An Internet-mediated Exercise Intervention for Veterans with Chronic Low Back Pain

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June 5, 2012

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Funded by VA HSR&D Service IIR 07-177

Overview

- Background
- Conceptual Framework
- Intervention
- Study Aims/Design
- 6 Month Study Findings
- Implications

Low Back Pain

- Prevalent health condition
  - 1/4 adults in the U.S. reporting low back pain in the past three months
  - 1/2 reporting back pain during a given year

(Deyo, 2006; Brooks, 2006; Lawrence, 1998)

- Costly
- Significant negative consequences

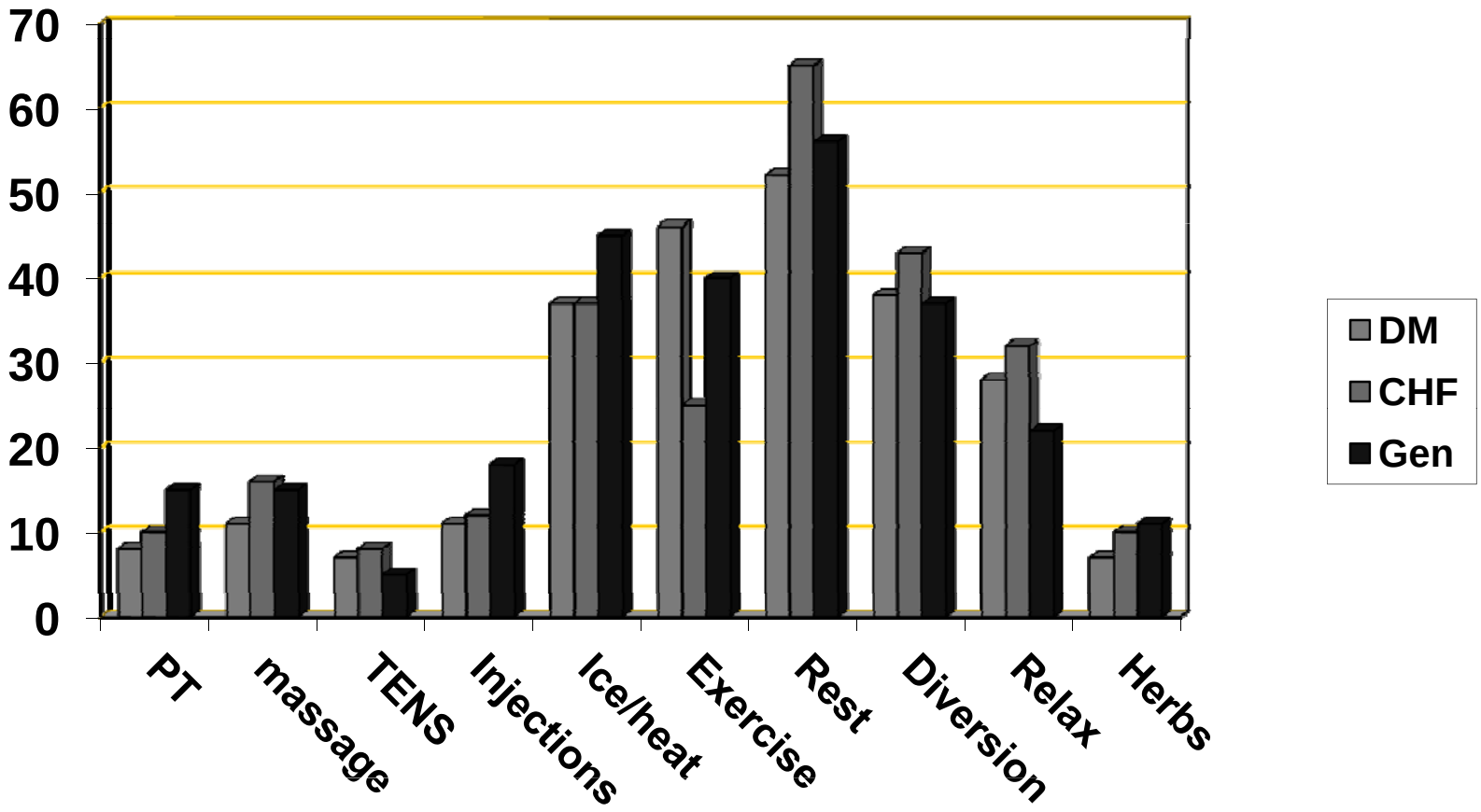
Chronic Pain Among VA Primary Care Patients

