

# RECIPROC®

Results of scientific studies



## Content

### Preparation with RECIPROC®

3-year outcome 4

### How safe is RECIPROC®?

Canal shaping 5  
Resistance to fracture 5  
Microcracks 6  
Extrusion 7

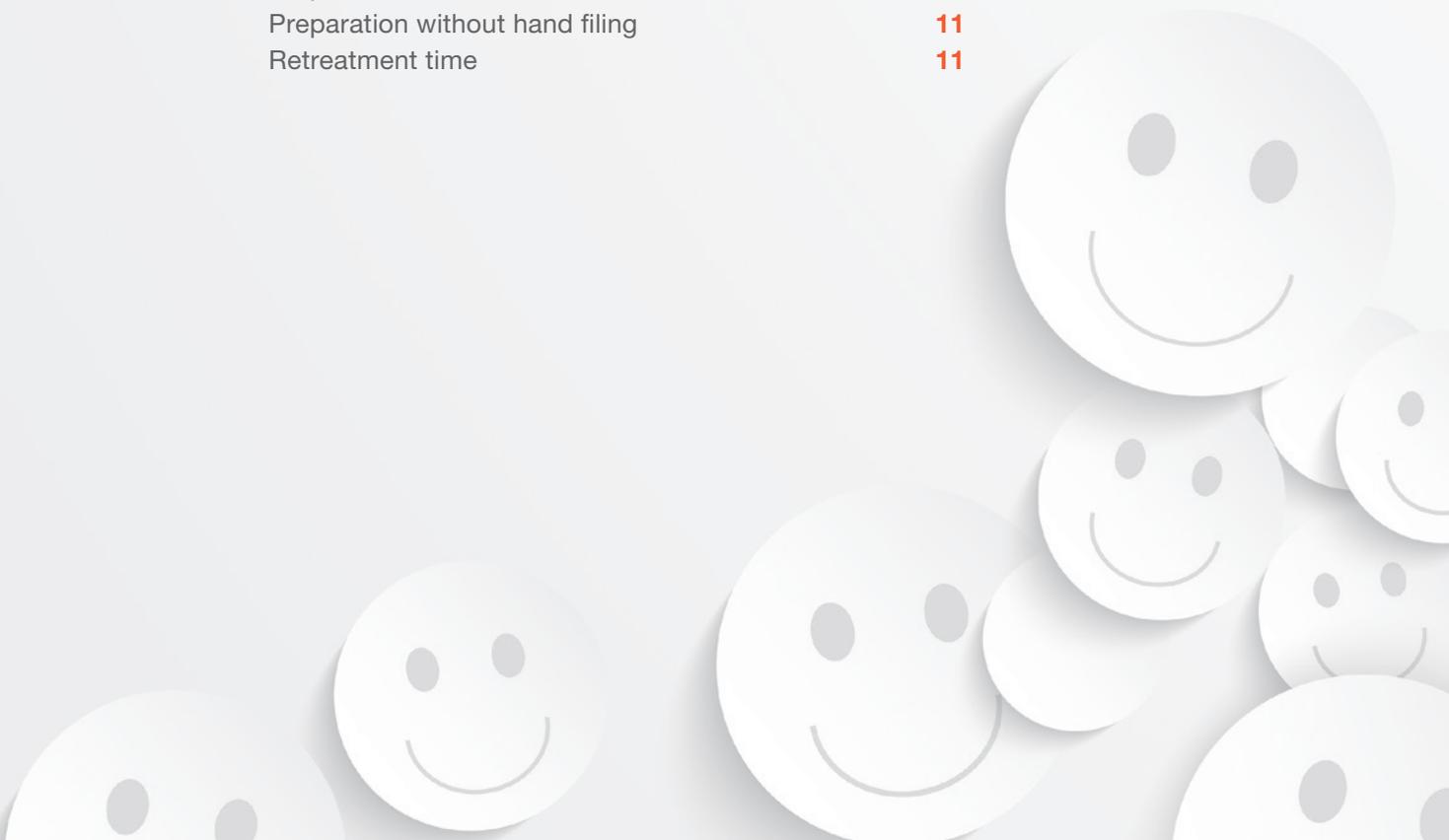
### How efficient is RECIPROC®?

