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Get fit with PU balance therapy

Physical therapy joins polyurethane's many novel applications



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by Liz White, editor

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Polyurethane is now being used as an aid to rehabilitation, in the form of Terrasensa 'balance' mats — a new idea from German design company Teo Industriedesign. These modular mats — an aid for all sorts of physical, medical and sports therapy — are made in squares (see pictures) which push together, designed in endless combinations such that no regular repeats of the surface topography are likely in use, explained its developer Jens Freitag, head of Kassel, Germany-based Teo Industriedesign.

The idea is to present a constantly changing surface to anyone walking, running, jumping or crawling on it, so that the person has to focus totally on their balance. In aiding balance and stability, Terrasensa "gives users a better sense of their own bodies," Freitag said. Terrasensa's design challenges people to stand and move in a stable fashion. Users have to constantly re-balance and stabilise themselves.



A stroke patient who had struggled to walk upright recovered the ability to do so after just half an hour's use, Freitag said. It is valuable in rehabilitation of knee injuries, and Terrasensa can also be used to train older people to balance better and thus avoid some of the injuries and bone fractures that become increasingly common with age. Ballet training and helping athletes kick well are other uses, he added. Terrasensa is also finding use in training for highperformance sports such as handball, where players are able to train better with the matting than with simple power training, Freitag said.

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It is a simple way of helping children and the elderly with physical training, providing a challenge, but in the form of a soft surface so injuries are unlikely, said Freitag. Pointing out that children learn by moving, Freitag said those who don't move well are less likely to be smart — so this sort of training helps all-round development.

The PU construction absorbs shock and supports movement: "Polyurethane is the only material for realising this in the way we wanted," Freitag commented. "PU helps by being indestructible."

When he was designing the device, Freitag said, he wanted a natural effect in an artificial material, and started by modelling rock surfaces by hand. During the practical step of turning the design into a commercial product, Freitag turned to polyurethane processor Hübner GmbH of Kassel, who is now making and selling the Terrasensa matting.

Delegates at the 10-11 Nov 2009 meeting of the FSK (the German association of foam plastics producers) in Würzburg, Germany, had the chance to test their own stability when the day's presentations were over - by walking along some samples Freitag had bought along.

PU good for mats

Terrasensa combines the best characteristics of polyurethane:

- extremely wear resistant;
- no loss of form/function even with heavy use;
- comfortably shock absorbing;
- not sensitive to cleaners or to moisture;
- dermatologically safe.

Product details:

Dimensions: 50 x 50 cm

Weight: 3.2 kg

Material: 100 percent polyurethane

Hardness: 45 Shore A