

Psychological effects of forest environments on healthy adults: Shinrin-yoku (forest-air bathing, walking) as a possible method of stress reduction.

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Abstract

OBJECTIVES: Shinrin-yoku (walking and/or staying in forests in order to promote health) is a major form of relaxation in Japan; however, its effects have yet to be completely clarified. The aims of this study were: (1) to evaluate the psychological effects of shinrin-yoku in a large number of participants; and (2) to identify the factors related to these effects.

METHODS: Four hundred and ninety-eight healthy volunteers took part in the study. Surveys were conducted twice in a forest on the same day (forest day) and twice on a control day. Outcome measures were evaluated using the Multiple Mood Scale-Short Form (hostility, depression, boredom, friendliness, wellbeing and liveliness) and the State-Trait Anxiety Inventory A-State Scale. Statistical analyses were conducted using analysis of variance and multiple regression analyses.

RESULTS: Hostility ($P<0.001$) and depression ($P<0.001$) scores decreased significantly, and liveliness ($P=0.001$) scores increased significantly on the forest day compared with the control day. The main effect of environment was also observed with all outcomes except for hostility, and the forest environment was advantageous. Stress levels were shown to be related to the magnitude of the shinrin-yoku effect; the higher the stress level, the greater the effect.

CONCLUSIONS: This study revealed that forest environments are advantageous with respect to acute emotions, especially among those experiencing chronic stress. Accordingly, shinrin-yoku may be employed as a stress reduction method, and forest environments can be viewed as therapeutic landscapes. Therefore, customary shinrin-yoku may help to decrease the risk of psychosocial stress-related diseases, and evaluation of the long-term effects of shinrin-yoku is warranted.

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