#### Cleaning efficiency

in the apical region 8  
in oval canals 8  
during retreatment 9

### Is RECIPROC® time saving?

Preparation time 10  
Preparation without hand filing 11  
Retreatment time 11



# PREPARATION WITH RECIPROC®

**Tried and tested** – Millions of treatments have been performed with RECIPROC® since its introduction in 2011. One file endo, the innovative concept for root canal preparation is growing worldwide. Renowned scientists have put the RECIPROC® system to the test and have come to the following conclusion:

**RECIPROC® is safe, efficient  
and time saving.**

## RECIPROCATE and SMILE



“My experience with RECIPROC® has been nothing short of amazing. This presents a paradigm shift in the way mechanical root canal preparation can be achieved to provide every practitioner a markedly better opportunity to produce consistent, predictable results. RECIPROC® provides the safest and easiest method for shaping the canals compared to any system. If this doesn't get you more excited about endodontics nothing will!”

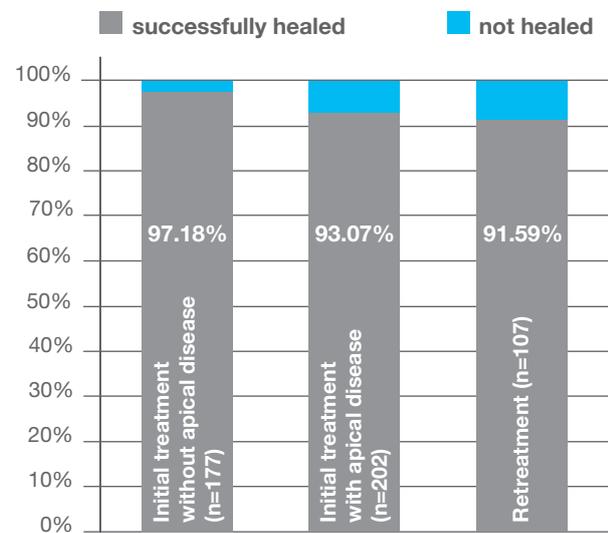
Dr. Bjørn Besserman-Svendsen, Frederiksberg Copenhagen, Denmark

**Try it out  
and see!**

# PREPARATION WITH RECIPROC®

3-year outcome of  
endodontically treated teeth\*

RECIPROC®  
enables successful  
endo-treatments.<sup>1</sup>



\*All treatments were performed by one endodontist in a private practice.

# HOW SAFE IS RECIPROC®?

## Canal shaping

## Resistance to fracture

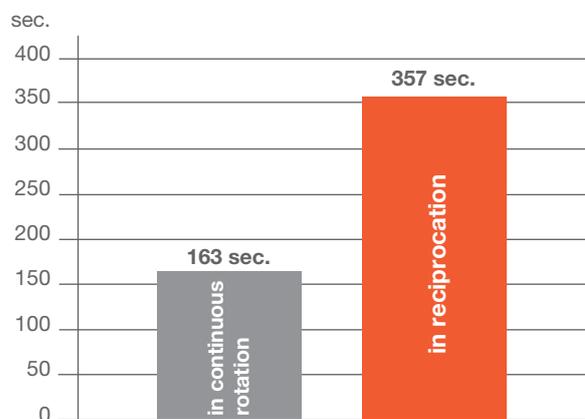
One reason for instrument fracture is cyclic fatigue which is caused by the repeated tension and compression of the instrument, for example in a canal curvature.

**Furthermore!**

The RECIPROC® instrument maintains the original root canal curvature well.<sup>2</sup>

The RECIPROC® R25 in reciprocation has a significantly higher resistance to cyclic fatigue than in continuous rotation.<sup>3</sup>

**R25, time until instrument fractures**



Compared to another single file system, the RECIPROC® instrument showed a significantly higher resistance to cyclic fatigue (time period until fracture: RECIPROC® 130.8 seconds versus single file system 97.8 seconds).<sup>4</sup>

<sup>2</sup> Bürklein S, Hinschitzka K, Dammaschke T, Schäfer E. Shaping ability and cleaning effectiveness of two single-file systems in severely curved root canals of extracted teeth: RECIPROC and WaveOne versus Mtwo and ProTaper. IEJ 2012, 45: 449-461, doi: 10.1111/j.1365-2591.2011.01996.x.

<sup>3</sup> Gavini G, Caldeira CL, Akisue E, de Miranda Candeiro GT, Sacaguti Kawakami DA. Resistance to flexural fatigue of RECIPROC R25 files under continuous rotation and reciprocating movement. JOE 2012, 38 (5): 684-687.

<sup>4</sup> Plotino G, Grande NM, Testarelli L, Gambarini G. Cyclic fatigue of RECIPROC and WaveOne reciprocating instruments. IEJ 2012, 45 (7): 614-618, doi: 10.1111/j.1365-2591.2012.02015.x.

