

CAN I TEACH SOMEONE HOW TO REPAIR A FINGERTIP INJURY WITH A 60-SECOND VIDEO?



Peter J. Apel, MD PhD

Hand & Elbow Surgery (Pediatric and Adult)

Assistant Professor, Department of Orthopaedic Surgery

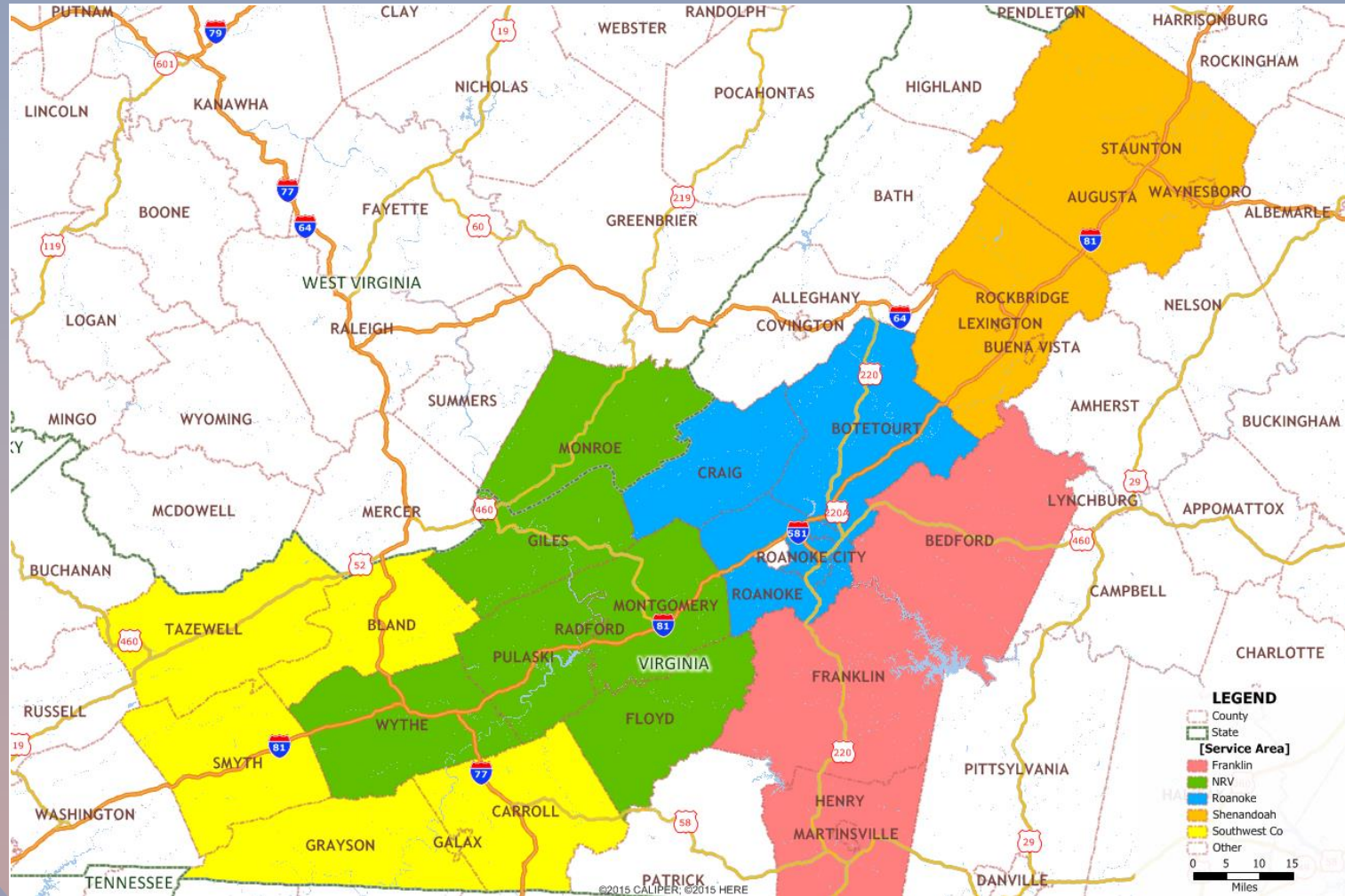
Virginia Tech Carilion School of Medicine

BACKGROUND

FINGERTIP INJURY



CLINICAL NEED





WHAT VIDEOS EXIST?


