The chronic burden of living with arthritis: how patients can take control

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Center for Enhancing Activity and Participation among Persons with Arthritis

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They Are Not Alone

- 50,000,00 adults in the U.S. have doctor-diagnosed arthritis.

- 294,000 children have some form of arthritis or rheumatic condition.
Arthritis: What is it?

Osteoarthritis (OA)
ACR Criteria- Knee OA

- Using history and physical examination
  - Pain in the knee
  - AND 3 OF THE FOLLOWING
  - Over 30 years of age
  - Less than 30 minutes of morning stiffness
  - Crepitus on active motion
  - Bony tenderness
  - Bony enlargement
  - No palpable warmth of synovium

Progression of Arthritis from the Inside

Diminished cartilage

- Initial
- 9 years
- 13 years
- 19 years

Damaged Cartilage
Rheumatoid Arthritis

2010 ACR/EULAR Classification Criteria for RA

<table>
<thead>
<tr>
<th>JOINT DISTRIBUTION (0-5)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1 large joint</td>
<td>0</td>
</tr>
<tr>
<td>2-10 large joints</td>
<td>1</td>
</tr>
<tr>
<td>1-3 small joints (large joints not counted)</td>
<td>2</td>
</tr>
<tr>
<td>4-10 small joints (large joints not counted)</td>
<td>3</td>
</tr>
<tr>
<td>&gt;10 joints (at least one small joint)</td>
<td>5</td>
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</tbody>
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<table>
<thead>
<tr>
<th>SEROLOGY (0-3)</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Negative RF AND negative ACPA</td>
<td>0</td>
</tr>
<tr>
<td>Low positive RF OR low positive ACPA</td>
<td>2</td>
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<td>High positive RF OR high positive ACPA</td>
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<thead>
<tr>
<th>SYMPTOM DURATION (0-1)</th>
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<tbody>
<tr>
<td>&lt;6 weeks</td>
<td>0</td>
</tr>
<tr>
<td>≥6 weeks</td>
<td>1</td>
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<table>
<thead>
<tr>
<th>ACUTE PHASE REACTANTS (0-1)</th>
<th></th>
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<tbody>
<tr>
<td>Normal CRP AND normal ESR</td>
<td>0</td>
</tr>
<tr>
<td>Abnormal CRP OR abnormal ESR</td>
<td>1</td>
</tr>
</tbody>
</table>

≥6 = definite RA

eular
Others…

- There are over 100 different types of arthritis and many affect the joint along with the skin and internal organs
  - Ex: Lupus and psoriatic arthritis

Common symptoms

1. Chronic pain and/or stiffness
2. Fatigue
3. Limited activity
4. Decrease in strength and flexibility
5. Joint deformity “(mal)alignment”
6. Decreased balance

Natural to want to slow down/stop moving
Arthritis Steals Movement

Arthritis Steals Activity

Psychological Impact of Arthritis

- 1/3 of US adults with arthritis ≥45 yrs. suffer with anxiety and/or depression (33% women vs. 23% men)

Anxiety and depression among US adults with arthritis: Prevalence and correlates

- Anxiety Only: 6.0 million
- Anxiety & Depression: 6.6 million
- Depression Only: 1.0 million

Need to Screen

- Only ½ of those with anxiety and/or depression sought help for their mental health condition
- No strong predictors/correlates with anxiety and/or depression suggesting all people with arthritis should be screened

Murphy, L.B. et al, 2012; Shih M, 2006; 21:1160.
Anxiety and Depression Burden

Individuals with both mental health disorders and arthritis…

- risk for increased disability
- responsiveness to treatment
- quality of life
- coping ability

Shih M, 2006;21:1160.

Fig 1  Simple regression line plot of BAI × CES-D interaction on physical function as measured by LEFS. Low and high depression and anxiety were delineated by 1 SD below and above the respective means.