- 50-70% of VHA patients in primary care report chronic pain (Kerns et al., 2003; Clark, 2002; Butchart, 2009)
- The prevalence may be higher (75%) among female Veterans (Haskell et al., 2006)
- Pain is among the most costly disorders treated in VHA settings; total estimated costs attributable to low back pain was $2.2 billion in FY99 (Yu et al., 2003)
- Number of Veterans with chronic low is growing steadily (Sinnott & Wagner, 2009)

Strategies for Managing Chronic Back Pain

- Pharmacotherapy
- Surgery and other interventional strategies
- Exercise therapy, intensive multidisciplinary pain programs, and certain psychological interventions

What type of non-pharmacologic strategies do VA primary care patients report using to manage their chronic pain?



VA/DoD Low Back Pain Clinical Practice Guideline
Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society

- Recommendation 7: For patients who do not improve with self-care options, clinicians should consider the addition of nonpharmacologic therapy with proven benefits – for acute low back pain, spinal manipulation; <u>for chronic or subacute, intensive interdisciplinary rehab, exercise therapy, acupuncture, massage, spinal manipulation, yoga, CBT or progressive relaxation.</u>

(Chou et al., Ann Intern Med, 2007)

What do we know about the evidence?

- Suggests that exercise therapy is at least as effective as other conservative therapies and slightly to moderately superior to no treatment or usual care; although,
- Studies generally graded as low quality
- Inconsistency in outcome measures
- Heterogeneity
  - Study populations
  - Exercise intervention

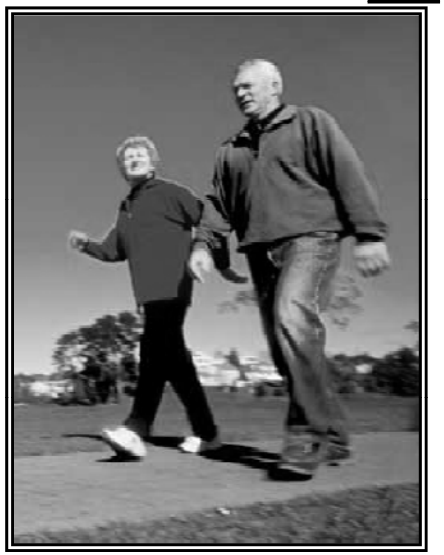
(Chou et al., Ann Intern Med, 2007; Hayden, Ann Intern Med, 2005; van Tulder, Eur Spine J, 2006; van Middlekoop Eur Spine J, 2011)

Exercise Therapy Defined As:

"a series of specific movements with the aim of training or developing the body a routine practice or physical training to promote good physical health"

Van Middelkoop, Eur Spine J, 2011

Exercise Therapy



Supervised exercise program or formal home regimen, ranging from programs aimed at general physical fitness or aerobic exercise to those aimed at muscle strengthening, flexibility, or stretching

Boot camp wasn't like this—Veterans (from left) "Big D" Donaldson, Jay Shufeldt and Art Harrison take part in a yoga class with instructor Dawn Landon at the San Diego VA.

Characteristics Associated with Improvements in Pain & Function for Chronic Low Back Pain

- Individually designed
- Supervised (e.g., home with regular therapist follow-up or individually supervised)
- Adherence to achieve high dose or high intensity (≥ 20 h)
- Stretching (for pain) and strengthening (for function)

(Hayden et al., Ann Intern Med, 2005)

What is the Best Type of Exercise Therapy for Low Back Pain?

Summary

- Chronic back pain is prevalent
- Patients use many different strategies to manage chronic pain including some that may not be recommended

Summary Cont.

- Exercise is a key$_{com}$ ponent in the management of people with chronic back pain (as well as most other chronic conditions) not to mention that another VA study found that . . .