Search results for **nailed repair**


FILTER

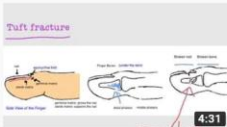
Showing results for **nailed repair** Search instead for **nailed repair**


- 

Fingernail Bed Repair, traditional method
Brian Lin • 26K views • 5 years ago
This video outlines the conventional method for nail bed injury repair & stenting. Follow up images are also included. This video ...
- 

Pediatric Nailbed Laceration
Procedural Pause • 7.2K views • 3 years ago
This video is about Pediatric Nail bed Laceration repair for educational purposes only.
- 

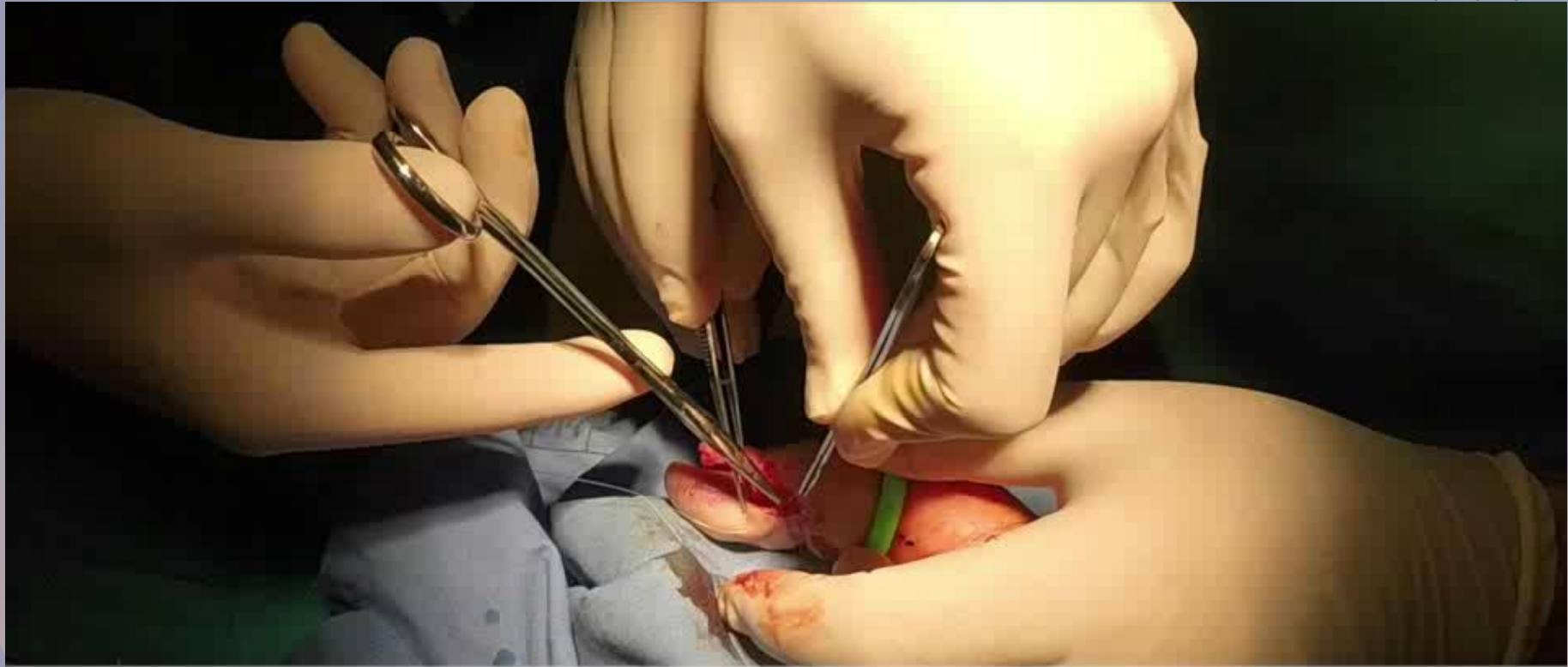
2018 Nailbed Repair
Brown EM • 1.3K views • 11 months ago
Nailbed Repair How-To's and Tips.
- 