Relationships of Fear, Anxiety, and Depression With Physical Function in Patients With Knee Osteoarthritis

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positive affect

Web definition

A mood dimension that consists of specific positive emotions such as excitement, self-assurance and cheerfulness at the high end and boredom, sluggishness and tiredness at the low end

wps.pearsoned.co.uk/ema_uk_he_robbins_orgbeuro_1/151/388&hellip;

White, et al, Arthritis Care & Research, 2012

Significance & Innovations

*Among persons with knee pain, those with high positive affect walked more steps per day compared to those with low positive affect.

*The absence of depressive symptoms alone may not be enough to encourage daily walking among people with symptomatic knee osteoarthritis; positive affect should instead be considered.
**Table 3. Association of positive affect with daily walking stratified by people with and without knee pain***

<table>
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<tr>
<th>No.</th>
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<th>β (95% CI)</th>
<th>Adjusted β (95% CI)†</th>
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<td><strong>Knee pain (n = 393)</strong></td>
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<td>High positive affect 235</td>
<td>8,541.5 ± 3,268.0</td>
<td>1,157.7 (431.2, 1,884.1)</td>
<td>711.0 (55.1, 1,366.9)</td>
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<td>7,324.3 ± 3,007.3</td>
<td>−59.5 (−1,137.7, 1,018.7)</td>
<td>85.2 (−871.6, 1,042.1)</td>
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<td>High positive affect 367</td>
<td>8,646.3 ± 3,403.6</td>
<td>−514.7 (−1,201.7, 172.3)</td>
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<td>9,168.5 ± 4,211.8</td>
<td>Ref.</td>
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<td>7,405.1 ± 3,277.1</td>
<td>−1,755.9 (−2,975.3, −536.6)</td>
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*Knee pain was defined as present in respondents who reported having pain on most days of the previous 30 days at the clinic visit and a telephone screening a median of 33 days prior. 95% CI = 95% confidence interval. †Adjusted for age, sex, race, body mass index, comorbidity, knee extensor strength, knee pain severity, widespread pain, and study site.

Adapted from White, et al, AC7R, 2012
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Adapted from White, et al, AC7R, 2012
Self-Efficacy

- **Albert Bandura** has defined self-efficacy as one's belief in one's ability to succeed in specific situations.

Self-Efficacy for Managing Chronic Disease 6-Item Scale

We would like to know *how confident* you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident are you that you can keep the fatigue caused by your disease from interfering with the things you want to do?
2. How confident are you that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do?
3. How confident are you that you can keep the emotional distress caused by your disease from interfering with the things you want to do?
4. How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do?
5. How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce you need to see a doctor?
6. How confident are you that you can do things other than just taking medication to reduce how much you illness affects your everyday life?
Arthritis Self-Efficacy Scale

For each of the following questions, please circle the number that corresponds to how certain you are that you can do the following tasks regularly at the present time.

Items (using the same format as above):
1. How certain are you that you can decrease your pain quite a bit?
2. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with your sleep?
3. How certain are you that you can keep your arthritis or fibromyalgia pain from interfering with the things you want to do?
4. How certain are you that you can regulate your activity so as to be active without aggravating your arthritis or fibromyalgia?
5. How certain are you that you can keep the fatigue caused by your arthritis or fibromyalgia from interfering with the things you want to do?
6. How certain are you that you can do something to help yourself feel better if you are feeling blue?
7. As compared with other people with arthritis or fibromyalgia like yours, how certain are you that you can manage pain during your daily activities?
8. How certain are you that you can deal with the frustration of arthritis or fibromyalgia?

Scoring

- Sum scores and divide by number of items

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Totally confident</th>
</tr>
</thead>
</table>
Knee Replacement Prevalence

- Rates of total knee replacement skyrocketing
- Over 3.5 million annually in U.S. by 2030\(^1\)

Prevalence of Participation Restriction

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>% of Subjects with Participation Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-knee replacement (n=218)</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
</tr>
<tr>
<td>Sex: Women</td>
<td>39</td>
</tr>
<tr>
<td>Men</td>
<td>32</td>
</tr>
<tr>
<td>Race: White</td>
<td>33</td>
</tr>
<tr>
<td>Other</td>
<td>62</td>
</tr>
<tr>
<td>Age at knee replacement:</td>
<td></td>
</tr>
<tr>
<td>&lt;65 years</td>
<td>46</td>
</tr>
<tr>
<td>65-74 years</td>
<td>33</td>
</tr>
<tr>
<td>75+ years</td>
<td>24</td>
</tr>
</tbody>
</table>

