

Revolutionizing Scoliosis Braces with Innovation and Comfort

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Every year, 22 million Europeans are treated for scoliosis. Non-invasive treatment at child's age is the preferred option, though mild forms of scoliosis often remain unnoticed at that time, with resulting medical conditions only arising later on in life when common braces treatment is not possible anymore. The brace confines the upper body in a rigid polyethylene shell for approx. 23 hours a day, 7 days a week, from the start of puberty until the end of growth. It is tedious and exhausting, especially in the heat of summer. And often, even the most disciplined teens and parents alike, face the challenge of choosing between continuing the suffering or suspending the treatment. Scoliosis itself is a discriminatory disease, where 4 out of 5 patients are female. Despite the restrictions, brace therapy is the most effective treatment of scoliosis, showing satisfactory results for 75 % of patients. The only existing alternative in case of a severe scoliosis is highly invasive surgery along the entire spine. Subsequently, restrictions in every aspect of daily life are accepted.

The MBrace project aims to significantly improve the well-being of these young patients. It combines innovative developments of functional multi-matrix composites, high-strength mineral fibers, cost-efficient manufacturing, new therapy methods and machine learning for gait movement with fashionable design to develop the lightest possible orthosis. The development and research of new materials and design concepts for flexible elements is intended to give the body more range of motion and significantly increase patient compliance by reducing the limitations of conventional braces was carried out. This ambitious approach envisions reducing mass, improving comfort, and creating a structured design with large openings and appealing morphology.

The project's goal is to transform scoliosis braces from an uncomfortable fixation device into a supportive aid with high wearing comfort, and to change their perception from a medical necessity to a fashion accessory.

The MBrace project will be presented by a talk and an exhibit presented in the venue's lobby. The collaborative research combines an international and multidisciplinary team from Germany, Belgium and Poland.

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