Nail bed repair Technique
Harshil Parekh Hand Surgeon • 338 views • 2 months ago
- 

BoneTalks - FingerTip and Nailbed Injuries (Tuft Fracture)
BoneTalks • 26K views • 5 years ago
This video quickly reviews the types of fingertip and nail injuries also known as tuft fractures. We discuss blood under the nail, torn ...
- 

Finger Nail
Larry Mellick • 21M views • 8 years ago
This video demonstrates the management of a nail gun injury (roofing nail through finger) in the emergency department.

MY PAST ATTEMPTS AT FINGERTIP EDUCATION VIDEOS



Injured tissue requires full-thickness bites

WHAT I LEARNED FROM MY STUDENTS & RESIDENTS



Pediatric Nailbed Laceration

7,253 views • Sep 5, 2016

👍 23 💬 4 ➦ SHARE ⚙️ SAVE ⋮

DRIVER'S SEAT VIEW?

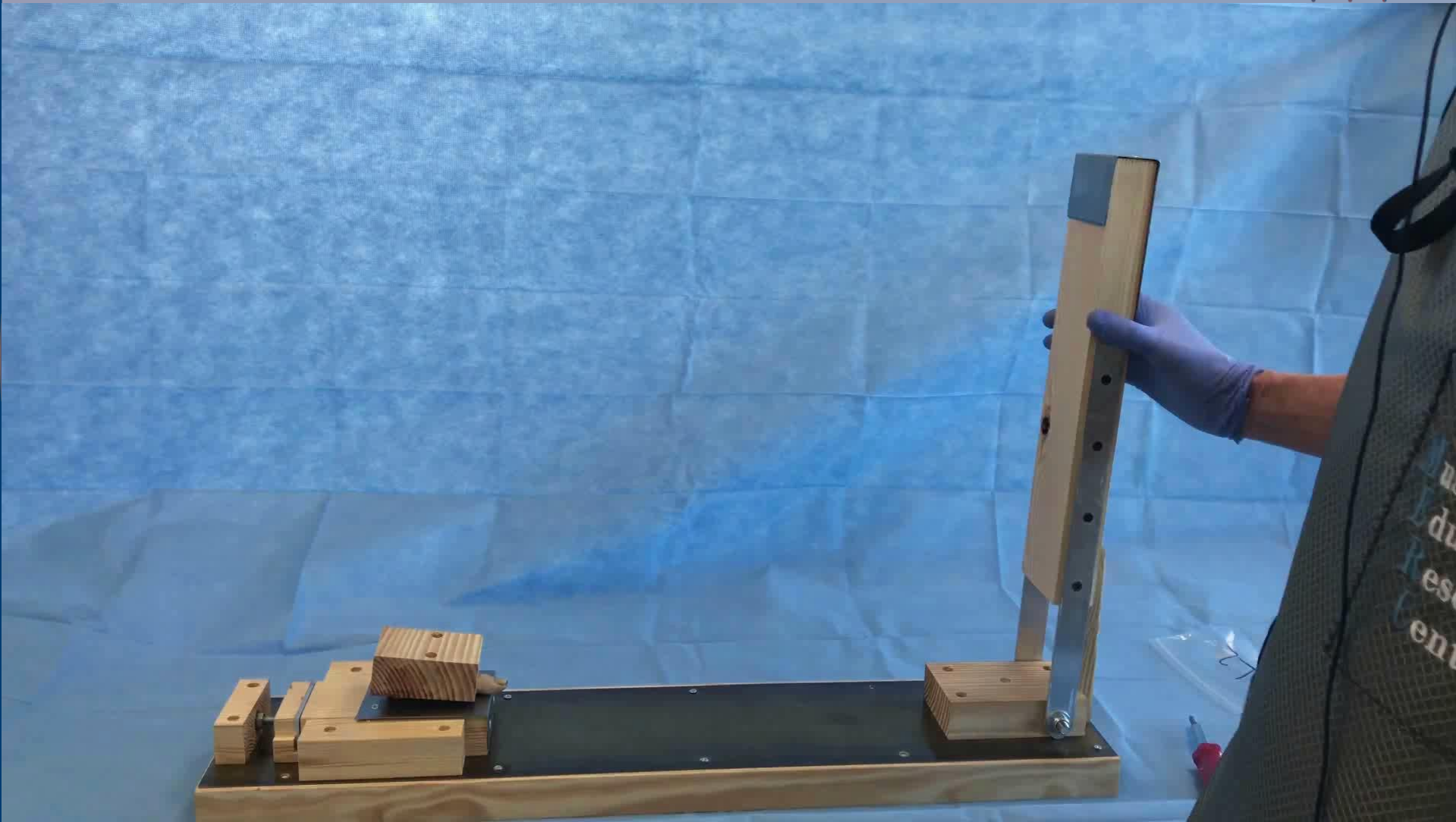


RESEARCH QUESTION / HYPOTHESIS

- » What are the best ways to use videos to teach medical procedures?
- » First area of interest: Video length
- » Hypothesis:
 - » An ultrashort video will be superior to a standard-length educational video in training emergency medicine residents to perform a fingertip injury repair.

METHODS

NEED A STANDARDIZED FINGERTIP MODEL



THE VIDEO

- » Short
 - » 1 minute
- » “Driver’s seat view”
- » Contains all the same information
 - » Verbal
 - » Visual
 - » Implied
 - » Assumed



HOW WE MADE IT SHORTER

- » Eliminate setup steps
 - » Implied
- » Eliminate mastered steps
 - » Assumed
- » Editing
 - » Most critical steps
 - » Speed up the video
 - » Talk faster
 - » Use a script



THE 60 SECOND EDUCATIONAL VIDEO

EXPERIMENTAL STUDY ON EMERGENCY MEDICINE INTERNS

- » 18 EM interns completed study
- » Each subject filled pre-repair questionnaire & presented with clinical prompt

- » Each subject given 30 minutes to prepare AND perform fingertip repair
 - » 7 had ultrashort (60-second) educational video
 - » 6 had standard (8-minute) educational video
 - » 5 had no educational video

- » Each subject filled post-repair assessment



OUTCOME MEASURES

- » Primary outcome:
 - » Fingertip repair score

- » Secondary outcomes:
 - » Time to completion of study
 - » Time spent watching video
 - » Time spent during repair
 - » Post-repair confidence levels
 - » Post-repair feeling of preparedness

