, NO. 6, 14 MAR. 2006, PP. 801–809, [WWW.NCBI.NLM.NIH.GOV/PMC/ARTICLES/PMC1402378/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1402378/), [HTTPS://DOI.ORG/10.1503/CMAJ.051351](https://doi.org/10.1503/cmaj.051351).

WHO. "WHO HIGHLIGHTS URGENT NEED TO TRANSFORM MENTAL HEALTH AND MENTAL HEALTH CARE." [WWW.WHO.INT](http://www.who.int), 17 JUNE 2022, [WWW.WHO.INT/NEWS/ITEM/17-06-2022-WHO-HIGHLIGHTS-URGENT-NEED-TO-TRANSFORM-MENTAL-HEALTH-AND-MENTAL-HEALTH](http://www.who.int/news/item/17-06-2022-who-highlights-urgent-need-to-transform-mental-health-and-mental-health).

CARE#:--:TEXT=SOCIAL%20AND%20ECONOMIC%20INEQUALITIES%2C%20PUBLIC%20HEALTH%20EMERGENCIES%2C%20WAR%2C. WORLD HEALTH ORGANIZATION. "WHO GUIDELINES ON PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR." [WWW.WHO.INT](http://www.who.int), 25 NOV. 2020, [WWW.WHO.INT/PUBLICATIONS/1/ITEM/9789240015128](http://www.who.int/publications/1/ITEM/9789240015128).