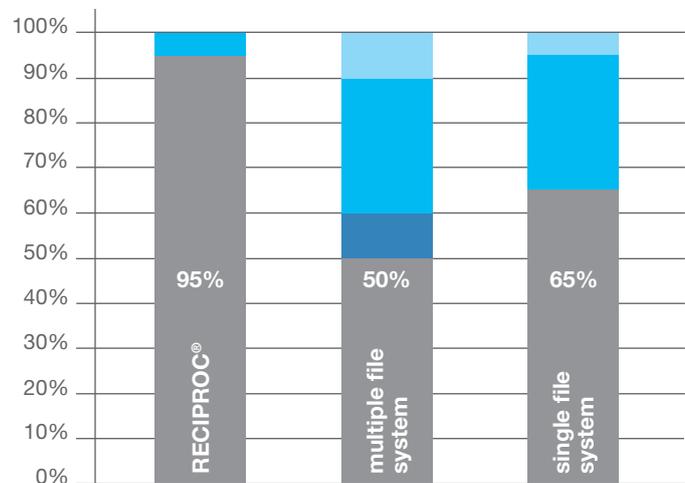
## Microcracks

Numerous tests show that endodontic procedures may cause undesirable mechanical damages in dentine.<sup>5</sup>

The RECIPROC<sup>®</sup> instrument causes significantly less microcracks compared to another single and multiple file system.<sup>6</sup>

### Microcracks

- in the apical surface and horizontal section
- only in the horizontal section
- only in the apical surface
- no microcracks



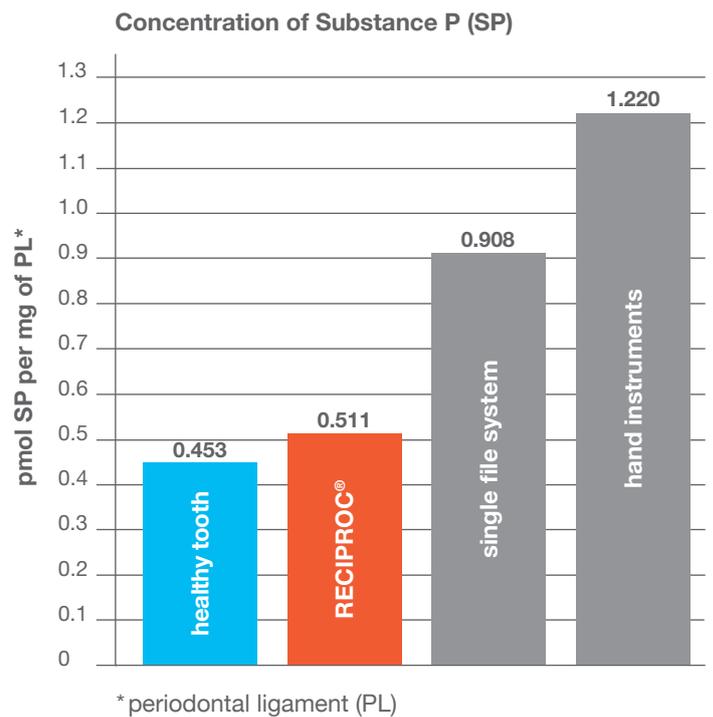
<sup>5</sup> Rödiger T. Mechanische Schädigung des Wurzelkanalendodontins durch endodontische Maßnahmen. Literatur-Rundschau 2012, 21 (1): 1-7.

<sup>6</sup> Liu R, Hou XB, Wesselink PR, Wu MK, Shemesh H. The incidence of root microcracks caused by 3 different single-file systems versus the ProTaper system. JOE 2013, 39 (8): 1054-1056.

## Extrusion

After preparation with RECIPROC<sup>®</sup>, the degree of inflammation (e.g. Substance P values) in the periodontal ligament is almost identical to that of a healthy, untreated tooth.<sup>7</sup>

No significant inflammatory reaction in the apical region due to the extrusion of debris during preparation with RECIPROC<sup>®</sup>.<sup>8</sup>