- » Analysis:
 - » One-way ANOVA and Tukey post-hoc tests

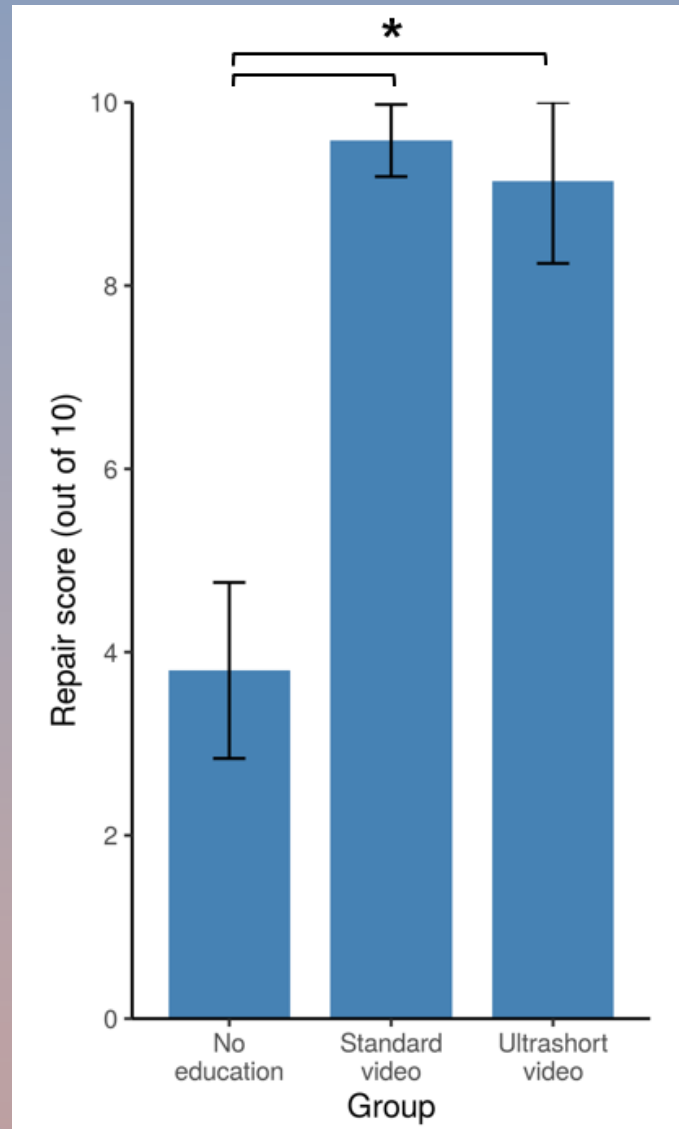
Procedural step	Performed correctly (+2)	Performed incorrectly (+1)	Did not perform (+0)
1. Application of finger tourniquet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Removal of nail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Lavage of laceration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Lavage of eponychial fold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Closure of nailbed laceration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Use of absorbable sutures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Placement of adaptic dressing correctly under the eponychial fold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Proper dressing application	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total score:			

-Raw score can be converted to the adjusted score by the following equation:

$$Adjusted\ score = \left(\frac{raw\ score}{16} \right) \times 10$$

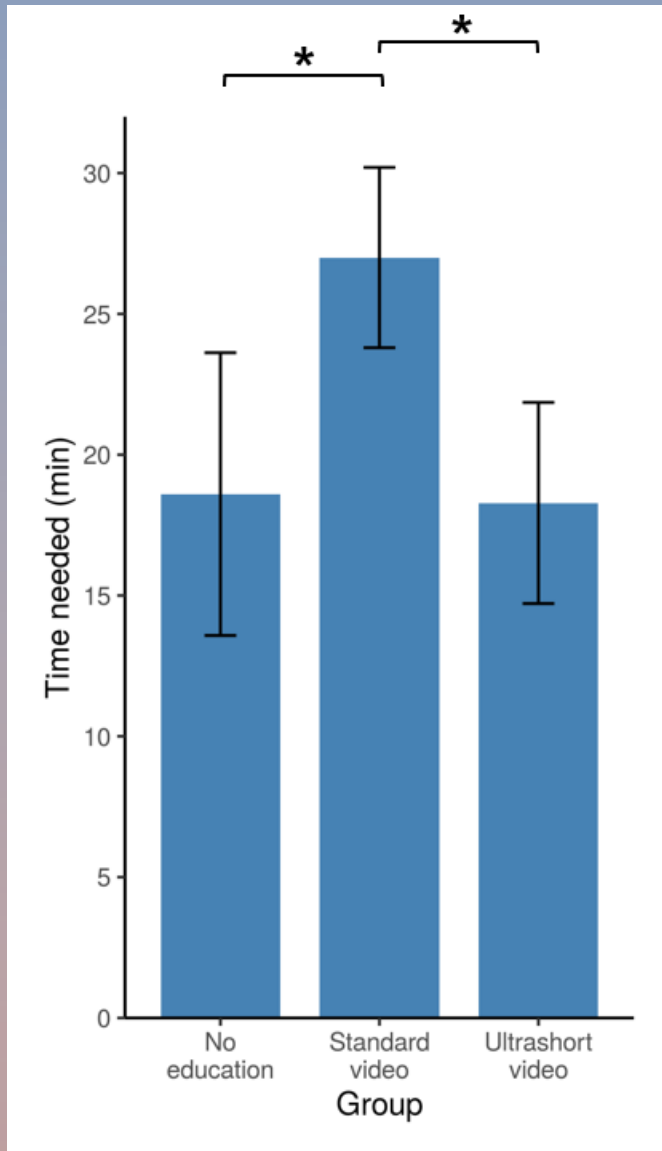
RESULTS

FINGERTIP REPAIR SCORE



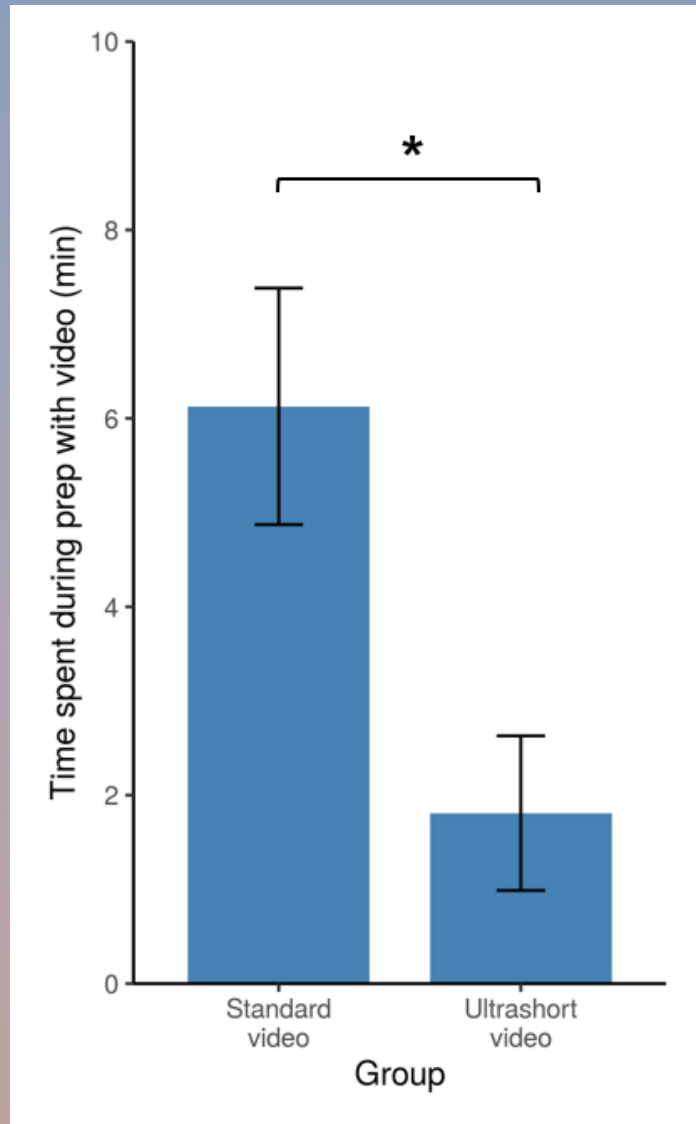
Group	Repair score (out of 10)	95% CI
No education (n=5)	4	3.5 – 4.5
Standard video (n=6)	9.6	9.2 – 10.0
Ultrashort video (n=7)	9.1	8.65 – 9.55