Figure adapted from, ¹Kurtz, 2007
### Prevalence Ratios of post- knee replacement participation restriction

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Unadjusted, PR (95%CI)</th>
<th>Adjusted PR (95% CI)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (ref=men)</td>
<td>1.6 (0.8, 3.0)</td>
<td>1.8 (0.7, 2.7)</td>
</tr>
<tr>
<td>Race (ref= White)</td>
<td>2.0 (0.9, 4.4)</td>
<td>1.9 (0.8, 4.5)</td>
</tr>
<tr>
<td>Age at knee replacement: &lt; 65 yrs. (n=92)</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>65-74 (n=101)</td>
<td>1.0 (0.5, 1.9)</td>
<td>1.1 (0.6, 2.1)</td>
</tr>
<tr>
<td>75+ (n=25)</td>
<td>1.9 (0.8, 4.7)</td>
<td>2.2 (0.9, 5.7)</td>
</tr>
<tr>
<td>Educational Attainment (ref=&gt;HS)</td>
<td>1.4 (0.4, 4.5)</td>
<td>1.2 (0.4, 4.0)</td>
</tr>
<tr>
<td>Depressive Symptoms (refs16)</td>
<td>4.9 (2.2, 11)</td>
<td>4.5 (2.0, 10.3)</td>
</tr>
<tr>
<td>Quadriceps Strength: strongest tertile</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>middle tertile</td>
<td>1.1 (0.5, 2.3)</td>
<td>1.0 (0.5, 2.3)</td>
</tr>
<tr>
<td>weakest tertile</td>
<td>1.4 (0.6, 3.0)</td>
<td>1.3 (0.6, 2.8)</td>
</tr>
<tr>
<td>Post-knee replacement pain in the ipsilateral (knee replacement) knee (ref &lt;10/20)</td>
<td>5.1 (1.8, 14.4)</td>
<td>7.0 (2.2, 22.7)</td>
</tr>
<tr>
<td>Post-knee replacement pain in contralateral knee (ref &lt;10/20)</td>
<td>5.6 (1.9, 16.8)</td>
<td>5.3 (1.6, 16.9)</td>
</tr>
<tr>
<td>Number of knees replaced (ref=1)</td>
<td>1.0 (0.5, 1.9)</td>
<td>1.0 (0.6, 2.0)</td>
</tr>
<tr>
<td>Body Mass Index (ref &lt; 30)</td>
<td>1.1 (0.6, 1.9)</td>
<td>1.1 (0.6, 2.1)</td>
</tr>
<tr>
<td>Pre-knee replacement WOMAC Physical Function</td>
<td>1.1 (1.0, 1.1)</td>
<td>1.1 (1.0, 1.1)</td>
</tr>
<tr>
<td>Comorbidities</td>
<td>1.1 (0.9, 1.3)</td>
<td>1.0 (0.8, 1.3)</td>
</tr>
</tbody>
</table>

### So…what to do…

- Establish strong medical team
- Utilize medication regimens, as appropriate
- Protect joint/tissues
  - Engage in evidence-based practices
Arthritis Medical Team

- Rheumatologist, orthopedist, primary care; nurse
- Physical therapist; occupational therapist
- Social worker
- Mental Health Specialist
- Others

Arthritis Medications

- Anti-inflammatories (e.g., Motrin), DMARDS (e.g., Methotrexate); Biologics (e.g., Embrel), Steroids
- Goal: Control inflammation and symptoms; minimize joint and tissue damage
- Close medical follow-up to monitor impact on liver and other internal organs
Muscle Strength: The Evidence

- Know people with arthritis have weak muscles around involved joints
- Know that people with OA and RA can do strength training exercises without increasing symptoms
- Know that people with OA and RA can experience decrease pain and improved function (walking) with strength training activities

Strong Muscles

- Current recommendations: progressive resistance training major muscle groups 2 days/week

- Posture and positioning are important
  - Protect involved joints
    - Wrist: careful when weightbearing on hands/lifting weights: MODIFY
    - Knee: careful with jumping, twisting, deep knee bends: MODIFY
Do 8-10 repetitions of each exercise and increase the number of repetitions as you get stronger

Make time!

