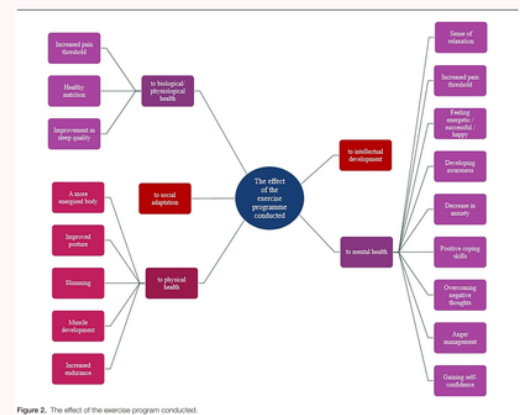


Research Bulletin

July 2026

THE CONTRIBUTION OF GROUP EXERCISE TO EARTHQUAKE SURVIVORS' HEALTH AND SOCIAL INTEGRATION HAS BEEN DEMONSTRATED

The effects of group-based aerobic exercise on health and social adaptation were examined among survivors of the 2023 Kahramanmaraş earthquakes. Interviews were conducted with 17 individuals who had participated in an exercise programme for at least six weeks, and their experiences were evaluated using thematic analysis. Participation in exercise was found to reduce stress, improve sleep quality, and strengthen emotional well-being. Improvements in physical health, interpersonal relationships, and social adaptation were also observed. The findings suggest that structured group exercise programmes may support post-disaster recovery.



Yardimci, F. B., Altay Ili, H., Apak, H., Kaya, M. S., & Anaforoglu, B. (2026). Effects of group aerobic exercise on health and social adaptation in earthquake survivors: *A qualitative study. Medicine, 105*(26), e49439. <https://doi.org/10.1097/MD.00000000000049439>

LEADERSHIP AND COMMUNICATION IDENTIFIED AS KEY DETERMINANTS OF EMPLOYEE COMMITMENT

The factors influencing employee commitment during organisational change were examined through 29 articles published between 2006 and 2025. Commitment was found to be shaped at two levels: at the organisational level by leadership, support, communication, and cultural factors; and at the individual level by psychological responses, behaviours, attitudes towards change, and career opportunities. Conceptual inconsistencies in the field were identified, and recommendations for future research were provided.

Table 1. Brief summary of the included articles.

Description	Results
Timespan	2006–2024
Sources (Journals)	26
Documents (Articles)	29
Average citations per document	11.1
Author's Keywords	114
Authors	76

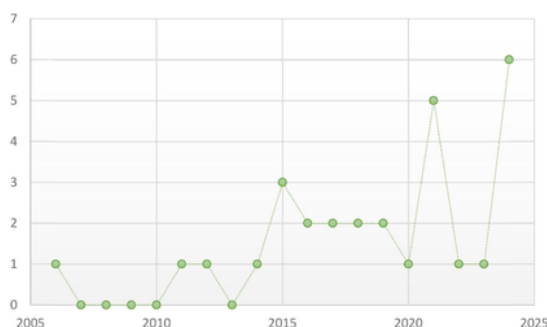


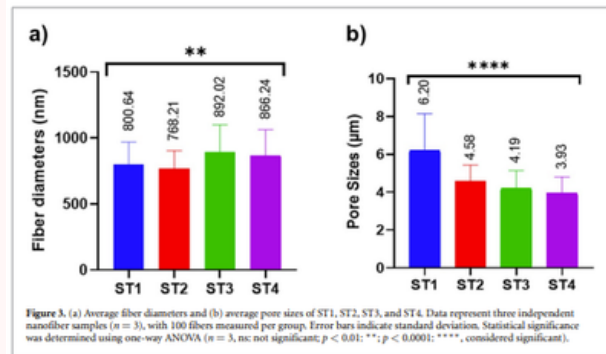
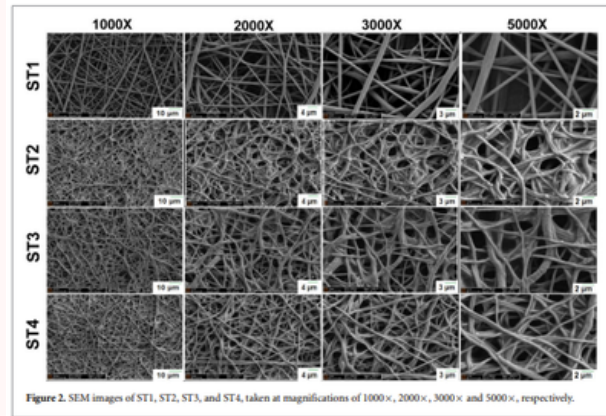
Figure 2. The number of articles published per year.



