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Background:
Green spaces (greenness) have been reported as beneficial to health, mainly mitigating air pollution, hot spots, noise and promoting socialisation, biodiversity and physical activity (PA). This study aims to examine the association between greenness and oxidative stress (OS) in children and to evaluate interaction with PA.
Methods:
The cross-sectional study involved 323 subjects (9-11 yrs.) from five schools in Asti (Italy). Parents completed a questionnaire providing home-address, parental education, and PA of children. Urinary samples were collected to measure OS by isoprostane (15-F2t-IsoP). Time-weighted exposure to greenness was calculated from satellite images (Sentinel2 L2A) by Normalised Difference Vegetation Index (NDVI), within buffers around participants' homes and schools, accounting for the individual multi-site exposure during the day.
Results:
Overall 323 subjects were included in the analyses, 50% females. An inverse correlation was found between greenness and OS (Pearson -0.162, $p = 0.003$). A generalised linear mixed model, age-adjusted with schools as random effect, tested the association between greenness and log-transformed(15-F2t-IsoP), reporting decreased OS levels for each unit of increase in greenness (β: -0.50, 95%CI-0.98 to -0.02, $p = 0.041$). After adding PA in the model, greenness was no longer significant (β: -0.42, 95%C.I.-0.90 to 0.07, $p = 0.092$), but children reporting low-PA and high-PA showed the highest increase in OS (β: +0.19, 95%CI 0.04 to 0.43, $p = 0.02$; β: +0.25, 95%CI 0.04 to 0.46, $p = 0.018$) compared to those with moderate-PA.
Conclusions:
Greenness positively impacts health by reducing OS in children. Our findings suggest that PA is partly mediating this association. Noticeably, this is the first study assessing a multi-site greenness exposure and its association with OS accounting for PA in children. The management of urban greenness should be included as preventive Public Health intervention for health and well-being promotion.
Key messages:
- Greenness exposure may benefit health by reducing oxidative stress in children.
- The association between greenness and oxidative stress seems partly mediated by physical activity.

Greenness and physical activity as possible oxidative stress modulators in children

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