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Perspective

Viewing a Japanese garden and stress relief

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Abstract

It has been suggested that viewing nature can elicit positive feelings, reduce stressful thoughts and fear, and aid recovery from anxiety and stress. Previous studies have found that Japanese-style gardens can reduce perceived stress and lower heart rate. A recent study aimed to clarify the role of eye movements in alleviating physiological and psychological stress by comparing the effects of viewing a Japanese garden and a university campus garden containing similar visual elements. The Japanese garden was found to be more effective at reducing pulse rate and improving mood. In neither garden did pulse rate rise or fall based on the particular objects participants were viewing. Participants' gazes moved more quickly and across a broader range of the visual field in the Japanese garden than in the university garden. In the Japanese garden, gaze points were distributed more widely, extending to the edges of the visual field — particularly horizontally — and participants' gazes shifted more frequently from side to side. In conclusion, the stress-relieving effect was primarily the result of design features that prompted viewers to make frequent, rapid horizontal eye movements.

Betrachten eines japanischen Gartens und Stressabbau

Der Anblick der Natur scheint positive Gefühle auszulösen und dabei zu helfen, Angstzustände und Stress zu bewältigen. Frühere Studien haben gezeigt, dass japanische Gärten empfundenen Stress reduzieren und die Herzfrequenz senken können. Eine aktuelle Studie hatte zum Ziel, die Rolle der Augenbewegungen bei der Linderung von physiologischem und psychischem Stress zu klären. Dazu wurden die Auswirkungen des Betrachtens eines japanischen Gartens und eines Universitätscampusgartens mit ähnlichen visuellen Elementen verglichen. Der japanische Garten erwies sich als wirksamer hinsichtlich der Senkung der Pulsfrequenz und der Verbesserung der Stimmung. In keinem der beiden Gärten änderte sich die Pulsfrequenz, wenn die Teilnehmer bestimmte Objekte betrachteten. Die Blicke der Teilnehmer bewegten sich im japanischen Garten schneller und über einen größeren Bereich des Gesichtsfeldes als im Universitätsgarten. Im japanischen Garten waren die Blickpunkte weiter verteilt und reichten bis an die Ränder des Gesichtsfeldes, insbesondere in horizontaler Richtung. Die Blicke der Teilnehmer wanderten außerdem häufiger von einer Seite zur anderen. Zusammenfassend lässt sich sagen, dass die stressmindernde Wirkung in erster Linie auf Gestaltungsmerkmale des Gartens zurückzuführen war, die die Betrachter zu häufigen, schnellen horizontalen Augenbewegungen veranlassten.

日本庭園鑑賞とストレス緩和

自然を鑑賞することは、ポジティブな感情を引き出し、ストレスフルな思考や恐怖感を軽減し、不安やストレスからの回復を導くことが示唆されている。これまでの研究で、日本式庭園は知覚ストレスを和らげ、心拍数を低下させることが明らかになっている。類似した視覚的要素を持つ日本庭園と大学構内の庭を鑑賞してその影響を比較することで、生理的および心理的ストレスの緩和における目の動きの役割を解明することを目的とした最近の研究がある。その結果、日本庭園は脈拍数の低下と気分転換により効果的であることが分かった。いずれの庭園においても実験参加者の脈拍数は、特別な単一の何かを見たからといって変動することはなかった。しかし、大学構内の庭よりも日本庭園では、実験参加者の視線がより速くより広い視野の範囲を移動し、注視点がより広く分散し、特に水平方向に視野の端まで広がってしばしば左右に移動していた。このことからストレス緩和効果は主に、見る人の目の動きを頻繁に速く水平方向へ促すような日本庭園の設計上の特徴によるものと考えられる。

Keywords: Japanese garden; Eye movements; Heart rate; Mood; Stress relief.

The impact of natural environments on human physiology has been observed through personal experience and formal research studies (Li and Lange, 2023). It has been suggested that viewing nature can elicit positive feelings, reduce stressful thoughts and fear, and aid recovery from anxiety and stress (Ulrich, 1984). Studies of elderly people and individuals with advanced dementia have revealed that Japanese-style gardens have unique features that engage participants and reduce their subjective sense of tension, as well as its physiological manifestation in the form of an increased heart rate (Goto and Fritsch, 2011; Goto et al., 2013, 2014, 2018). This raises questions about the underlying physiological mechanisms. Therefore, recent research has investigated stress levels and eye movements in response to visual stimulation involving a natural scene in a Japanese garden (Goto et al., 2025).

