The effects of yoga on people with arthritis: a systematic review

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Outline of Presentation

- Introduction
- Methods
- Results
- Discussion
- Clinical Recommendations
- Questions?
Impact of Arthritis

- Affects 1 in 6 Canadians over 15 years old
- In 1998, the economic burden in Canada was ~ $4.4 billion
- Estimated that within a 10 year span, an additional 1 million people will be diagnosed with arthritis

(Health Canada 2003)
The Move To Yoga

- In India, yoga is part of mainstream medicine
- In the West, yoga is regarded as an alternative holistic approach to health
- Recently classified as a form of Complementary and Alternative Medicine (CAM)
- Health care professionals, yoga instructors and laypeople are recommending yoga for managing arthritis
YOGA: Sanskrit from the root yug (to join), or yoke (to bind together or to concentrate)

5,000 year-old tradition: liberation from suffering in this life through meditation

Mental and physical illnesses prevent this

Hatha yoga prepares the body for meditation
Hatha Yoga

- Defined as “physical” yoga
- Consists of a series of asanas, pranayama, and savasanas
Iyengar yoga

- Select poses to ease ailments / stress
- Standing poses
- Use of props
Yoga is proposed to:

- Improve **mood**
- Promote **relaxation**
- Increase **ROM**
- **Strengthen** muscle, connective tissue, bone
- Relieve **pain**
- **Aerobic** conditioning
- Strengthen the **immune** system
- Improve **blood circulation**
- Enable deep **concentration**
- Enhance **self-awareness**
- Increase **confidence**
What the gurus say:

“Yoga creates an environment in which other therapies have a chance to work”

“Yoga not only treats the signs and symptoms, but also treats the root cause of the disease”
Study Purpose

To investigate the chronic effects and safety of yoga on people with OA, RA, and AS.
Methods
Inclusion Criteria

- **Population**
  - Adults with OA, RA or AS.

- **Intervention**
  - Chronic hatha yoga
Inclusion Criteria, cont.

**Outcome Measures** per ICF headings:

- **Body Structure/Function**
  - Pain, Muscular Strength, Joint ROM, “Other” (e.g. disease activity, aerobic capacity, or morning stiffness)

- **Activities/Participation**
  - Physical Function, Quality of Life, or “Other” (e.g. subjective ratings of activities of daily living).
The ICF

“Health Condition”
(disorder or disease)

Body Functions and Structures

Activities

Participation

Personal Factors

Environmental Factors
Inclusion Criteria, cont.

**Study Types**

- Peer-reviewed studies:
  - RCTs
  - Case series/case reports
  - Case control
  - Cohort
  - Cross-sectional
  - Cross-over
  - Pilot studies
  - Qualitative research designs

- Non-peer reviewed research (i.e. grey literature)
Search Terms

- **Concept 1: Arthritis**
  - Key search terms: arthritis, rheumatic, ankylosing spondylitis, osteoarthritis

- **Concept 2: Yoga**
  - Key search terms: yoga, hatha
Databases Searched

- CDSR
- DARE
- Cochrane Central Register of Controlled Trials
- Current Controlled Trials
- Cochrane Collaboration Norway
- MEDLINE (PubMed)
- CINAHL
- EMBASE
- PEDro
- MANTIS
- Web of Science
- Sport Discus
- CRISP
- TRIP
- National Guideline Clearinghouse
- REHABDATA
- CIRRIE
- ACP Journal Club
- Conference Proceedings
- Proquest theses
Additional Search Strategies

- Internet (Google Scholar)
- References hand-searched
- Authors / experts contacted
Quality Assessment Tool

- Three tools considered:
  - van Tulder et al. 20
  - Jadad et al. 21
  - Verhagen et al. 22

- Elements of all were combined to create a new tool

- Piloted
Quality Assessment Tool

1. Was the study described as randomized?
2. Was the method of randomization adequate (e.g. was treatment allocation concealed)?
3. Was the purpose/objective of the study defined?
4. Were the eligibility criteria specified (inclusion/exclusion)?
5. Was there at least one control (comparison group)?
6. Were the groups similar at baseline regarding the most important prognostic indicators?
7. Was the sample size justified (e.g., power calculation)?
8. Was there a clear description of the interventions?
9. Was the outcome assessor blinded to the intervention?
10. Were cointerventions avoided or similar?
11. Were the methods of statistical analysis described?
12. Did the analysis include an intention-to-treat analysis for primary outcomes?
13. Was the compliance acceptable in all groups?
14. Was the drop-out rate acceptable?
15. Was the timing of the outcome assessment in all groups similar?
16. Were point estimates and associated variance (e.g. mean and standard deviation) presented for primary outcome measures?
17. Were the outcome measures validated for the population?
18. Were adverse effects described in all groups?
Data Extraction

- Form developed and piloted
- Performed by 2 team members independently
Pranayama Series / Standing Deep Breathing
Results
Initial search = 230 hits
- The irrelevant and duplicates
  = 26 articles
- The irrelevant
  = 7 articles
Summary of Studies

Dates:
- 1992 – 2005

Population:
- 3 = OA, 4 = RA
- N = 152
- 69% female
- Ages 15 – 79
Summary, cont.

