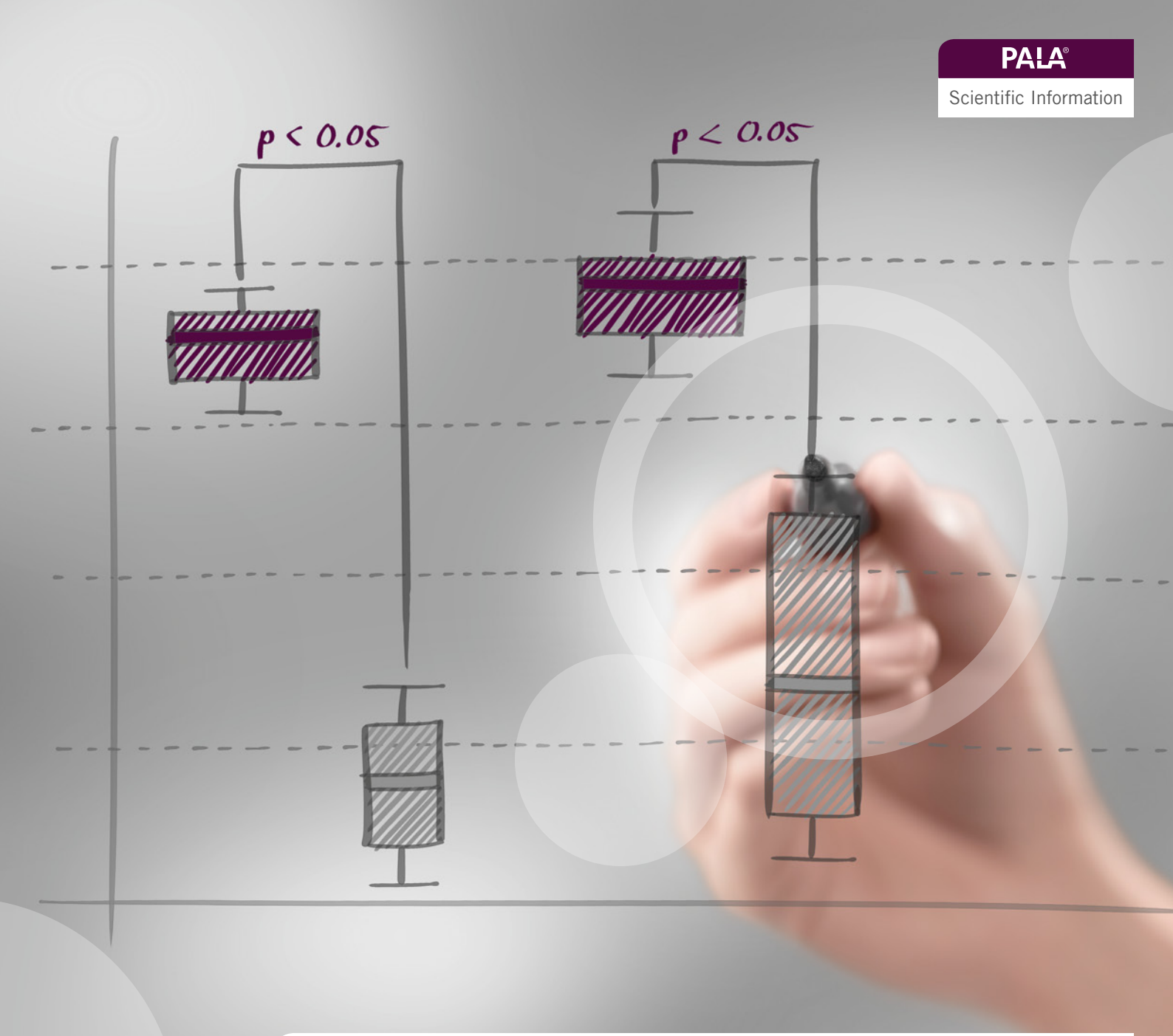
PALA®
Scientific Information



Pala® Teeth – Mondial

Fracture resistance – LMU, Munich
Retention of denture teeth on the denture base and their fracture resistance.

The failure of dental work can lead to frustration at the dental office, dental lab and at the patient. One type of failure is the breakage of denture teeth or denture base material. To enhance the fracture resistance of denture work and thus avoid failure and resulting frustration processing technologies and materials are under constant improvement.
The following in-vitro study tests the bonding strength between two anterior tooth lines and a denture base material under various pretreatments of the basal tooth surface and also the fracture resistance of the teeth. Mondial teeth showed fracture resistance values that are far above maximum loads occuring in partial dentures.