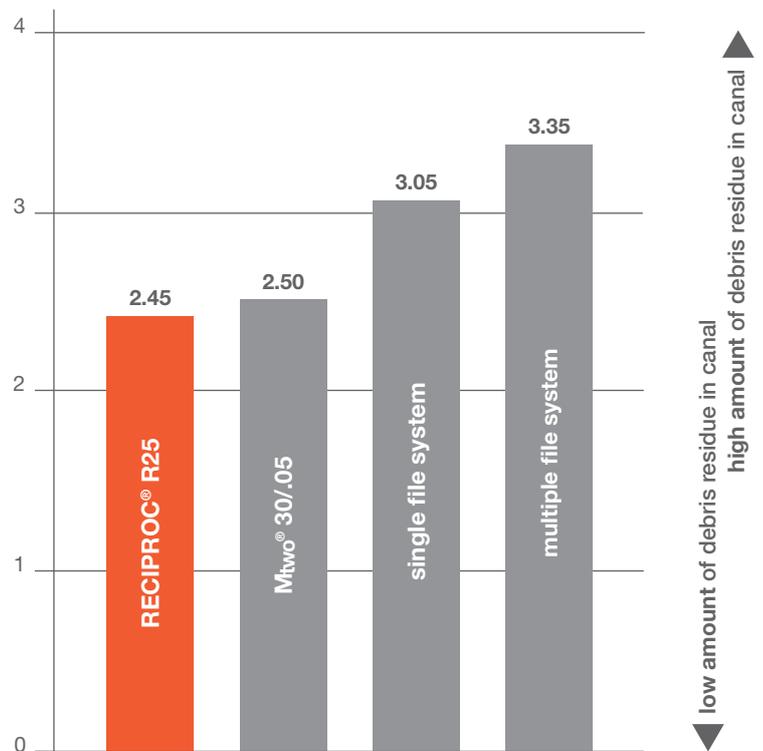


<sup>7,8</sup> Caviedes-Bucheli J, Moreno JO, Carreño CP, Delgado R, Garcia DJ, Solano J, Diaz E, Munoz HR. The effect of single-file reciprocating systems on substance P and calcitonin gene-related peptide expression in human periodontal ligament. IEJ 2013, 46: 419-426, doi: 10.1111/iej.12005.

# HOW EFFICIENT IS RECIPROC®?

Cleaning efficiency in the apical region

RECIPROC® cleans the root canal system significantly more thoroughly, especially in the apical region, compared with other systems.<sup>9</sup>



Cleaning efficiency in oval canals

RECIPROC®'s ability to significantly reduce the amount of bacteria in oval canals is equivalent to that of a multiple file system.<sup>10</sup>

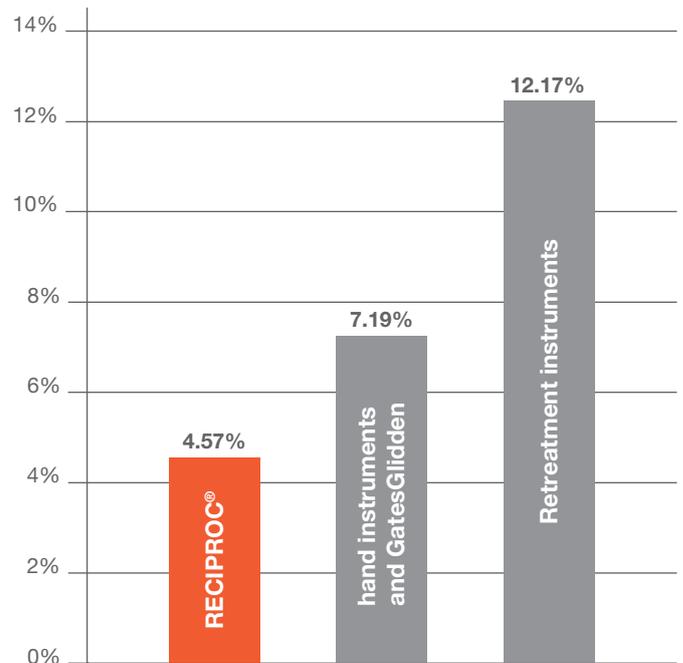
<sup>9</sup> Bürklein S, Hinschitzka K, Dammaschke T, Schäfer E. Shaping ability and cleaning effectiveness of two single-file systems in severely curved root canals of extracted teeth: RECIPROC and WaveOne versus Mtwo and ProTaper. IEJ 2012, 45: 449-461, doi: 10.1111/j.1365-2591.2011.01996.x.

<sup>10</sup> Alves FRF, Rôças IN, Almeida BM, Neves MAS, Zoffoli J, Siqueira JF. Quantitative molecular and culture analyses of bacterial elimination in oval-shaped root canals by a single-file instrumentation technique. IEJ 2012, 45 (9): 871-877, doi: 10.1111/iej.12085.