TIME TO COMPLETION OF REPAIR



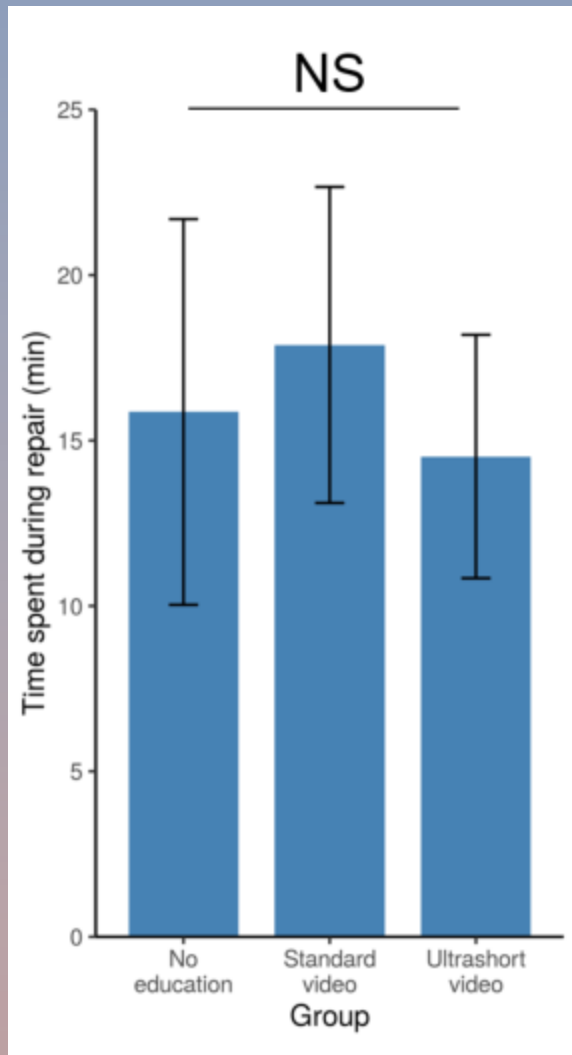
Group	Time (min.)	95% CI
No education (n=5)	19	16.5 – 21.5
Standard video (n=6)	27	25.5 – 28.5
Ultrashort video (n=7)	18	15.5 – 20.5

TIME SPENT WATCHING EDUCATIONAL VIDEO



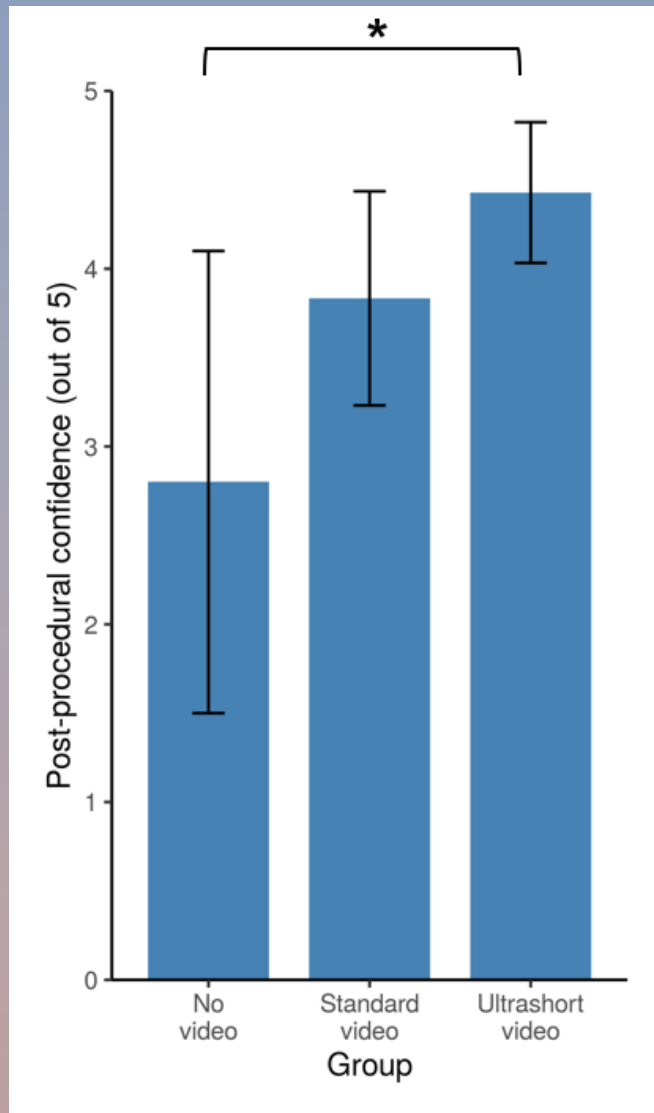
Group	Time (min.)	95% CI
Standard video (n=6)	6	5 – 7
Ultrashort video (n=7)	2	1 – 3