"A Little Regular Exercise Extends Men's Lives"

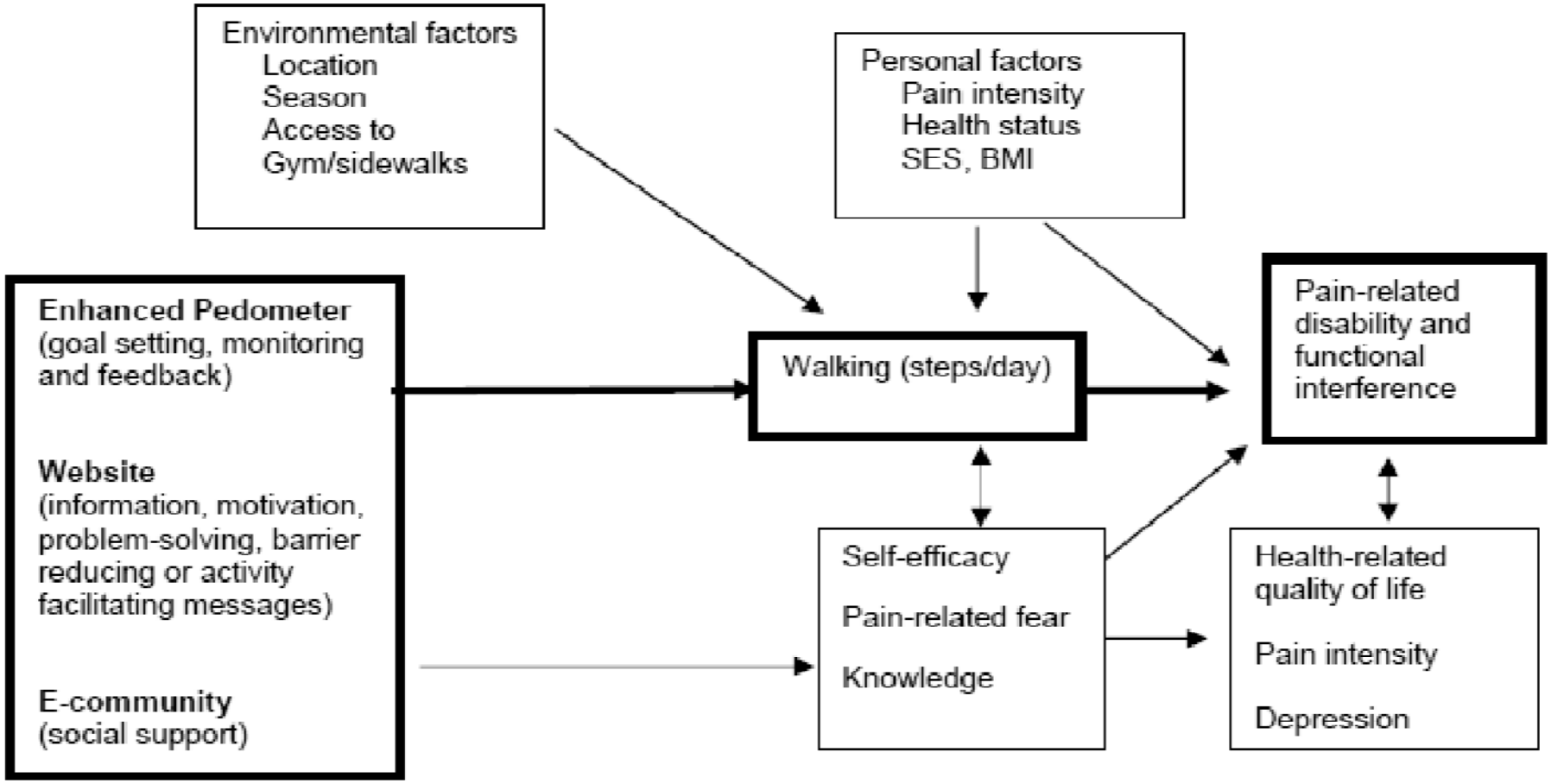
Washingtonpost.com, January 23, 2008

- Most effective exercise regimen and how to effectively and efficiently assist people with using exercise therapy is still to be determined