## Cleaning efficiency during retreatment

During retreatment, **RECIPROC®** removes gutta-percha and sealer the most effectively.<sup>11</sup>

Gutta-percha and sealer residue

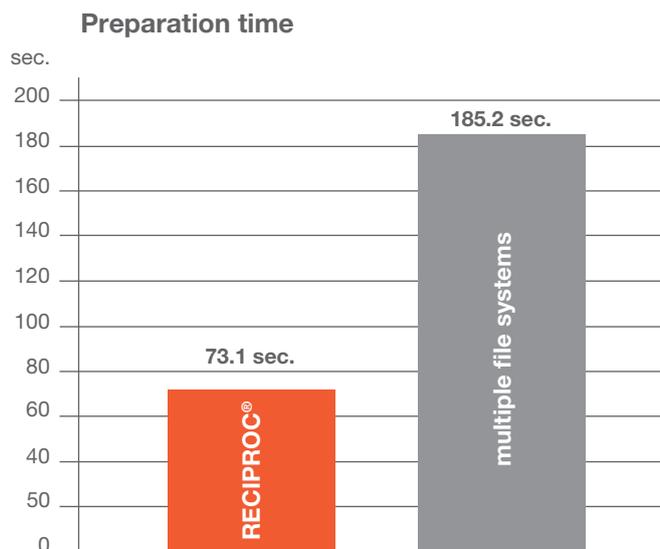


<sup>11</sup> Zuolo AS, Mello Jr JE, Cunha RS, Zuolo ML, Bueno CES. Efficacy of reciprocating and rotary techniques for removing filling material during root canal retreatment. IEJ 2013, first published online: 18 march 2013, doi: 10.1111/iej.12085.

# IS RECIPROC® TIME SAVING?

## Preparation time

RECIPROC® prepares a root canal up to 60% faster than multiple file systems.<sup>12</sup>

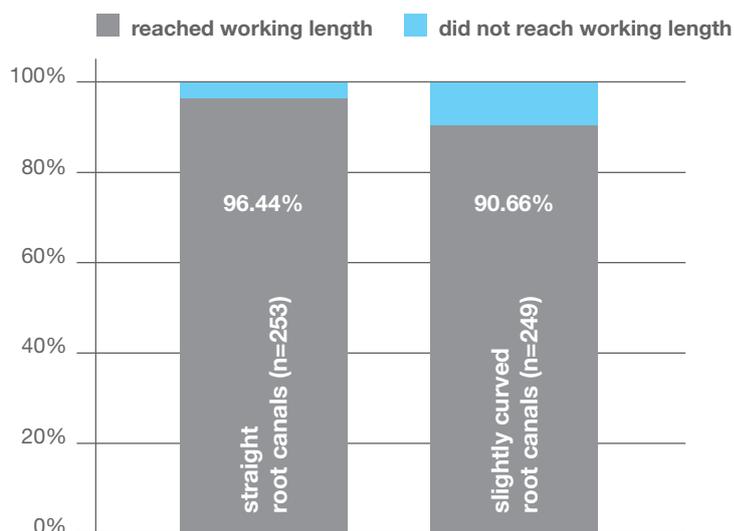


<sup>12</sup> Bürklein S, Hinschitzka K, Dammaschke T, Schäfer E. Shaping ability and cleaning effectiveness of two single-file systems in severely curved root canals of extracted teeth: RECIPROC and WaveOne versus Mtwo and ProTaper. IEJ 2012, 45: 449-461, doi: 10.1111/j.1365-2591.2011.01996.x.

Preparation without hand filing

Without having to create an initial glide path, **RECIPROC®** reached full working length of more than 93% of the examined cases.<sup>13</sup>

Cases in which working length was achieved with RECIPROC®



**Furthermore!**

In cases in which the ISO size 10 hand file did not reach the full working length (after preparing to 2/3 of the estimated working length), the R25 was able to reach full working length in 67.3% of the cases!<sup>14</sup>

Retreatment time

In comparison to other systems, the **RECIPROC®** instrument removes gutta-percha and sealer the most quickly.<sup>15</sup>

<sup>13,14</sup> De-Deus G, Arruda TEP, Souza EM, Neves A, Magalhães K, Thuanne E, Fidel RAS. The ability of the Reciproc R25 instrument to reach the full root canal working length without a glide path. IEJ 2013, first published online: 6 april 2013, doi: 10.1111/iej.12091.

<sup>15</sup> Zuolo AS, Mello Jr JE, Cunha RS, Zuolo ML, Bueno CES. Efficacy of reciprocating and rotary techniques for removing filling material during root canal retreatment. IEJ 2013, first published online: 18 march 2013, doi: 10.1111/iej.12085.



**RECIPROC<sup>®</sup>**  
*one file endo*

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