

Latex and Non-Latex Orthodontic Elastic Force Loss Due to Cyclic Temperatures

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Introduction

Elastics are commonly used in orthodontics to apply force at various vectors. The most common elastics are made of latex, but non-latex alternatives have also been developed. In dental offices in particular, latex allergies are predicted to be one of the most common allergies (1). In addition to



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Abstract

The purpose of this study was to compare the force loss of ¼ inch (6.35mm) 3.5oz (99g) medium latex elastics from Ormco Corp. to non-latex elastics from ClassOne Orthodontics and Phoenix after being cycled between different temperatures. Elastics were stretched to 1.57 inches (40mm) on jigs and cycled in water baths for 4 minutes at 5°C and 37°C, 21°C and 37°C, 5°C and 50°C, 37°C and 50°C, and a control group was held at 37°C.

The force produced by new elastics and elastics after incubation was measured using a Mini 44 Instron.

Results: All elastics experienced increased force loss that correlated with increased temperatures with the exception of Ormco latex elastics. The latex elastics had the greatest force loss upon cycling between 5°C and 50°C while the non-latex elastics had the greatest force loss while cycling between 37°C and 50°C. All elastics were strongest when cycled between 5°C and 37°C.

Conclusion: This study suggests that hot liquids reduce the force of latex and non-latex elastics even when cycled between hot temperatures for brief periods of time.

KEY WORDS: force, latex, elastics, orthodontic, temperature

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