

# Effect of brushing time on plaque removal from less-accessible areas

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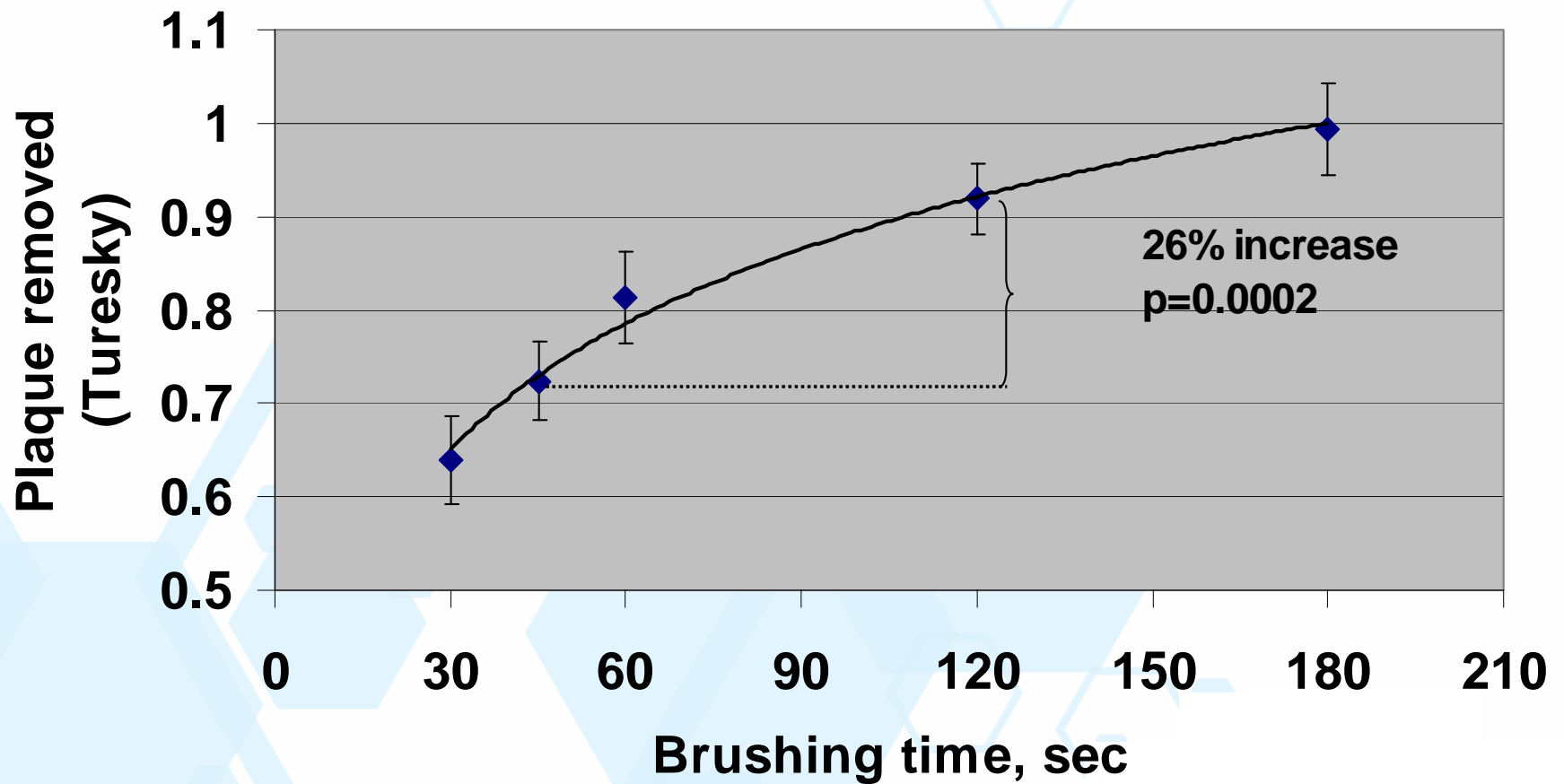
# Plaque removal by toothbrushing

- Principal method of plaque removal in general population
- Important factors:
  - Brushings/day; brush type; technique; brushing time
- Min. recommended brushing time: **2 minutes**
- Mean actual brushing time: **45 sec** (approx)
- No prior study of plaque removal vs brushing time in:
  - general population
  - standard brush & paste
  - ad lib technique

