



# What Are The Effects Of Wearing Shoes On Foot Posture?

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## Background

- Recent studies have debated the benefits that shoe wear, or lack thereof, has on reducing the forces that are imposed on the lower extremities while running, thus lowering the chance for injury<sup>1</sup>.
- Research has shown that reducing the amount of structural support provided by shoes increases cross sectional area of foot intrinsic muscles. Additionally, increased intrinsic support of the medial longitudinal arch promotes a higher degree of supination<sup>3</sup>.
- Clinically, and in the literature, it is well established that extreme foot postures are associated with injuries, while more normal foot postures are not<sup>2&5</sup>.
- Inter-rater reliability for the Foot Posture Index (FPI) and Dorsal Arch Height Ratio (DAHR) are established in the literature as valid ways of assessing static foot posture. These measures have a ICC interrater reliability values of .525-.655 and .98-.99, respectively<sup>4</sup>.
- To date, there are no studies that specifically evaluate the relationship between foot posture and habitual shoe wear.
- Our purpose was to compare foot posture and foot anthropometric measurements of habitually shod and unshod participants and to determine if a correlation exists between foot strike pattern and foot posture.**

## Hypothesis

- Habitually unshod participants will demonstrate greater foot pronation (low arch posture), compared to unshod participants.
- Foot strike patterns will have no effect on foot posture, according to the FPI, DAHR, and foot posture measurements.
- Habitually unshod participants will demonstrate a wider forefoot than shod participants.

## Methods

### Participants

Group 1:30-shod (mean age: 25)  
Group 2: 21-unshod (mean age: 32)  
Ugandans- recruited in collaboration with Uganda Christian University

### Inclusion Criteria

Age: 15-40 years old  
Shod Group: Self-reported habitually shod  
Unshod Group: Self-reported habitually unshod  
All participants unhindered in walking and running ability

### Exclusion Criteria

Musculoskeletal or nervous system injuries in the past year that would affect lower extremities in walking or running.

### Objective Measures:

Foot Posture Index, Dorsal Arch Height, Forefoot Width, Total Foot Length, Foot Strike Pattern



## Discussion

- Habitual shoe wear does not affect foot posture according to the FPI.
- Habitual shoe wear does affect metatarsal foot width, but the effect size was very small. Barefoot individuals presented with an average FFW that was 2 mm greater than habitually shod individuals.
- Habitual shoe wear does have an effect on DAHR which is a more objective measure than FPI. This suggests shoe wear may indeed affect foot posture, but the FPI was not able to pick up the change.
- Foot strike pattern does not affect FPI scores, DAHR, Midfoot Width, or Forefoot Width.

### Limitations

Participants in the shod group largely wore shoes with minimal support, such as dress shoes or sandals, implying that the effects of shoe wear may not have been properly represented.

## Declarative Statement

The effect of shoe wear on foot posture is minimal, and clinically insignificant. In the absence of pathology, clinicians should not be concerned about affecting foot posture when prescribing various shoe wear to patients.

Different running foot strike patterns do not have an effect on foot posture. Clinicians should not attempt to alter a patient's running foot strike pattern with the intention to alter their foot posture.

