Conducting Remote, Internet-Based Experiments on Web Design

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July 2005
Overview

- Background
- Our Study
- Our Toolkit
- Going Forward
Background

- Health information increasingly online
- Often haphazard!
  - Long-article formats
  - Merged with existing content
- Little empirical research on navigation and comprehension
Relevant Research

- TOCs help develop schema for single-page articles online
- Applying TOCs to multi-page articles?
Our Primary Hypothesis

Better comprehension if the site:

- Explicitly cues article structure
- Explicitly differentiates article structure from global navigation structure
Study Method: Article

- Adapted from a UW Web site
  - UW Orthopaedics and Sports Medicine
  - Knee replacement surgery technique
  - Long: 8,500 words across 8 pages
  - Left-hand navigation combined with intra-article “next” and “previous” links
- Chosen for high traffic and ratings
Study Method: Article


Edited By: Seth S. Leopold, M.D.
Last updated Thursday, June 09, 2005

Summary

Overview
Knee replacement is a surgical procedure that decreases pain and improves the quality of life in many patients with severe arthritis of the knees. Typically, patients undergo this surgery after non-operative treatments (such as activity modification, anti-inflammatory medications, or knee joint injections) have failed to provide relief of arthritic symptoms. Surgeons have performed knee replacements for over three decades, generally with excellent results; most reports have ten-year success rates in excess of 90 percent. Broadly speaking, there are two types ways to insert a total knee replacement: the traditional approach, and the newer minimally-invasive (sometimes called quadriceps-sparing) approach.
Study Method: Conditions

- Four variations on explicitness and placement of TOC:
  - Original local navigation
  - Original local navigation but labeled TOC
  - Explicit TOC
  - Global navigation + explicit TOC
Minimally-Invasive Surgery (MIS) Quadriceps-Sparing Total Knee Replacement: New Quad Sparing Technique May Provide Faster Recovery for Patients with Arthritis of the Knee

Edited By: Seth S. Leonid, M.D.

Summary

Overview

This article provides information about total knee arthroplasty using new minimally-invasive surgery (MIS) techniques, performed with a quadriceps-sparing surgical approach for the treatment of knee arthritis. This article summarizes the potential advantages and limitations of the surgical procedure.
Study Method: Measures

- **Survey questions:**
  - Demographics
  - Perceptions
  - Comprehension
    - 7 each factual and inferential

- **Browsing behavior:**
  - Pages seen (unique and total)
  - Time on pages
  - Link type clicked
Study Method: Surveys

Please answer the following questions:

1) How interesting was the information you read?
   - Very Uninteresting.
   - Uninteresting.
   - Neutral.
   - Interesting.
   - Very Interesting.

2) How difficult was the information you read?
   - Very Difficult.
   - Difficult.
   - Neutral.
   - Easy.
   - Very Easy.

3) How enjoyable was the information you read?
   - Very Unenjoyable.
   - Unenjoyable.
   - Neutral.
   - Enjoyable.

Final questions:

- I heard about this study from: (Check all that apply)
  - A flyer.
  - The UW Orthopaedics and Sports Medicine Website.
  - An online forum.
  - An email list.
  - A friend.
  - Other.

- I participated in this study because: (Check all that apply)
  - I like volunteering.
  - I like using the Internet.
  - I am interested in web site design.
  - I am interested in arthritis.
  - Someone I know has (or may have) arthritis.
  - I wanted to enter the drawing for a $75 Amazon.com certificate.
  - Other.

Please comment on any other aspect of your experience today.
Study Method: Procedure

- Participants remotely:
  - Entered study when they wanted
  - Consented and read instructions
  - Completed a pre-survey
  - Browsed article
  - Completed a post-survey
Study Method: Participants

- Interested in health information online
- Phase 1: through forums and flyers
  - N ~ 170
  - Mostly female, well educated, mid-forties, native English speakers
- Phase 2: through actual live site (ongoing)
Study Results: Comprehension

- Significantly higher comprehension with explicit TOC versus original
Study Results: Perceptions

- No significant differences:
  - Perceptions of the site
  - Perceptions of knowledge gained in general or about knee arthritis

- But! Labeled TOC led to significantly greater perceptions of knowledge learned about knee surgery
Study Results: Navigation (Preliminary)

- No significant differences in preliminary navigation analysis:
  - 6 unique pages seen (mean)
  - 13 minutes spent reading (mean)
Study Results: Discussion (Preliminary)

- Explicitly differentiated TOC aids comprehension overall
- Readers’ structural schema and comprehension are facilitated when intra-article navigation is distinguished
Shifting Gears: How We Ran The Study

- Work supported by a remote research toolkit we have been developing
- Remote research is difficult...
- But remote research is rewarding!
Toolkit Support: Materials

- Automatically...
  - Generates conditions from single code source
  - Sorts participants into conditions
  - Generates integrated surveys from simple text files
Toolkit Support: Logging

- Includes many features of standard logs, identifying:
  - Where people come from
  - What pages they see in what order

- Includes much more! Including:
  - Tracking by ID instead of IP
  - Monitoring specific links clicked
Toolkit Support: Data Manipulation

- Web-based Excel data export
- Easy data import to SPSS, Access, etc.
- Post-processing to identify suspicious behavior
Demo!

And now, we enter the interactive part of the program...
Going Forward

- The future: this study
  - Run actual site readers (ongoing)
  - Analyze path data in more depth

- The future: our toolkit
  - Continue to extend capabilities
  - Adapt to other remote-research situations
For Further Information

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