Flexible muscles

- Tight Calf muscles cause a bend in the knees
- The bended knees cause the upper body to lean forward
- Do 8-10 repetitions of each exercise and increase the number of repetitions as you get stronger
- Make time!

Hamstring

Shoulder

Calf

Walking

- Start slowly, slowly increase speed and distance
- Decrease speed if pain occurs while walking
- Cut back a bit if having joint pain after or during exercise
- Build in “rests” during the week
- Balance activities with exercise programs
Mind-Body Physical Activity

- Yoga
  - RA - Swollen joints
  - Decreased pain and disability
  - Improved self-efficacy

- Tai Chi
  - Cardiovascular fitness
  - Muscle strength
  - Balance
  - Physical function
  - Reduced stress anxiety and depression


Keep moving! The Evidence

Know: Inactivity leads to poor health including early mortality and disability
Know: People with OA and RA can decrease pain and improve walking ability by engaging in walking programs
Move Easier, Lose Weight

- 1 pound weight loss unloads 4 pounds of joint stress in people with knee osteoarthritis.

Effects of Exercise Training on Older Patients With Major Depression

2008 Centers for Disease Control and Prevention (CDC): Physical Activity Guidelines for Americans

150 minutes moderate intensity/week
OR
75 minutes of vigorous intensity/week

Arthritis: Low Impact Activity

Strength training 2 or more days/week for all major muscle groups

http://www.cdc.gov/physicalactivity/everyone/guidelines/index.html

Physical activity levels among adults with and without arthritis

With Arthritis

>33% inactive
Women aged ≥45
Blacks, Hispanics
“other” race
Obese
≤12 years of education

Without Arthritis

>33% inactive aged ≥75
Hispanic
Self-Efficacy and Walking in Knee Osteoarthritis

Perceived Barriers and Self-regulatory Efficacy to Cope

Copyright 2007 by The Gerontological Society of America

Gyurcsik NC et al., Arthritis Care & Research
Volume 61, Issue 8, pages 1087–1094, 15 August 2009
Setting Goals

- Start small and set reasonable goals
  - Ex: walk 5min. each day, once that is easy move it up to 10min. Each day

- Get Motivated
  - Ex: suggest an exercise partner and exercise program that motivates

- Mix it up and Have fun
  - Ex: walk a two days, bike two days, and swim two days

Work, Daily Life…Joint Protection

- Work-related joint pain and fatigue common
- Job accommodations can help
  - Task modifications and changes
- Balance work and home activities
  - Plan activities
Get Informed

- People with arthritis should speak with their healthcare professional about best practices for managing your arthritis
- Connect with groups that know…Arthritis Foundation [http://arthritis.org](http://arthritis.org)
- Join an evidence-based arthritis exercise or self-management class

![Image of people with arthritis]

Caution: Refer to Doctor

- Uncontrolled disease activity
  - Swollen and warm joints
- Current Severe Pain
  - Pain non-arthritis joints and tissues
- Severe joint malalignment
- Concern of falling, history of falling

![Image of caution flag]
Evidence-based Community Programs

- Arthritis Foundation Exercise Program
- Walk with Ease Program
- Fit and Strong
- EnhanceFitness
- The Fitness Professional’s Guide to Training Clients with Osteoarthritis (American Counsel on Exercise)

See Arthritis Foundation (www.arthritis.org) and Centers of Disease Control and Prevention (http://www.cdc.gov/arthritis/)
Resources

http://arthritis.org

http://www.fightarthritispain.org/

http://www.bu.edu/enact/

Questions or Comments?

Center for Enhancing Activity & Participation among Persons with Arthritis (ENACT)
www.bu.edu/enact

The NIDRR Arthritis Rehabilitation and Training Center

NIDRR PR/Award #H133B100003