Giving a hand to oral health.

KULZER
MITSUI CHEMICALS GROUP

Bond strength – LMU, Munich
Retention of denture teeth on the denture base and their fracture resistance.

Objective

This study examined the influence of macro-retentions and chemical conditioning of the basal surface of denture teeth on the bond strength between denture tooth and denture base and also the fracture resistance of the denture teeth. Artificial aging was additionally conducted to provide information regarding the long-term stability of the strength.

Materials & Methods

Front teeth of similar teeth lines of two different manufacturers were roughened basally and cervically with a diamond burr of 50 µm grain. The teeth were then divided into the following groups: Pretreatment of the teeth with basal macro-retentions in the form of grooves combined with the respective recommended bonding agent (RP), basal macro-retentions in the form of a hole-retention in combination with the respective bonding agent (LP) and without any further treatment (-). All teeth were polymerized into the acrylic resin PalaXpress. Half of the specimens were artificially aged by thermocycling (10000 cycles between 5°C and 55°C). All samples were loaded until fracture in the universal testing machine using a 45° angle.

Results & conclusion

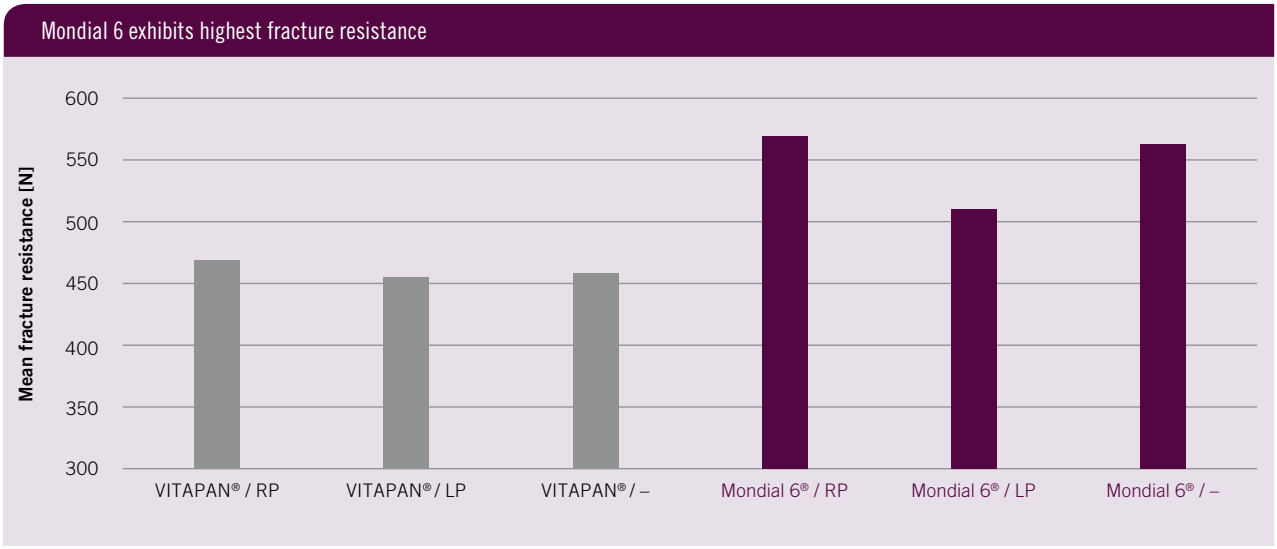


Fig. 1: Mean fracture resistance [N] of denture teeth after pretreatment without artificial aging.

Both before and after artificial aging the Mondial teeth showed significantly higher values for fracture resistance than the VITAPAN® teeth (Fig. 1). The pretreatment of the basal surfaces of the denture teeth only played a minor role in bond strength of the teeth to the denture base. Artificial aging resulted in a general decrease of fracture resistance for both teeth lines. Yet aged Mondial teeth exhibited breaking strength values that are far above maximum loads observed in partial dentures.

Source

Beuer F, Erdelt KJ, Friedrich R, Köbel-Bogai K, Eichberger M, Gernet W: Festigkeit von Kunststoffprothesenzähnen auf der Prothesenbasis. Deutsche Zahnärztliche Zeitschrift 61 [German Dental Magazine], Volume 3 (2006) Page 147 – 150

The study was abbreviated and summarised and all diagrams and titles have been established by Kulzer.

W18312 EN 07/2017 ORT