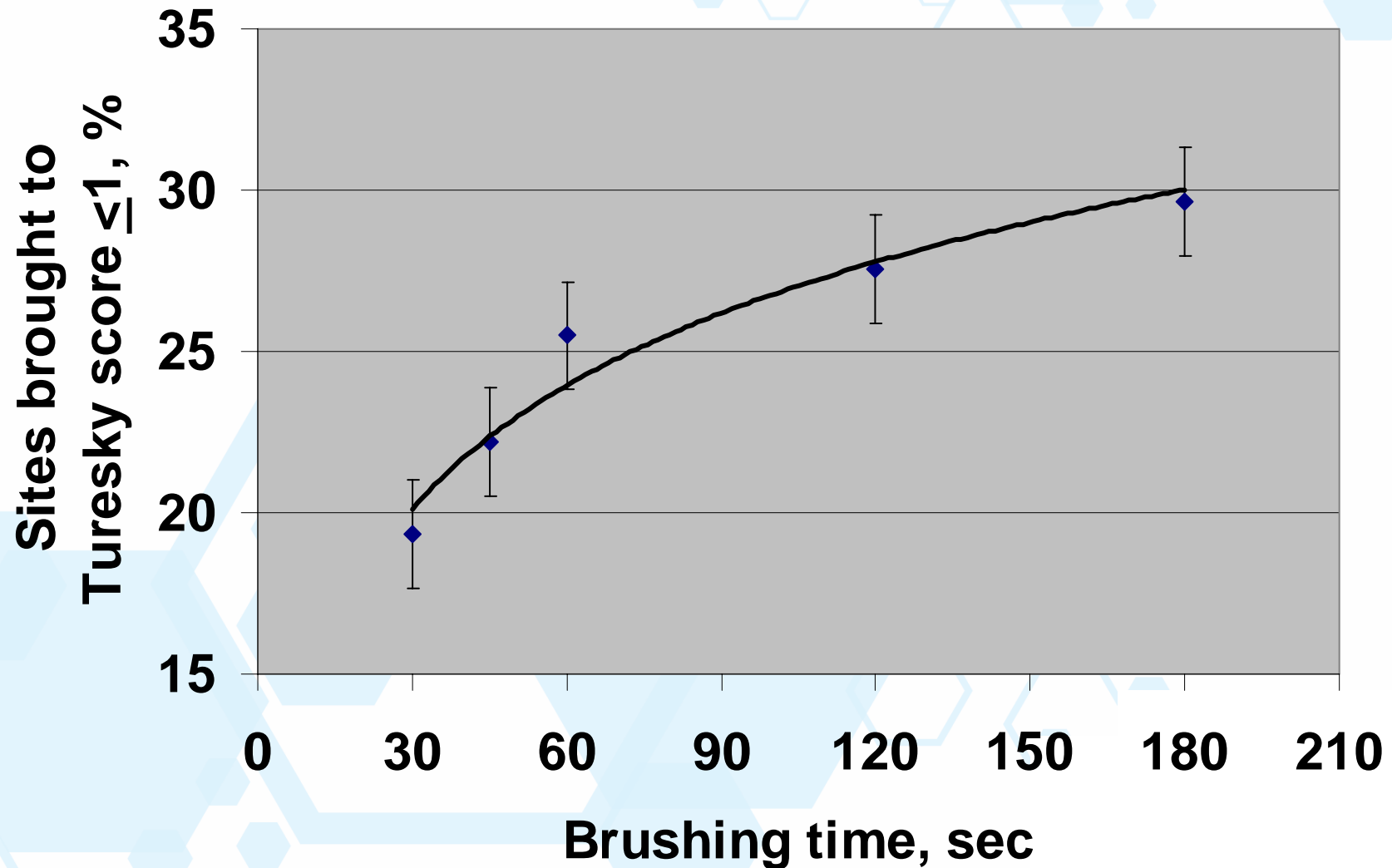
# Study Outline

- ◆ Plaque removal - Turesky modification of the Quigley-Hein index (6 sites/tooth)
- ◆ 47 subjects
- ◆ 30-180 seconds brushing time
- ◆ 'Aquafresh Flex' soft toothbrush
- ◆ 'Aquafresh Advanced' dentifrice (1.5 g)

# Summary results: plaque removal



How does this translate to 'at risk' vs 'not at risk' sites?



