Abstract: Objectives: The purpose of this study was to systematically review current literature on in vitro tests of fiber-reinforced composite (FRC) beams. The reported reinforcing effects of various fibers on the flexural strength and elastic modulus of composite resin beams were analyzed.

Data: Original, peer reviewed papers, selected using Medline from 1950 to 2007, on in vitro testing of FRC beams in comparison to non-reinforced composite beams. The differences in mean flexural strength and/or modulus between reinforced and unreinforced beams were set out in a forest plot. Meta-regression analyses were performed (single and multiple regression models).

Conclusions: Under specific conditions we have been able to show that fibers do reinforce resin composite beams. The flexural modulus not always seems to increase with polyethylene-reinforcement, even when fibers are located at the tensile side. Besides, fiber architecture (woven vs. unidirectional) seems to be more important than the type of fiber for flexural strength and flexural modulus.

Keywords: Fiber-reinforced composite, Flexural strength, Flexural modulus, Literature review

Presentation: Poster