Veterans Walk to Beat Back Pain

VA HSR&D IIR 07-177

Conceptual Framework

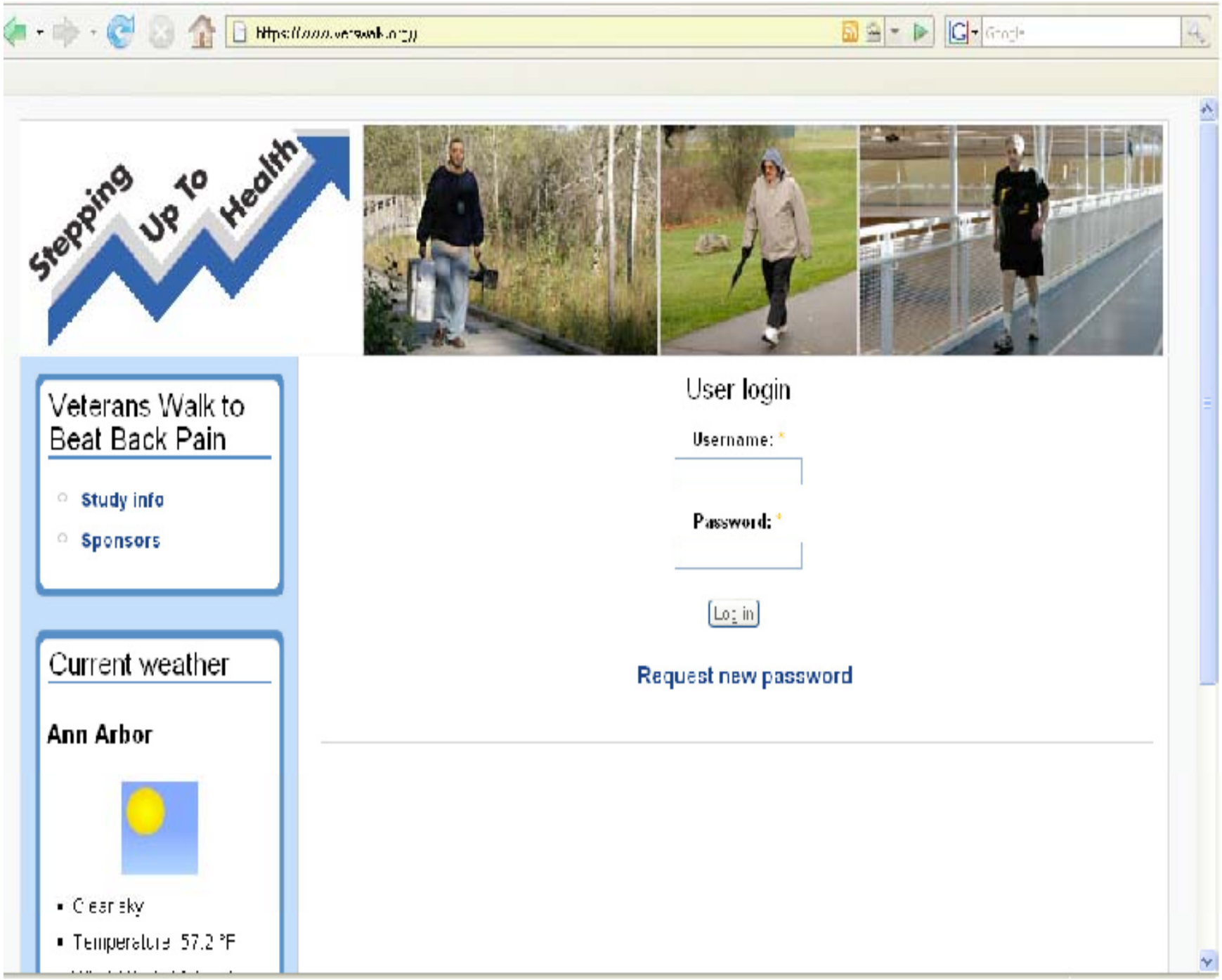


Krein, BMC Musculoskeletal Disorders, 2010

Walking

- Requires little skill or training
- Low cost – walking shoes
- Most people can do it
- Low injury rate
- Physical activity of choice for adults
- Easy to objectively monitor

Enhanced (uploading) Pedometer


Stepping Up To Health
Veterans Walk to Beat Back Pain
Study info
Sponsors
Current weather
Ann Arbor
Clear sky
Temperature 57.2 °F
User login
Username: *
Password: *
Log in
Request new password

Stepping Up To Health

Your walking goal for today is **8300 steps**.