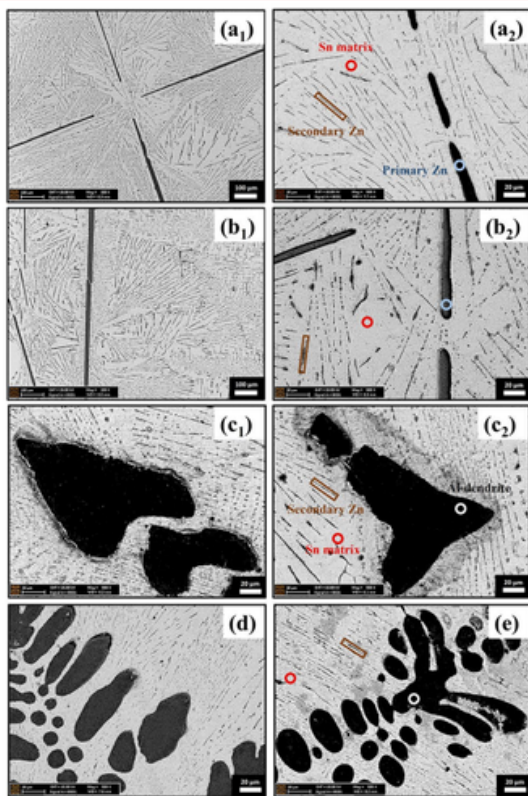
Ahmed, A., Usman, M., Shah, S. H. A., & Abbas, A. F. (2026). Unsettled grounds, enduring bonds: A literature review on employee engagement during organizational change. *Journal of Workplace Behavioral Health. Advance online publication.* <https://doi.org/10.1080/15555240.2026.2689351>

A NEW NANOFIBER DRESSING THAT ACCELERATES WOUND HEALING AND PROTECTS AGAINST BACTERIA

In this study, dual-functional nanofiber dressings were developed for wound treatment. Plantain extract and clove oil were incorporated into PCL/PEG polymer nanofibers. Clove oil showed effectiveness rates of up to 85% against *E. coli* and 80% against *S. aureus*. The plant extract was found to accelerate wound closure. The nanofibers were also shown to be non-toxic to cells and to have a high water-absorption capacity. The resulting dressings were considered promising candidates for wound care.



Teke, S. N., Yürük, A., & İşoğlu, İ. A. (2026). Electrospun PCL/PEG nanofibers incorporating *Plantago lanceolata* extract and clove oil for dual-function wound dressings. *Biomedical Materials*, 21(4), 045005. <https://doi.org/10.1088/1748-605X/ae7ebd>



THE EFFECT OF ALUMINIUM ADDITION ON LEAD-FREE TIN-ZINC SOLDERS WAS COMPREHENSIVELY INVESTIGATED

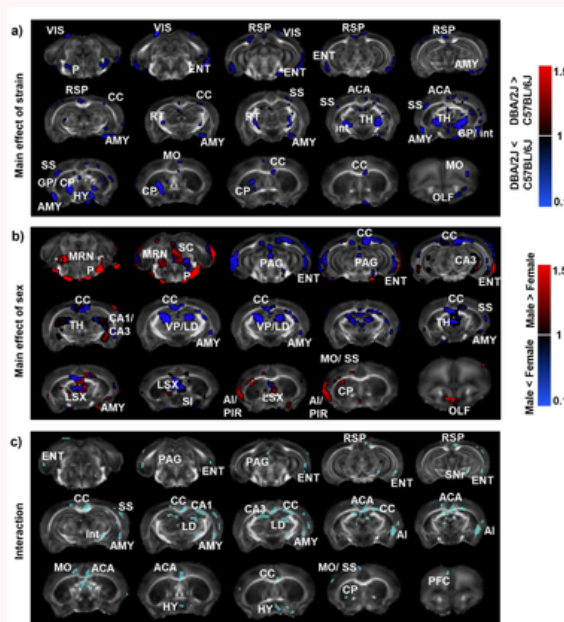
Lead-free tin-zinc solder alloys used in the electronics industry were supplemented with varying amounts of aluminium, and their mechanical, thermal, and electrical properties were comprehensively investigated. The microstructure, strength, hardness, and thermal conductivity of the alloys were examined using various methods. The alloy containing 2.5% aluminium exhibited the highest strength and hardness, while the alloy containing 5% aluminium showed the greatest ductility. The findings indicate that aluminium-added alloys could provide an environmentally friendly alternative to conventional lead-containing solders.