Intervention:

- Group sessions (1 incl. home)
- 2 Iyengar, 1 modified Iyengar, 1 flow, 3 NA
- 3 included education
- 60 – 120 min/session
- 1 – 7 days/wk
- 2 wks to 3 months + 3 wks
- Control: 5 no intervention, 2 not specified
Limitations of Studies

- Poor description of interventions
- Outcome measures varied, not always valid
- Weak methodology (3 – 14 / 18)
  - 1 study randomized appropriately
  - 2 studies blinded outcome assessor
  - None reported using intention to treat analysis
Bosch 2003 [dissertation]

- Quasi-RCT
- RA, 100% female
- n = 15
- 30 sessions over 10 weeks
- Quality = 6/18
- Improvements in balance, function, pain, disability and depression
Bosch et. al 2003 [abstract]

- Pilot Quasi-RCT
- RA, 100% female
- n=15
- 30 sessions over 10 weeks
- Quality = 3/18 (abstract)
- Improvements in function, mood, balance, and daytime cortisol patterns
Dash & Telles 2001

- Quasi-RCT
- RA, 50% female
- $n = 40$ (largest population)
- Yoga camp for 2 weeks (# sessions unknown)
- Quality = 6/18
- Improvements in grip strength ($F > M$), decrease in NSAID use
Garfinkel 1992 [dissertation]

- Fixed effect pre-post design
- n = 25
- OA of the hands, 56% female
- 8 sessions over 8 weeks
- Quality = 14/18 (highest)
- Improvements in hand pain during activity, DIP/PIP tenderness, and (R) hand ROM
- Appropriate randomization and blinding, intervention well described
Garfinkel et al. 1994

- Quasi-RCT
- OA of the hands, 56% female
- n = 30
- 8 sessions over 8 weeks
- Quality = 10/18
- Improvements in hand pain during activity, DIP/PIP tenderness, and (R) hand ROM
Haslock et al. 1994

- Pilot Quasi-RCT
- RA, 85% female
- n = 20
- 15 sessions in 5 weeks (+ home practice)
- Quality = 11/18
- Improvements in (L) hand grip strength
- Outcome assessor blinded
Kolasinski et al. 2005

- Pilot Repeated Measures
- OA, 100% female
- n = 7
- 8 sessions in 8 weeks
- Quality = 9/18
- Improvements in Pain and Function
Discussion
Body Structure/
Function
Pain

- 5 studies measured pain
- 4 showed significant decrease
  (Bosch, Dash & Telles, Garfinkel, Garfinkel et al.)
- 1 of these showed a non-significant decrease in hand pain at rest (Garfinkel)
Grip Strength

- 4 studies measured grip strength
- 2 showed significant increase
  (Haslock et al., Dash & Telles)
- 2 studies found no significant improvements
  (Garfinkel, Garfinkel et al.)
Range of Motion

- 2 studies measured ROM
- Both found significant improvements in (R) hand ROM (Garfinkel, Gafinkel et al.)
Other

- 2 studies showed improved joint tenderness (Garfinkel, Garfinkel et al.)
- 1 study showed altered cortisol daytime patterns (normalization?) (Bosch et al.)
- Non-significant results: remaining cortisol measures, finger circumference, stiffness, RHR, stress reactivity, global assessment
Activity / Participation
Function

- 6 studies measured function
- 2 reported significant improvements (Bosch, Bosch et al.)
- 1 reported mixed results (Kolasinski et al.)
- 3 reported non-significant results (Garfinkel, Garfinkel et al., Haslock et al.)
Quality of Life

- 4 studies measured QOL
- 1 showed positive results (Bosch et al.)
- 2 reported mixed results (Bosch, Kolasinski et al.)
- 1 reported non-significant results (Haslock et al.)
Safety

- 2 studies reported monitoring for adverse events (Garfinkel et al., Kolasinski et al.)
- 1 reported an increase in pain/stiffness but argues results were affected by a “personal tragedy” (Kolasinski et al.)
Yoga Poses for Arthritis
Ardha Chandrasana / Half Moon Pose
Back Extension Variations

Moon Pose

Chair Pose

Goals: back extension, chest opening, leg strength, back strength

Locust Pose
Down Dog

Original Pose

Goal: strength, flexibility, alignment, mental focus

Modification: use wall or chair
Hand Extension

Cat and Cow

Namaste Hands
Limitations of Review

- Broad inclusion criteria
- Study heterogeneity prevents meta-analysis
- Publication bias
- Language bias
Strengths of Review

- Rigorous methods
- Exhaustive search
- Unique: effects of yoga on 3 forms of arthritis (↑ external validity, convenient reference)
- We had fun?
Clinical
Recommendations
Bottom Line

• Sackett’s Grade “B” Evidence

• Yoga may be effective at improving:
  • Pain
  • Hand ROM
  • Joint line tenderness
  • Grip strength
  • Physical function
  • Depression

• Appears to be safe when introduced by qualified instructor
Optimal dosage unknown

“Qualified” instructor?

Clear patient to participate

PT communicate with instructor

Still need to do aerobic exercise!

Yoga – not such a far “stretch”
Future Research

- Methodological rigor!
- Isolate independent variable
- Measure aerobic capacity
- Monitor for and report adverse events
- Follow-up
- Need research on AS
- Qualitative research
Namaste

I honor the place in you where
the entire universe resides

I honor the place in you of love,
of light, of truth, of peace.

I honor the place within you
where if you are in that place
in you and I am in that place in
me, we are one.
Questions & Discussion

Thank you!