## Results

Figure 1

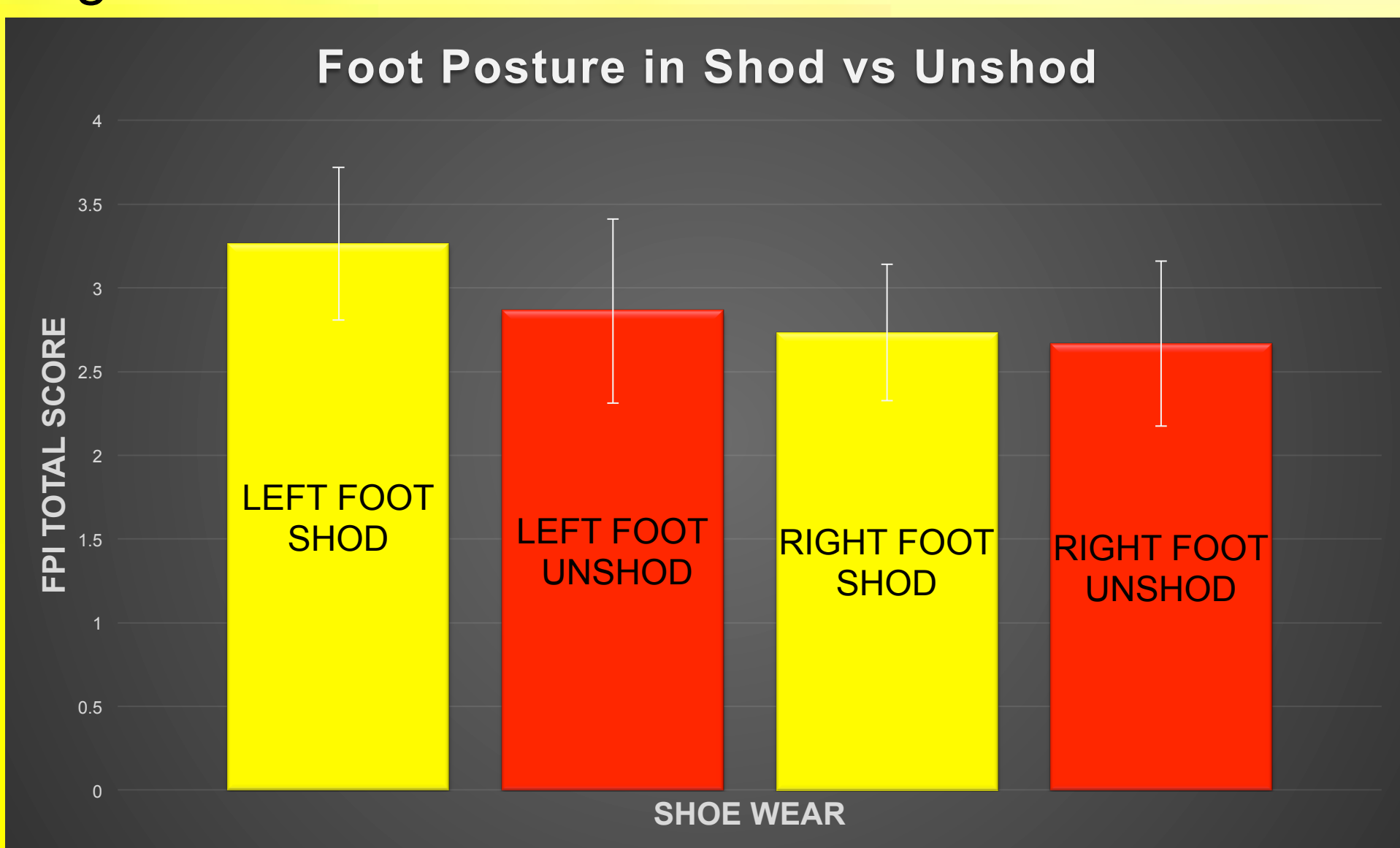


Figure 2

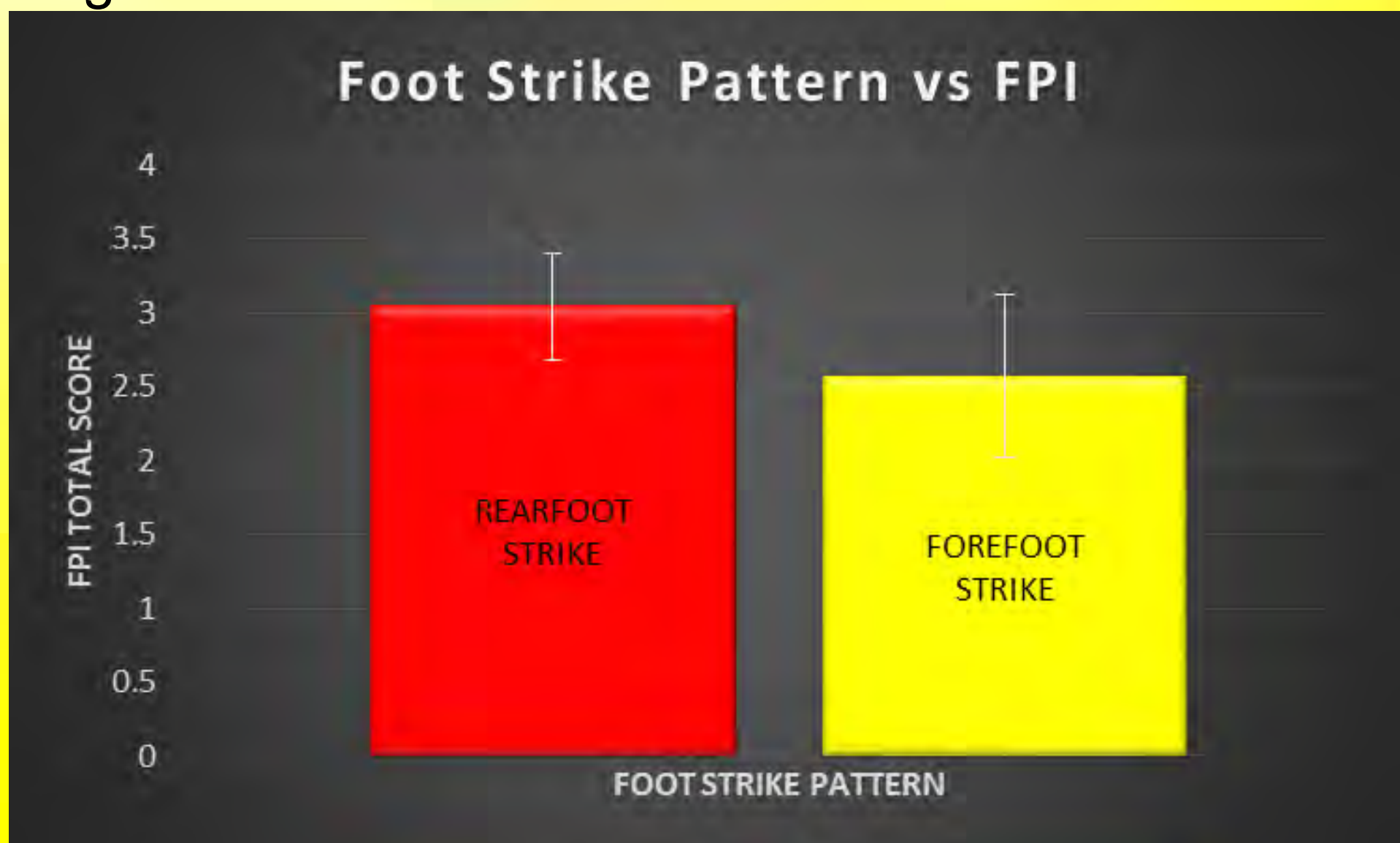


Figure 3

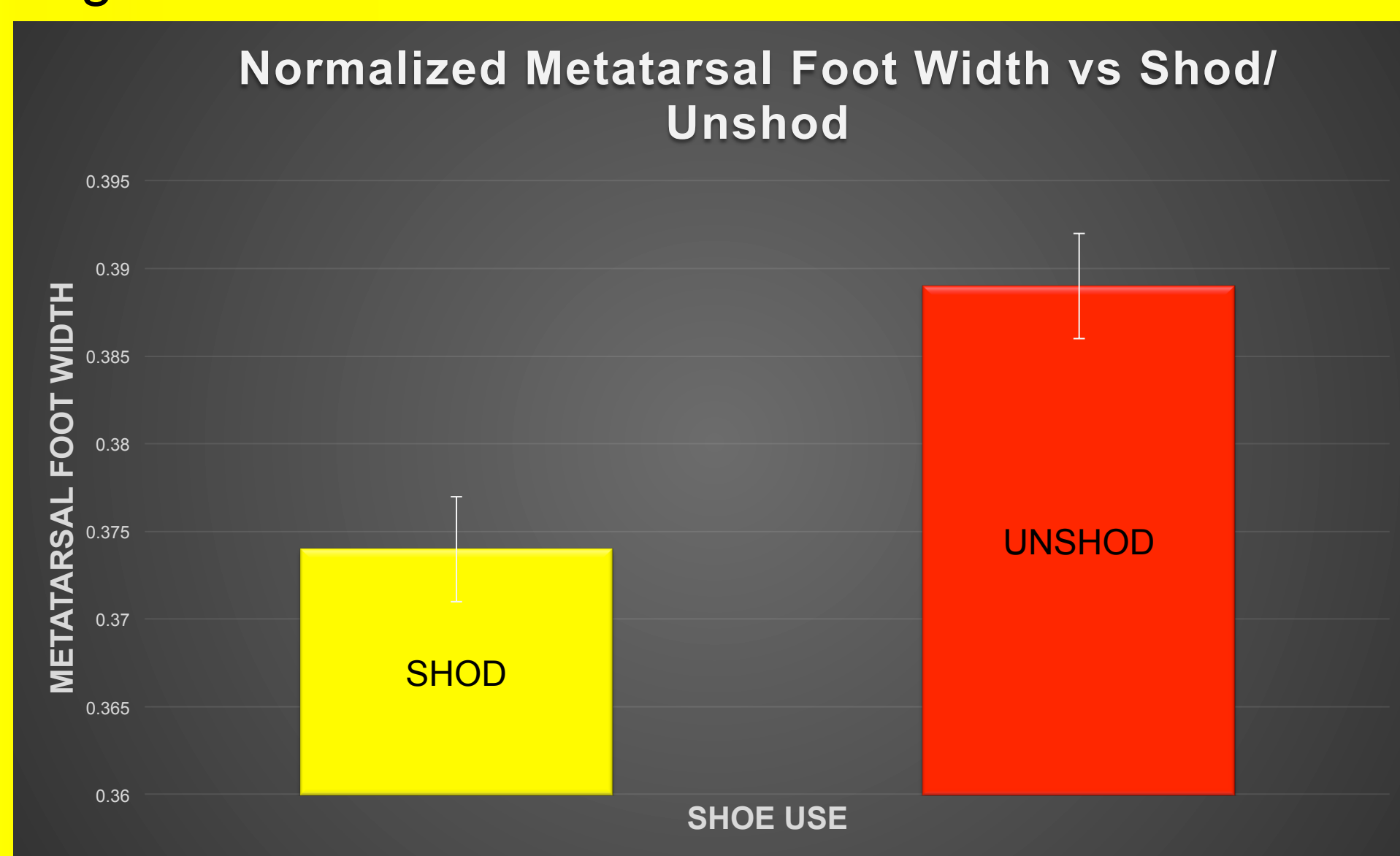


Figure 4

Comparisons	Mean Difference	Std. Error	Significance (p value)	95% confidence interval LB	95% confidence interval UB
Shoe wear vs DAHR	.014	.006	.029**	.001	.026
Shoe wear vs FPI	.400	.609	.514	-.824	1.624
Strike Pattern vs DAHR	.001	.007	.911	-.013	.015
Strike Pattern vs FPI	-.475	.657	.473	-1.796	.846
Shoe wear vs forefoot width*	.015	.004	.001**	.006	.024

\*--while controlling for covariates \*\*-- significant p-value

## References

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