Bayram, Ü., & Şahin, M. (2026). Comprehensive evaluation of microstructure–property relationships in Al-added Sn-Zn eutectic solder alloys from thermal, electrical, and mechanical perspectives. *Journal of Electronic Materials*. <https://doi.org/10.1007/s11664-026-12972-1>

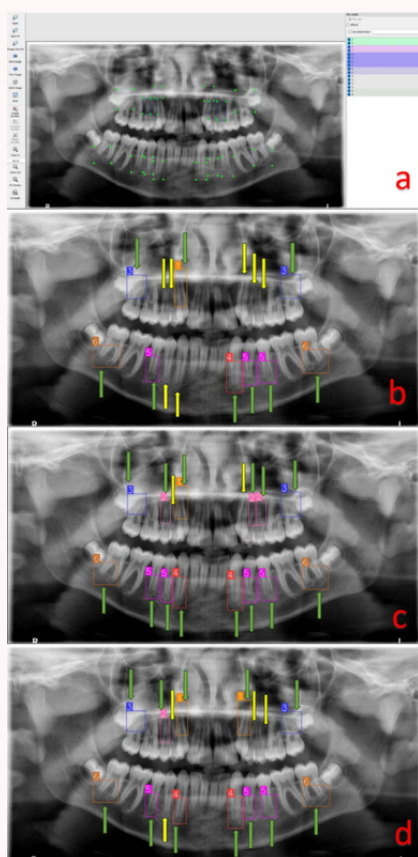


GENETIC AND SEX-BASED DIFFERENCES IN THE MOUSE BRAIN REVEALED BY MRI

The brain connectivity networks of two mouse strains commonly used in neuroscience research were examined using magnetic resonance imaging without anaesthesia. Functional and structural MRI methods were combined to evaluate brain networks associated with movement, sensation, and emotion. Distinct differences were identified between the strains and sexes. The study also revealed that the brain's functional and structural characteristics were interconnected. The findings emphasise that these fundamental differences should be considered when interpreting brain-behaviour relationships in mouse models of human diseases.



Arefin, T. M., Ünsal, H. S., Neuberger, T., Zhang, N., & Kamens, H. M. (2026). Dissecting the strain and sex specific connectome signatures of unanesthetized C57BL/6J and DBA/2J mice using magnetic resonance imaging. *Genes, Brain and Behavior*, 25(4), Article e70060. <https://doi.org/10.1111/gbb.70060>



TEETH WITH OPEN APICES DETECTED IN PANORAMIC RADIOGRAPHS USING ARTIFICIAL INTELLIGENCE

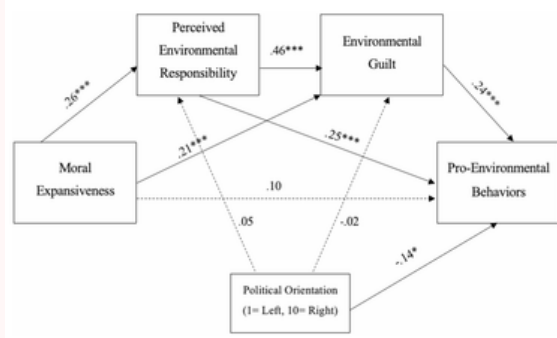
The use of artificial intelligence to detect teeth with incompletely developed root apices in panoramic dental radiographs was investigated. Three deep learning models were compared using a total of 966 radiographic images. The models classified teeth in the upper and lower jaws into six categories. YOLOv4 achieved the highest performance. AI-assisted systems were found to detect teeth with open apices more quickly and accurately. This approach could reduce the need for additional radiographs and save clinicians time.

Edik, M., Çelebi, F., & Çukurluoğlu, A. (2026). Deep-learning-based detection of open-apex teeth on panoramic radiographs using YOLO models. *Oral Radiology*, 42(3), 520–530. <https://doi.org/10.1007/s11282-025-00884-5>



THE EFFECT OF MORAL EXPANSIVENESS ON PRO-ENVIRONMENTAL BEHAVIOUR EXAMINED IN TÜRKİYE

The relationship between extending one's moral concern beyond humans to include other living beings and nature—known as moral expansiveness—and pro-environmental behaviour was investigated in a Turkish sample. The study, conducted with university students, examined the mediating roles of perceived environmental responsibility and environmental guilt. Moral expansiveness was found to be indirectly associated with pro-environmental behaviour through these two factors, while its direct effect was not significant. Individuals with more left-leaning political views also exhibited higher levels of pro-environmental behaviour. The findings may contribute to efforts promoting sustainability.