The contemplation or meditation garden, often referred to as a Zen garden, is a uniquely Japanese feature. Unlike strolling gardens, which are experienced by walking around them, contemplation gardens are designed to be viewed from a specific vantage point, such as a building or veranda. This allows the garden to be enjoyed as if it were a painting. The location of the vantage point is a carefully chosen design feature intended to maximise the visual impact of the scene. The reason for imposing this level of control on the viewer is that contemplation gardens were intended to serve a purpose beyond mere aesthetic appeal. For example, they were favoured in Zen temples as aids to meditation, performing an important function for the temple residents. The distinction between stroll and contemplation gardens is not always clear-cut. Zen gardens are often located within temple grounds, which offer opportunities for strolling, and elements of contemplation gardens can be found within stroll gardens.

Murin-an is a Japanese garden located at the foot of the Higashiyama mountains in Kyoto (Goto, 2005; Ueyakato Landscape, 2025). Built in the 1890s by Prince Yamagata Aritomo, one of the founding fathers of modern Japan, it is renowned for its beauty. It was designed by the acclaimed garden architect Ogawa Jihei VII. Key features include a pond, a stream with an artificial waterfall, and an open lawned area. The Higashiyama mountains provide the backdrop as 'borrowed scenery'. The garden's sophisticated design incorporates carefully positioned rocks, mounds of moss, and trees that frame views and create depth. Murin-an is intended for strolling through, but it can also be viewed from the centre of the villa's main room. Thanks to its peaceful atmosphere, Murin-an has earned a reputation as one of the most relaxing gardens in the region. This status has largely been maintained thanks to its impeccable upkeep.

A recent study aimed to clarify the role of eye movements in alleviating physiological and psychological stress when viewing Japanese gardens. Murin-an was chosen as the test site, while a garden with similar visual elements on Kyoto University's main campus was chosen as the control site. This garden features a central stream surrounded by pine trees, shrubs, rocks, and a bridge. The two gardens were similar in size. The most significant difference is that the Murin-an garden is enclosed by trees, whereas the Kyoto University garden is surrounded by buildings. There were no distractions caused by other people during the observation period. The experiment involved young, healthy college students observing each garden for seven minutes.

The Murin-an garden was more effective at reducing pulse rate and improving mood. In neither garden did pulse rate rise or fall based on the particular object participants were viewing. Participants' gazes moved more quickly and across a broader range of the visual field in the Murin-an garden than in the Kyoto University garden. In both gardens, participants tended to focus their gaze on the centre of their visual field. However, in the Murin-an garden, gaze points were distributed more widely, extending to the edges of the visual field, particularly horizontally. The Kyoto University group's attention remained centred in the visual field, undistracted by the regular geometry of the windows on the right-hand side of the image. In the Murin-an garden, but not the Kyoto University garden, participants' gazes shifted more frequently from side to side (Goto et al., 2025).

The researchers concluded that the stress-relieving effect was primarily the result of design features that prompted viewers to make frequent, rapid horizontal eye movements. Both of the gardens visited during the experiment contained typical Japanese garden features, such as water, stones, trees and bridges. However, contrary to the original assumption that viewing individual elements of the garden leads to relaxation, it is the overall composition that has the desired effect. In this case, the surrounding landscape was deliberately incorporated into the design. The quality of the arrangement and maintenance are both important factors. Studies have repeatedly found that people tend to spend more time viewing a scene with multiple visual fixation points when it is a structured natural space created using the design principles of a Japanese garden than when it is another type of green space. Furthermore, it was found that the parasympathetic nervous system, which is associated with relaxation, became dominant when participants' eyes moved across a Japanese garden (Liu et al., 2020).

In conclusion, a well-designed garden can provide considerable stress relief through the visual stimuli it offers. It appears that the way in which we move our eyes when viewing Japanese gardens contributes to stress reduction. These findings improve our understanding of how viewing a garden can alleviate physiological and psychological stress. Relaxation was not induced by a single visual element, but rather by the interplay of various design features that encouraged a more holistic viewing experience. Japanese gardens encourage viewers to envisage a broader landscape within seemingly simple natural elements. By contrast, the geometric arrangement of features in many Western gardens directs the gaze towards a single focal point immediately. Japanese gardens, on the other hand, have multiple focal points to encourage a multi-directional view. The idea is that if viewers look directly at the main feature, it will quickly become boring.

Conflict of interest

The authors declared no conflict of interest.

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