Report an illness or injury

Reema

- Home
- Getting started
- Download software
- Forums
  - Profile
- Basic Back Care
- F.A.Q.
- Questions or concerns
- Logout

Veterans Walk to Beat Back Pain

- Study info
- Sponsors

Today's weather

89 degrees at Ann Arbor, MI.

Your progress

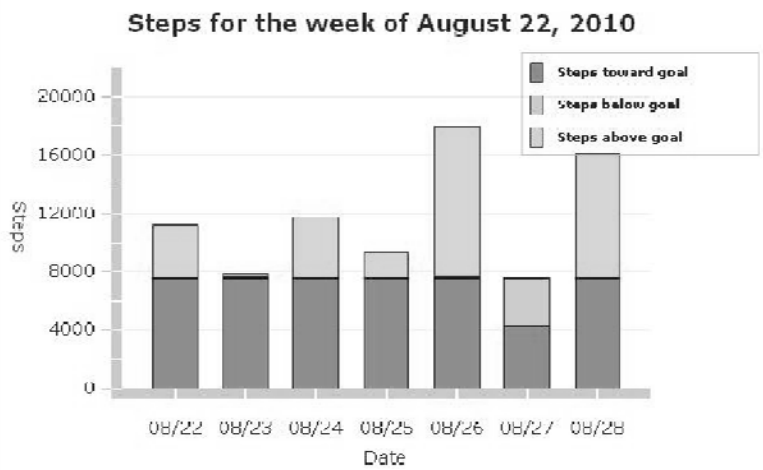
For the week of August 22, 2010 to August 28, 2010, you met your walking goal of 7600 steps on 6 of 7 days. Your average daily step count for the week was 11234 steps.

Click on a day in the calendar to view that week. Click on a bar in the graph to see the day's detail.

August 2010

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Week and day | Step types | Goal history



Active conversations | In the spotlight | Quick tip | Walking blog

- What's your snack of choice?
- Is anybody out there??
- Inversion Tables
- Road Blocks and Super High Ways
- What's that blinking "B1" icon on my pedometer?

more

Stepping Up To Health

Your walking goal for today is **3300 steps**.

Report an Illness or Injury

Maria

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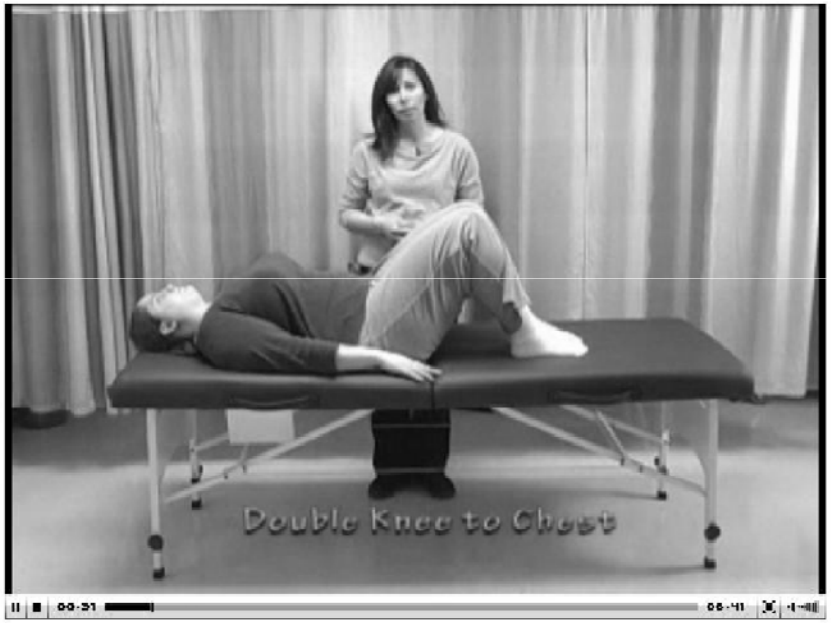
Basic Back Care refresher



Are you missing any of the handouts from the Basic Back Care class? Are you interested in seeing the handouts in full color?