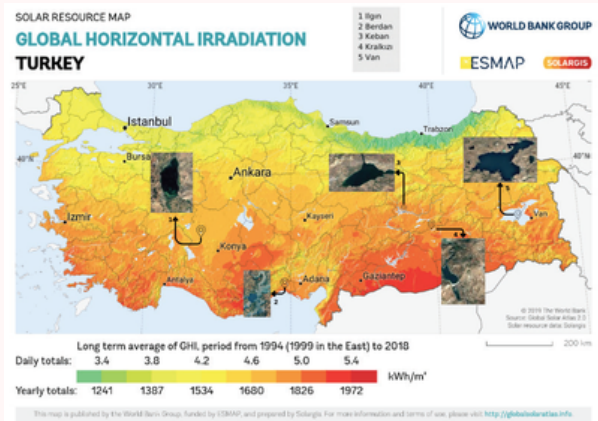


Sarı, E., Coşkun, M., Cingöz-Ulu, B., & Candanoğlu, İ. (2026). Widening the moral circle: Perceived responsibility and guilt as mediators of moral expansiveness and pro-environmental behavior. *Current Psychology*, 45(12), Article 1142. <https://doi.org/10.1007/s12144-026-09708-z>



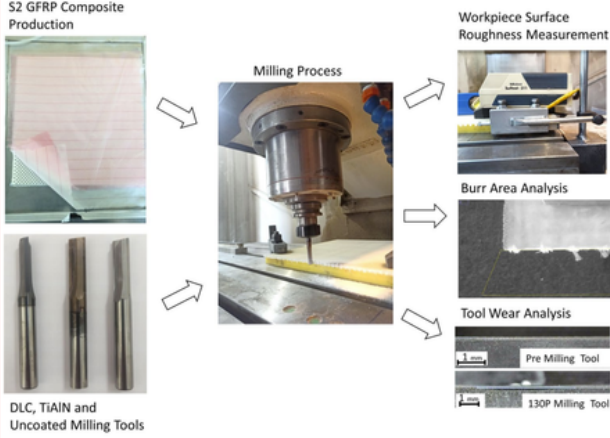
CLEAN ENERGY GENERATION AND CARBON REDUCTION THROUGH FLOATING SOLAR PANELS EXAMINED IN TÜRKİYE

The annual energy-generation potential and carbon-emission reduction benefits of floating solar panels installed on five different water bodies in Türkiye were investigated. Various tilt angles were modelled computationally, and 32 degrees was identified as the optimal angle. Berdan Dam was calculated to have the highest annual energy-generation potential. The panels were found to reduce annual carbon emissions by between 1 and 1.1 tonnes across the examined locations. The findings highlight the significant contribution of floating solar panels to clean energy generation and decarbonisation.



Özgün, F., Bajc, T., Koca, K., & Karipoğlu, F. (2026). A novel approach for clean energy production and decarbonization using floating photovoltaic systems: Türkiye case. *Sigma Journal of Engineering and Natural Sciences*, 44(3), 1674–1685. <https://doi.org/10.14744/sigma.2026.2057>

DLC-COATED TOOLS SIGNIFICANTLY IMPROVED SURFACE QUALITY IN COMPOSITE MILLING



The effects of cutting parameters and tool coatings on surface integrity and tool wear during the milling of S2 glass-fibre-reinforced polymer composites were investigated. Uncoated, TiAlN-coated, and DLC-coated tools were tested at different spindle speeds and feed rates. The lowest surface roughness and burr area were achieved with the DLC-coated tool at 4,000 rpm and a low feed rate. Surface deterioration was observed to accelerate once tool wear exceeded a certain threshold. The findings demonstrate that coating selection is a key factor in achieving high-quality machining.

Danişman, Ş., Ersoy, E., Kesriklioğlu, S., & Yılmaz, Ç. (2026). Surface integrity and tool wear in s2-GFRP milling: Experimental and statistical evaluation of cutting parameters and DLC and TiAlN tool coatings. *International Journal of Advanced Manufacturing Technology*. <https://doi.org/10.1007/s00170-026-18617-1>