TIME SPENT ON THE REPAIR



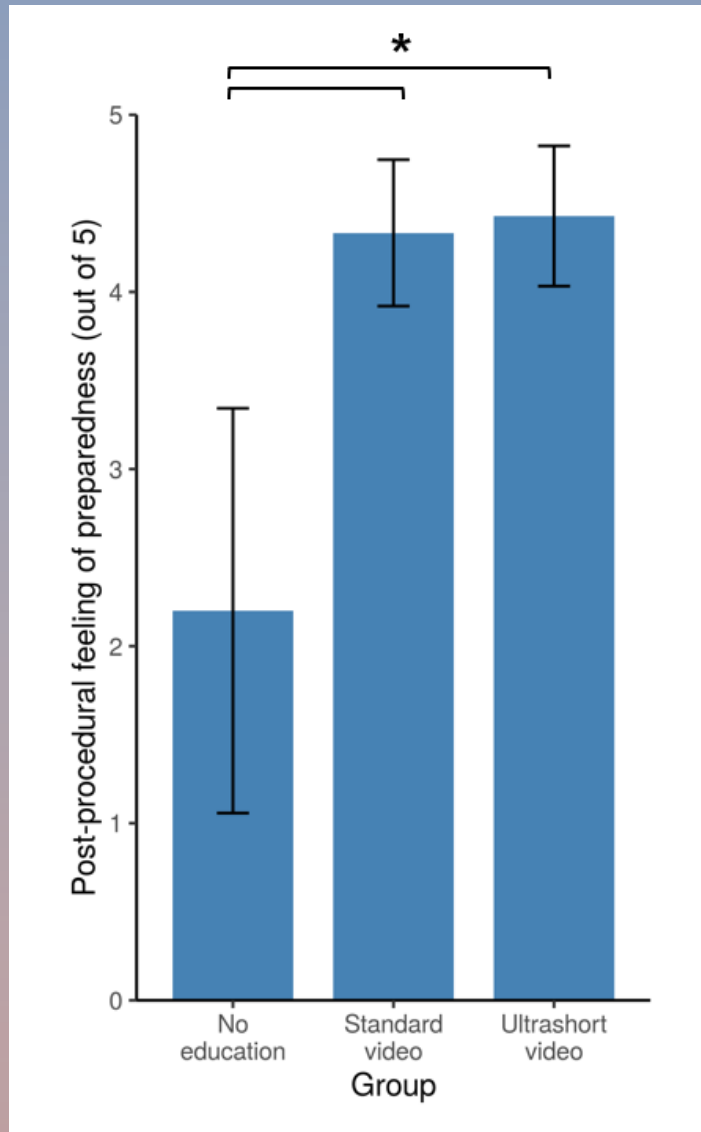
Group	Time (min.)	95% CI
No education (n=5)	16	10 – 22
Standard video (n=6)	18	13 – 23
Ultrashort video (n=7)	15	11 – 18

POST-REPAIR CONFIDENCE LEVEL



Group	Post-repair confidence (out of 5)	95% CI
No education (n=5)	3	2.5 – 3.5
Standard video (n=6)	3.8	3.5 – 4.1
Ultrashort video (n=7)	4.4	4.0 – 4.8

POST-REPAIR FEELING OF PREPAREDNESS



Group	Preparedness (out of 5)	95% CI
No education (n=5)	2	1.5 – 2.5
Standard video (n=6)	4.3	4.1 – 4.5
Ultrashort video (n=7)	4.4	4.2 – 4.6

CONCLUSIONS

CONCLUSION

- » A 60 second “just-in-time” educational video successfully conferred procedural expertise and confidence to subjects unfamiliar with fingertip injury repair.



FUTURE DIRECTIONS

- » Training of orthopaedic interns
 - » Fingertip
 - » Pediatric elbow pinning
- » Make videos available for all
- » Test this 'just-in-time' concept in practice with clinical outcomes



THANK YOU



Noah J. Orfield, PhD



Yazan Alshawkani, MSII

THANK YOU

- » Hugh Hagan, MD
- » Damon Kuehl, MD
- » Joe Moskal, MD
- » Emma Hudson
- » John McNamara, MPA, MS, DC



QUESTIONS / DISCUSSION