We have many of the handouts from the Basic Back Care class available below. You will need **Adobe Reader** to view these.

Attachment	Size
Basic Back Care refresher	1.73 MB

Specific Aims

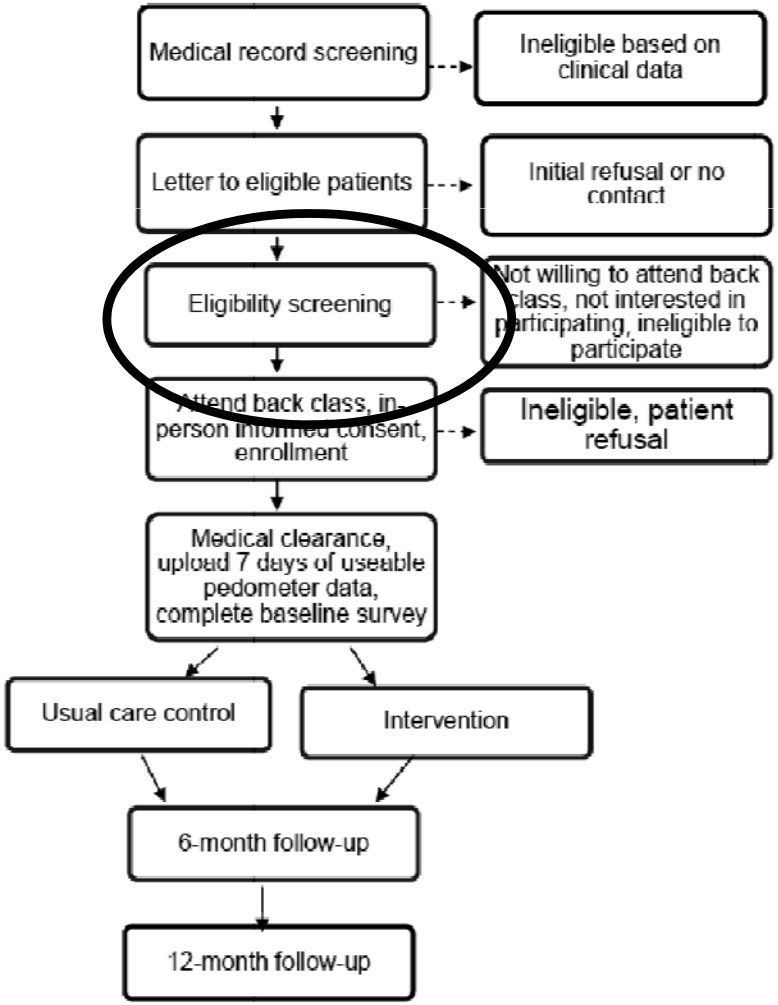
- **Aim 1** To determine whether a pedometer-based Internet-mediated intervention reduces pain-related functional interference among patients with chronic back pain in the short term and over a 12-month timeframe.

- **Aim 2** To assess the effect of the intervention on walking (measured by step counts), quality of life, pain intensity, pain related fear, and self-efficacy for exercise.

- **Aim 3** To identify factors associated with a sustained increase in walking over a 12-month timeframe among patients randomized to the intervention.

Recruitment and Eligibility Criteria

- Provider referral to back class or two or more outpatient encounters in the prior 12 months with a diagnosis of back pain with no neurologic findings (ICD-9-CM codes 724.2, 724.5, 846.0-846.9).
  - 1) persistent back pain > 3 months;
  - 2) sedentary lifestyle (< 150 minutes of physical activity per week);
  - 3) at least weekly access to a computer with a USB port and Internet access;
  - 4) able to walk at least one block.

