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COMPARISON OF RESISTANCE TO FATIGUE BETWEEN ENDODONTIC FILES (RECIPROCATING *VS.* CONVENTIONAL)

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INTRODUCTION/OBJECTIVE

Endodontic files are often used in endodontic treatments to enlarge and improve the shape of the root canals, but, due to geometric factors such as brushing movement, instrument fracture is common [1,2]. Therefore, this study aims to compare the resistance to cyclic fatigue between reciprocating files, that operate in an alternate movement, and conventional files, that work in a continuous clockwise motion.

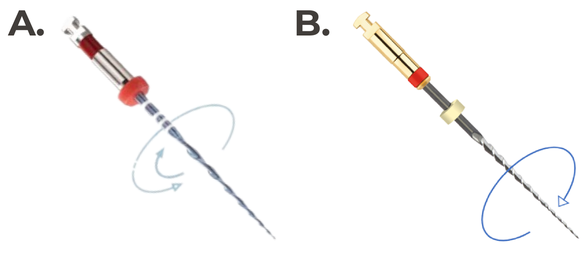
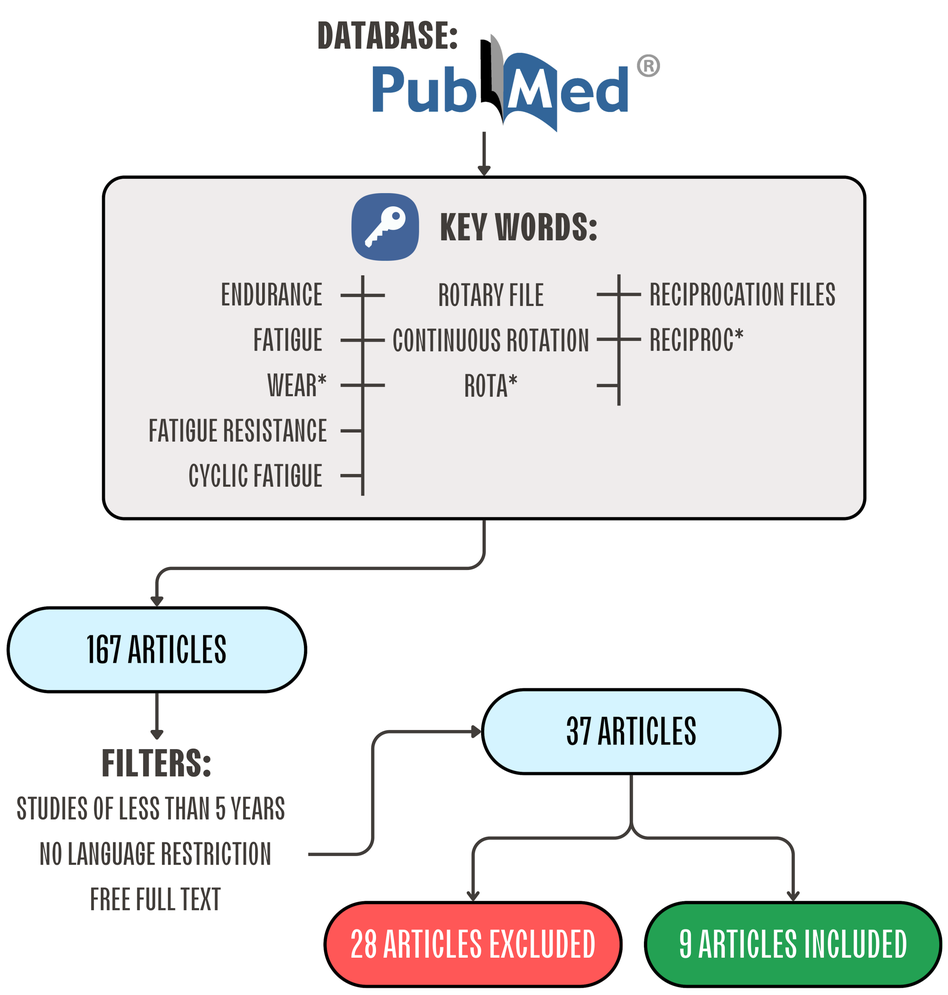


Figure 1. Representation of the movement of endodontic files. **A.** Reciprocating file. **B.** Rotary file.

Fonte: A. https://ae01.alicdn.com/kf/Hf0fec1bb048043ffacf8f7d6b9b56c76a/6pcs-Dental-Reciprocal-Blue-Files-R25-25mm-Reciprocation-NITI-Files-Dental-Only-One-Files-R40-Endodontic.jpg.
B. https://pinkblue.in/blog/wp-content/uploads/2017/06/One-Shape-rotary-file.jpg.

METHODOLOGY



RESULTS

Table 1 - Analysis of studies and findings

Authors / Year of Publication	Study Design	Findings
Aminsobhani et al. (2021) [1]	Experimental (*In Vitro*)	Using Neoniti files with reciprocal motion might result in less instrument fatigue and favorable results, with respect to canal anatomy preservation.
Faus-Matoses et al. (2022) [2]	Experimental (*In Vitro*)	Smarttrack NiTi alloy reciprocating files display higher resistance to cyclic fatigue than Endogal and PathMax Pro NiTi alloy rotary files, due to the reciprocating movement and metallurgical composition.
Faus-Matoses et al. (2022) [3]	Experimental (*In Vitro*)	NiTi alloy endodontic rotary files used with reciprocating motion at 350rpm with 120° counterclockwise and 30° clockwise movements are more resistant to dynamic cyclic fatigue.
Olcay et al. (2019) [4]	Experimental (*In Vitro*)	The reciprocal movement (WaveOne Gold) exhibited the best performance with regard to the cyclic fatigue resistance, compare to convencional files (ProTaper Next and 2Shape-NiTi)
Martins et al. (2022) [5]	Experimental (*In Vitro*)	Reciprocating R-Pilot instruments showed a higher cyclic fatigue time to fracture than the ProGlider and Edge Glide Path rotary files.
Mathew et al. (2020) [6]	Experimental (*In Vitro*)	Reciprocating file FlexiCON (Edge Endo) X1 showed better cyclic fatigue resistance when compared to rotary file FlexiCON (Edge Endo) X3.
Serafin et al. (2020) [7]	Experimental (*In Vitro*)	Reciprocal motion files with “RECIPROC” mode display the highest resistance to cyclic fatigue, followed by files with “WAVEONE” mode, and lastly continuous rotation files, with the least resistance.
Uygun (2020) [8]	Experimental (*In Vitro*)	It was observed that the Reciproc Blue instruments had higher cyclic fatigue resistance than VDW.ROTATE instruments ($P<0.05$). Reciprocal movement increases cyclic fatigue resistance compared to rotational movement.
Vivan et al. (2019) [9]	Experimental (*In Vitro*)	Reciprocating R-Pilot had the highest torsional strength, metal mass volume, and cross-sectional area, when compared to the Conventional One G. However, One G had higher angle of rotation to fracture than R-Pilot.

CONCLUSION

According to the studies analyzed, due to the stress relief that happens in the reciprocal movement, instruments with these kinematics display a greater resistance to cyclic fatigue than the ones with a continuous rotation movement. Thus, there is an improvement in the quality of the endodontic treatment, as well as a decrease in the discomfort of patients and clinicians.

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