## Plaque removal by region

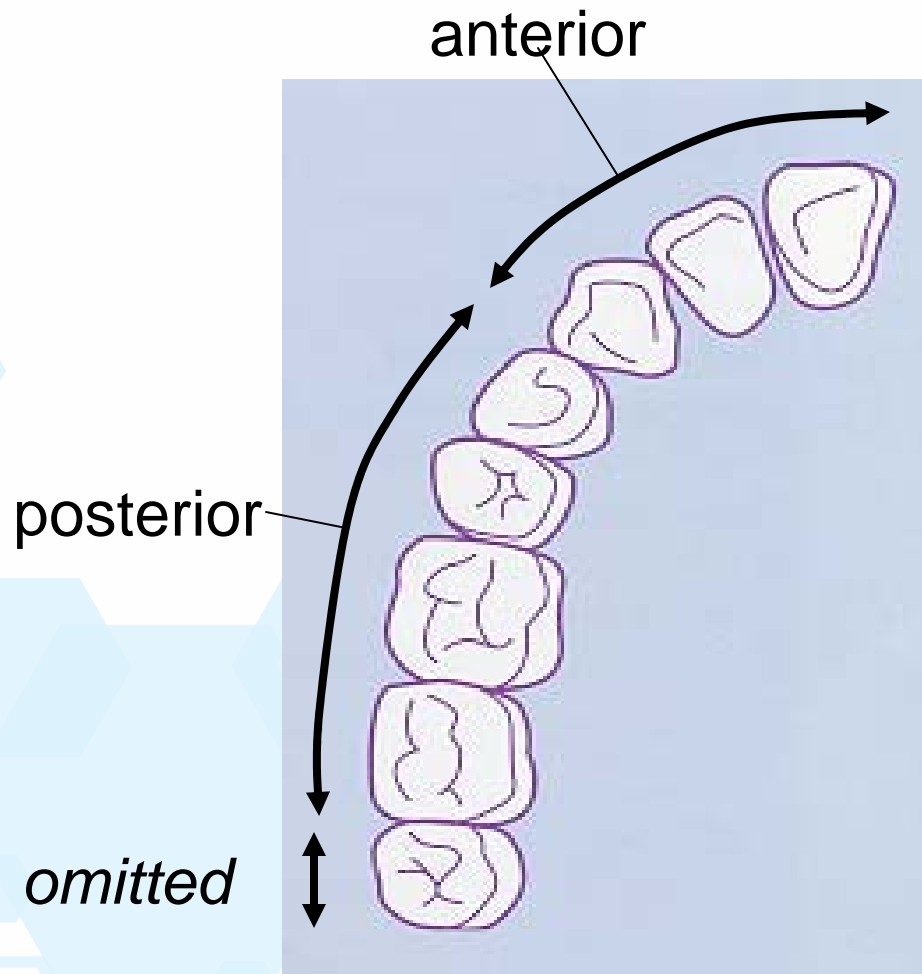
Region	% extra plaque removal 120s vs 45s	Std error
Anterior	28	9.7
Posterior	25	7.0
Anterior – interproximal	38	11.9
Posterior – interproximal	33	7.8
Facial	30	10.0
Lingual	21	7.5

# Indications of 120s vs 45s brushing giving more benefit in hard-to-reach places?

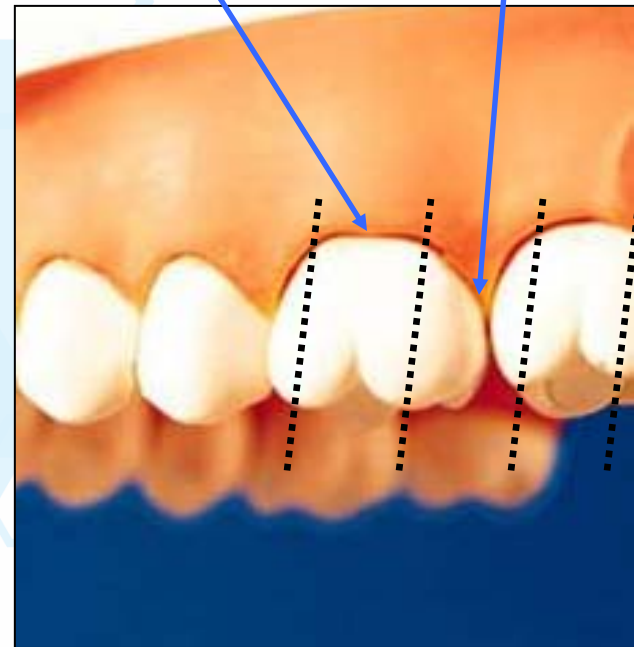
Sub-analysis by 8 regions:

- MLA: mid lingual anterior
- MLP: mid lingual posterior
- MFA: mid facial anterior
- MFP: mid facial posterior
- ILA: interproximal lingual anterior
- ILP: interproximal lingual posterior
- IFA: interproximal facial anterior
- IFP: interproximal facial posterior

# Map of mouth showing regions and mid-gingival vs interproximal areas

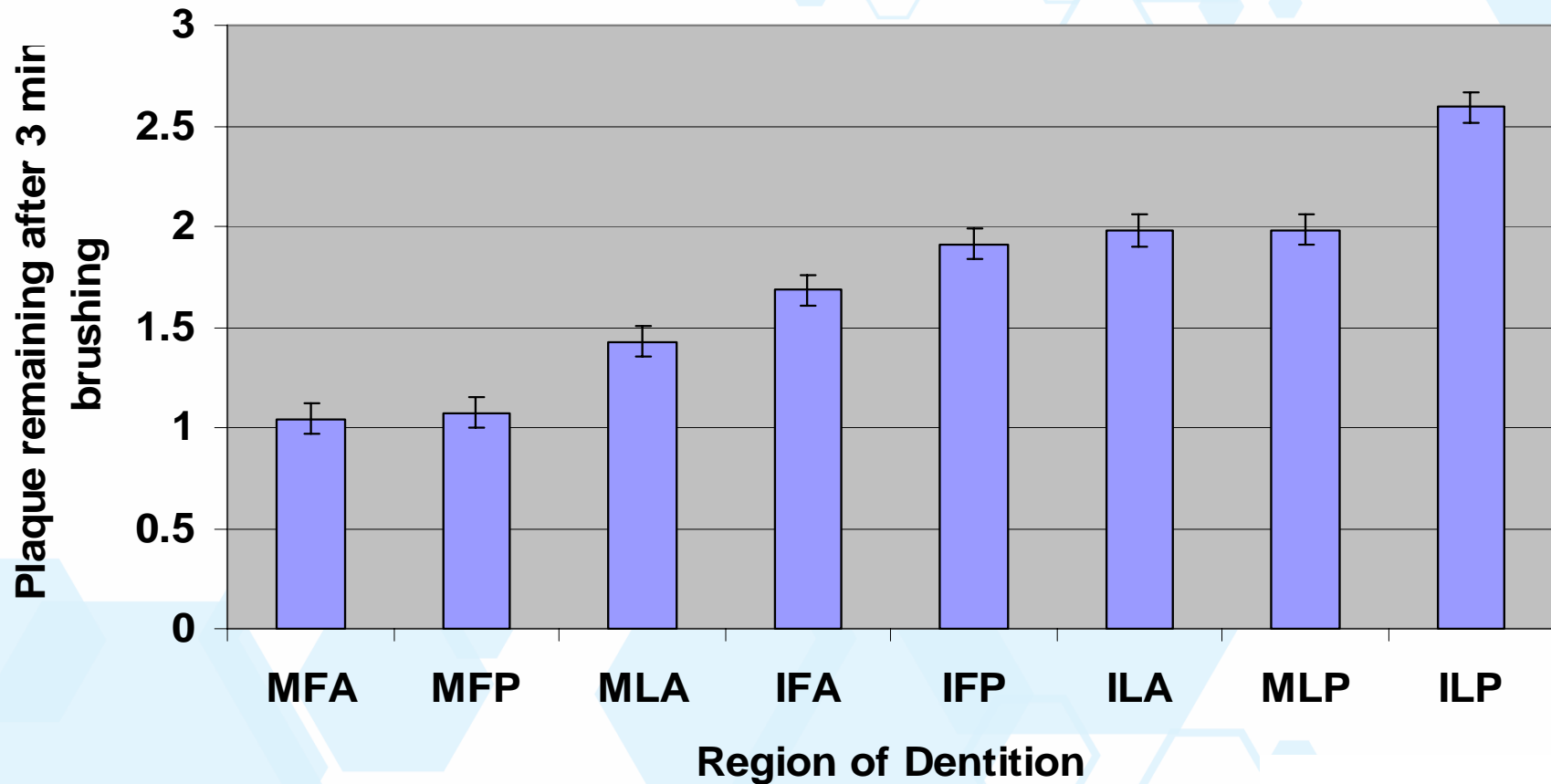


mid-gingival interproximal



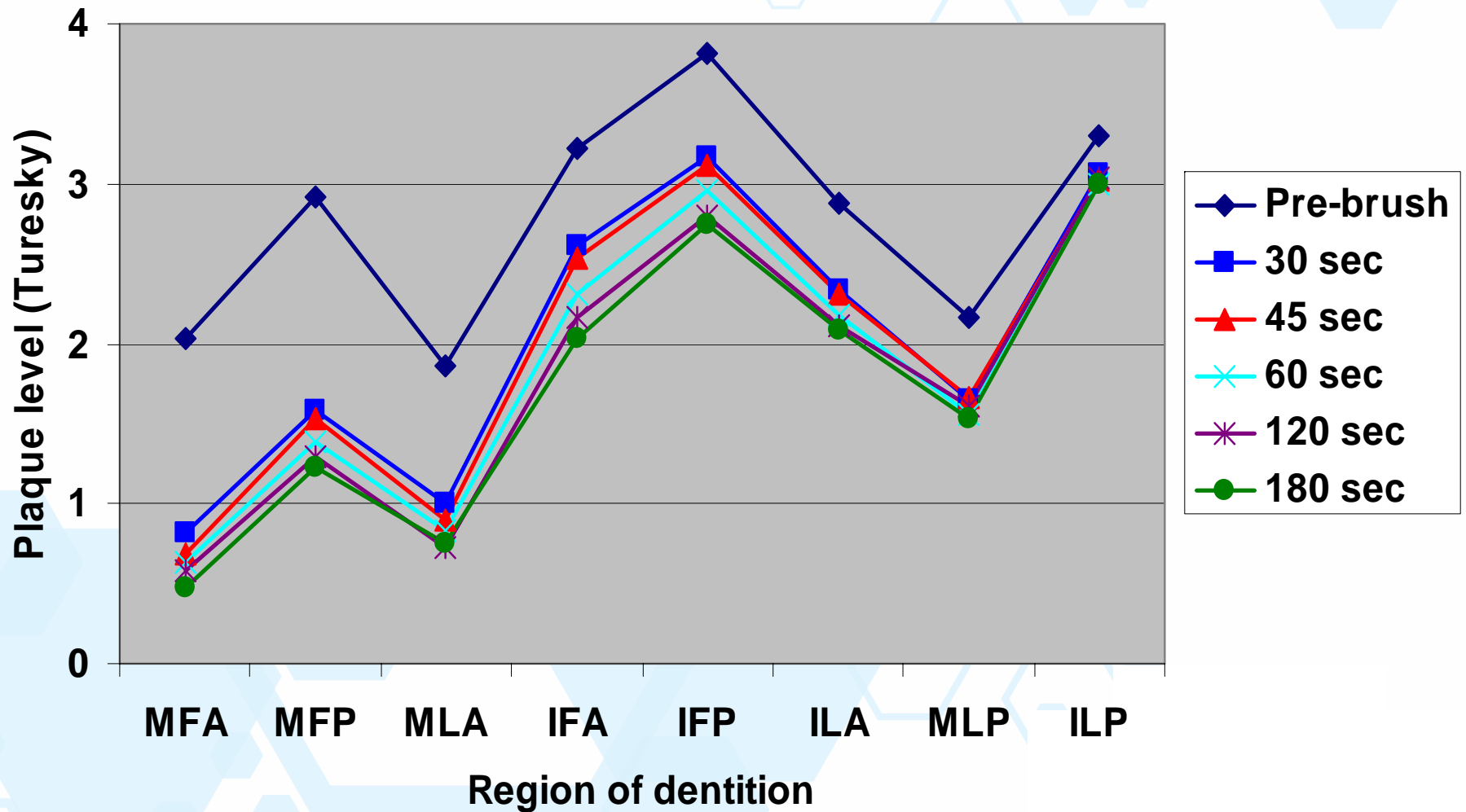
# Ranking 'hard-to-reach'

- Amount of plaque remaining after 3min brushing (*baseline corrected,  $\pm$  s.e.*)