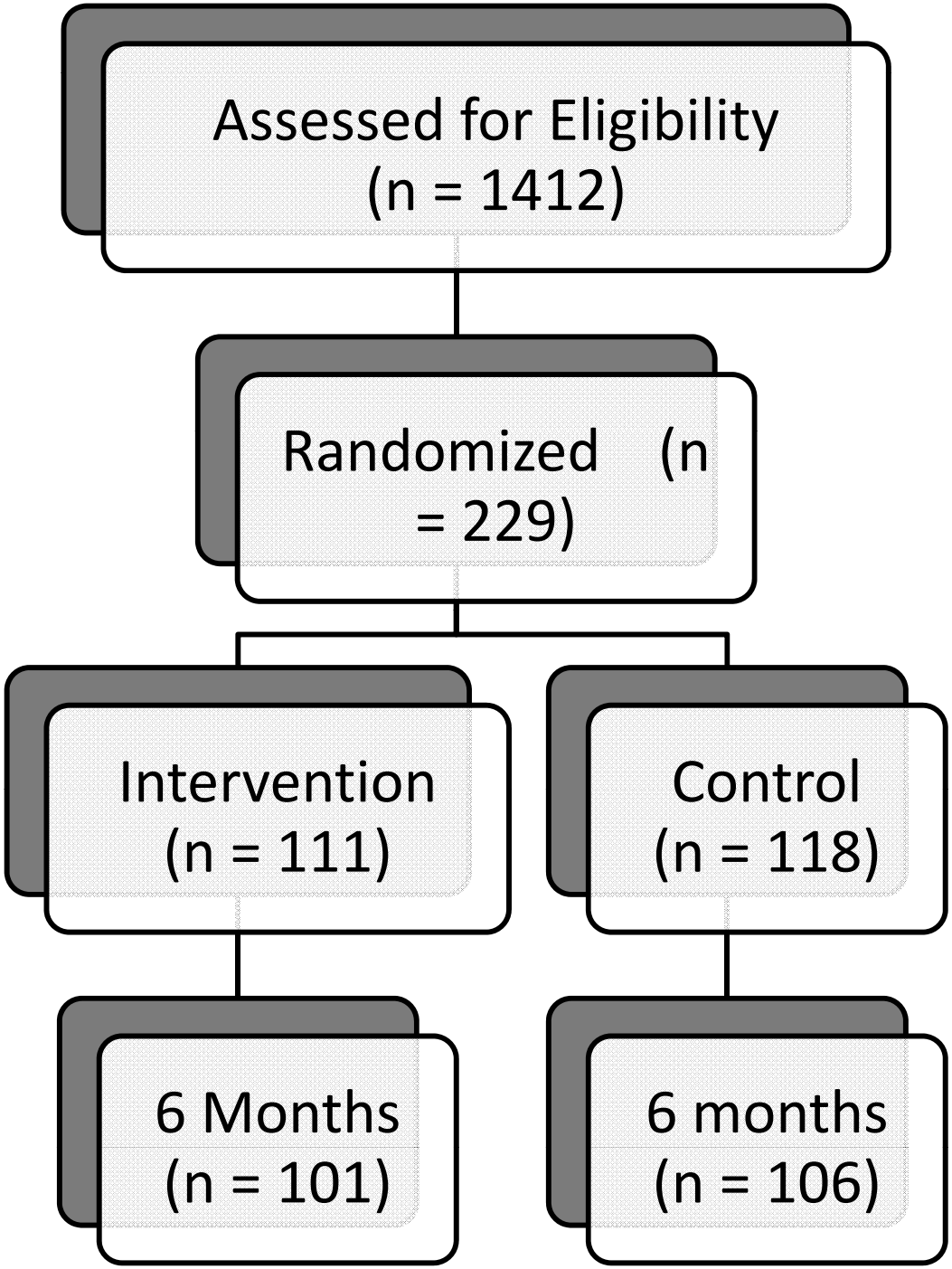

Medical record screening
Ineligible based on clinical data
Letter to eligible patients
Initial refusal or no contact
Eligibility screening
Not willing to attend back class, not interested in participating, ineligible to participate
Attend back class, in-person informed consent, enrollment
Ineligible, patient refusal
Medical clearance, upload 7 days of useable pedometer data, complete baseline survey
Usual care control
Intervention
6-month follow-up
12-month follow-up

