Evidence Table

	Hsu, C.-Y., 2022	Iacob, M.C., 2023	Özgün. A.K., 2024
Population	Ten adults with functional Pes planus (5 males, 5 females; mean age ~31 years).	No human subjects; study tested orthotic material properties only.	Single adult male, mean age ~39 years, obese (BMI 50.9).
Study Design	Prospective biomechanical study with within-subject comparison.	Laboratory-based mechanical fatigue testing.	Case report with within-subject comparison.
Intervention	Three 3D-printed insoles—auto-scan, total contact, and medial wedge.	3D-printed foot orthoses manufactured using different thermoplastic polyurethanes (TPUs).	Custom 3D-printed TPU insoles with varied infill (5%, 10%, 15%).
Comparison	Standard shoes without insoles.	TPU materials were compared against each other under flexural fatigue loading.	Prefabricated EVA insoles.
Methodology	Vicon motion capture and force plates measured gait kinematics and kinetics across four walking conditions.	The study used static three-point bending, cyclic flexural fatigue testing, Shore hardness measurements, differential scanning calorimetry (DSC), and scanning electron microscopy (SEM) to evaluate the mechanical, thermal, and microstructural properties of 3D-printed TPU orthoses.	Foot scanned, insoles fabricated via 3D printing, and plantar pressures measured during walking. Comfort scores are also given after wearing each insole.
Outcomes	Changes were noticed in the navicular height, ankle and knee joint angles/moments, and subjective comfort ratings.	Assessed flexural stiffness, strain tolerance, fatigue life (cycles to failure), hardness values, thermal transition points, and fracture surface morphology.	Successful recording with plantar pressure distribution and user satisfaction survey.
Key Findings	All insoles improved navicular height, dorsiflexion, and comfort; wedge insoles provided the greatest arch support, though knee joint effects were nonsignificant.	TPU 95A demonstrated the best balance of flexibility and fatigue resistance, TPU 87A showed moderate performance with mixed ductile/brittle characteristics, and TPU 64D had high stiffness but brittle failure and poor fatigue life, making it less suitable for long-term orthotic use.	3D-printed insoles reduced heel pressure, improved arch loading, and increased satisfaction scores.
Study Limitations	Small sample size, short-term testing only, and absence of long-term clinical outcomes limit generalizability to broader pes planus populations.	No human gait or clinical testing; findings are limited to bench-top mechanical performance and may not directly predict in-shoe function.	Single-subject design and limited plantar pressure sensor coverage.