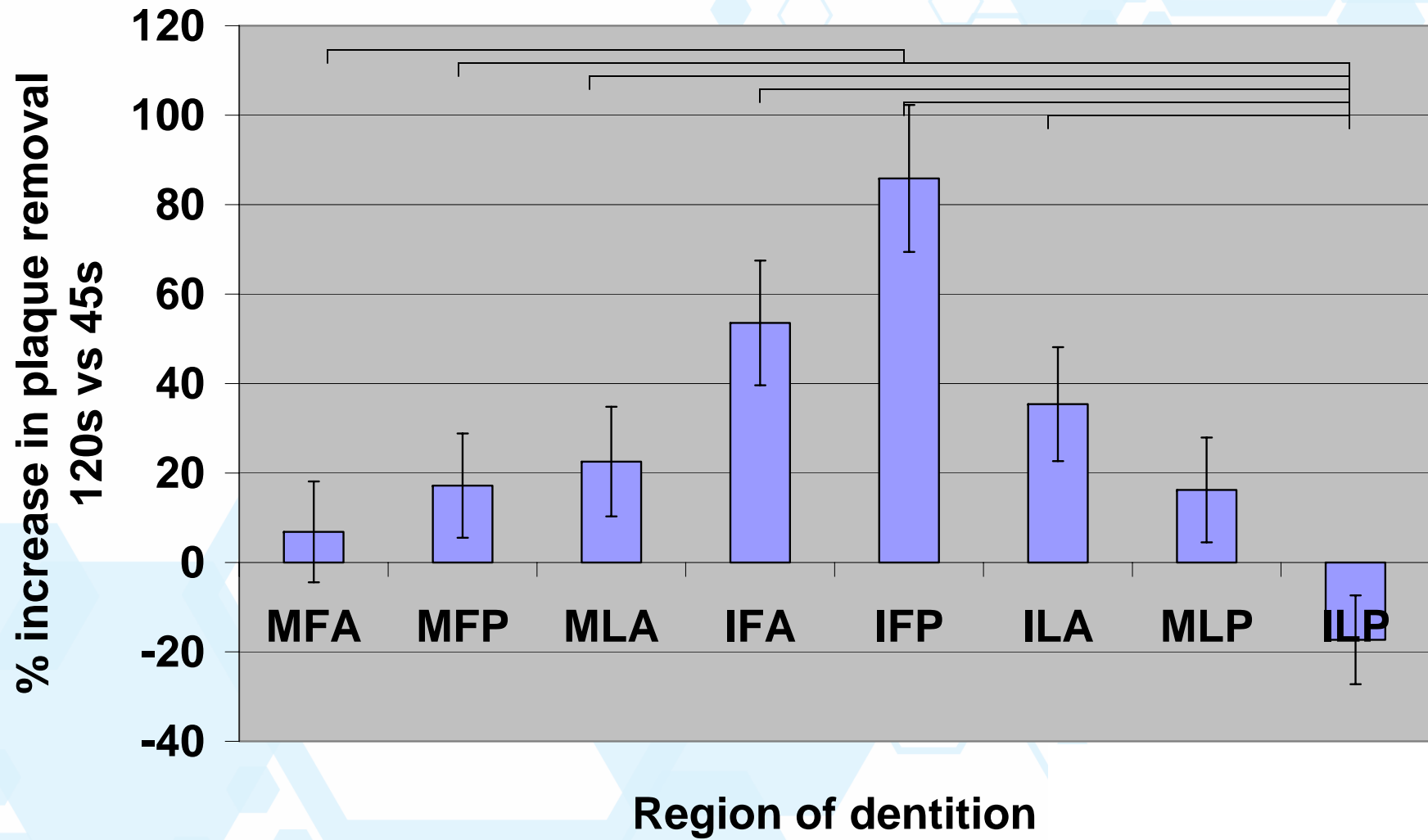


Progressively harder to reach

# Pre- and Post-brushing plaque levels by region



# Benefit of brushing for 120s vs 45s, by region of dentition



# Conclusions

- ◆ Plaque removal strongly linked to brushing time during 'normal' brushing
- ◆ Significant (modest) increase in 'not at risk' sites
- ◆ Longer-brushing benefits are highly site-dependent
  - Easy to Reach: *30 sec brushing very effective*
  - Hard to Reach: *highly brushing time-sensitive*
  - Very Hard to Reach: *3 min brushing ineffective*
- ◆ Both **time** and **good technique** appear essential to effective plaque removal