Study Outcomes

- Primary outcome is pain-related functional interference
  - Roland and Morris Back Pain Disability Questionnaire (RDQ) index
  - MOS pain and function
- Secondary outcomes
  - average daily steps, general health-related quality of life, pain intensity, pain-related fear or kinesiophobia, depressive symptoms

Data Collection

- Survey
  - Baseline
  - 6 months
  - 12 month
- 6 minute walk test
- Pedometer data and website use
- Electronic medical record data (utilization of VA healthcare services, medications)
- Qualitative interviews


Assessed for Eligibility
(n = 1412)
Randomized (n
= 229)
Intervention
(n = 111)
Control
(n = 118)
6 Months
(n = 101)
6 months
(n = 106)

Baseline Characteristics

Variable	Control	Intervention
Age (mean, SD)	51.9 (12.8)	51.2 (12.5)
Gender (% male)	86	89
General Health Status (% fair or poor)	42.7	41.6
Depressive symptoms score (mean, SD)	13.8 (6.6)	12.2 (6.4)
Report take narcotic medications (%)	48.7	40.7
Employment status (% employed)	30.5	38.7
Roland-Morris Disability score (mean, SD)	9.8 (5.7)	9.1 (6.0)
Pain severity last 4 weeks (mean, SD)	6.1 (1.6)	6.0 (1.9)
Step Counts (mean, SD)	4228 (2239)	4364 (2654)

6 Month Preliminary Results
Complete Case Analysis

Variable	Control	Intervention	Adj diff	P-value
Roland-Morris Disability score	9.2 (5.5)	7.2 (5.6)	1.53	0.02*
Pain effects	43.6 (18.1)	37.6 (19.5)	3.60	0.09*
Pain severity	5.1 (2.1)	4.7 (2.1)	0.48	0.06*
Exercise self-efficacy	5.7 (2.5)	6.7 (2.4)	0.81	0.006*
Fear avoidance scale	14.0 (5.9)	13.2 (6.0)	0.63	0.42*
Avg. step counts	4455 (2988)	5107 (3125)	-	0.19

***P-value for difference between groups, adjusted for baseline value**

6 Month Preliminary Results Adjusted for Non-response

Variable	Adjusted difference	P-value	Adjusted difference Roland > 4	P-value
Roland-Morris Disability score	1.24	0.09	1.99	.008
Pain effects	2.56	0.25	4.83	0.055
Pain severity	0.51	0.06	0.62	0.045
Exercise self-efficacy	0.66	0.03	0.64	0.07

Conclusions

Patients in the Internet mediated intervention, compared with those in the control group, reported less back pain related disability and increased their physical activity (walking) in the 6-months following study enrollment.

Intervention patients also reported less pain and improvements in general pain-related function.

Implications

- A facilitated walking intervention that uses an enhanced pedometer and the Internet may be an important strategy for enhancing management and improving access to an effective exercise program for Veterans with chronic back pain.

- This type of primarily automated intervention could be an efficient way of delivering or supplementing care provided through traditional facility based programs.

Would you have tried walking to help manage your back pain?

“ probably not. Now, yes. But then, I didn’t know what the study or the walking could do for me. But I do now . . . I had a lot of back pain, that’s why I was in the study. And, it seemed to alleviate my back pain. In fact, I credit it to the walking, and the true test came when I had to go off the program because of my illness and the back pain returned. In fact, just up until recently, when I had resumed walking.”

Study Team

- Caroline Richardson
- Reema Kadri
- Maria Hughes
- Tabitha Metreger
- Myra Kim
- Rob Holleman
- Bob Werner
- Jack Rosenberg
- John Piette
- Eve Kerr
- Bob Kerns

Thank you to the VAAAHS Physical Therapy Department

Thank You!

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