

Close up of 3D printed object

ZDRAVPRINT

3D PRINTED BIOPLASTIC CASTS

By Zdravprint

Project URL: zdravprint.ru

- Health
- Social Exclusion

Anyone who has broken an arm or leg will testify to the discomfort of the conventional plaster cast – it is heavy, cumbersome and sometimes smells. The skin beneath the cast becomes unbearably itchy and often breaks out in rashes, ulcerations, macerations and even infections. An added inconvenience is that the cast must be kept dry, making showering a great difficulty.

Fyodor Aptekarev knows this better than most – a veteran skateboarder, he has had his fair share of broken limbs. He combined his knowledge of 3D printing and his dissatisfaction with the plaster cast and came up with the design for the ZDRAVPRINT bio-plastic cast.

The patient's injured limb is scanned three-dimensionally. A computer makes a CAD model of the splint or cast, which is 3D printed using a durable bio-plastic filament. The plastic can be printed in a variety of colours, and is easily heated and smoothed into the exact shape of the wearer's body. The final product is waterproof and aerated, allowing the skin underneath to breathe and be washed regularly. In addition, it is lightweight and comfortable, unlike the unwieldy plaster cast.

The transition from plaster to plastic will not happen immediately because current 3D printing time is around 12 hours. Also, the current ZDRAVPRINT cast design does not work in the early stages of bone reparation, as a plaster cast is still needed in the first week to allow doctors to control and adjust the initial bone union. However, switching to ZDRAVPRINT's plastic cast after that first week is still preferable to a whole month in plaster, and Aptekarev is confident that within seven years, his 3D printed casts will have taken over from plaster completely. ZDRAVPRINT has received \$100,000 from venture fund Maxfield Capital, and further improvements are planned.

Image 'gesture map detail' courtesy of MattL

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