

at work

Information on workplace research from the Institute for Work & Health

This Issue

For Policy-Makers

U.S. workers with job-related back pain more likely to be treated by medical doctors

For Clinicians

Exercise helps relieve chronic low-back pain according to new systematic reviews

For Researchers

IWH revises policies to better safeguard privacy of research subjects

Infocus

This Issue's Supplement:

How is privacy legislation affecting health research? Learn about the costs and challenges facing research organizations and how IWH is safeguarding sensitive data.

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Research Excellence
Advancing Employee Health

Exercise helps relieve chronic low-back pain according to new systematic reviews

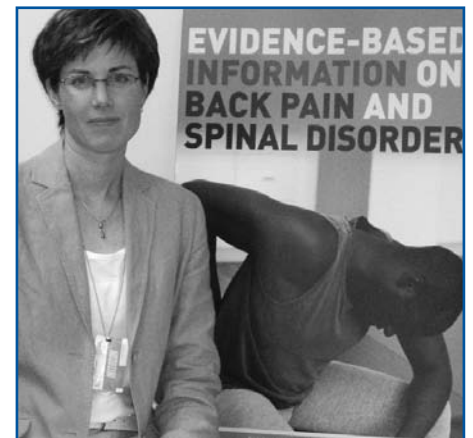
Even though exercise therapy is often recommended for patients with low-back pain, the scientific evidence in favour of such therapy has not been especially clear.

Now two new systematic reviews of the scientific literature show that certain kinds of exercise do, in fact, have positive benefits for certain patients with back pain.

“The review found that exercise therapy alleviated pain and improved function for some people with non-specific low-back pain—back pain that isn’t the result of a condition like arthritis or infection,” says Jill Hayden, the lead investigator and a research fellow at the Institute for Work & Health.

Hayden searched the literature published up to October 2004 and reviewed 61 published randomized controlled studies that evaluated the benefits of exercise compared to other treatments or no treatment at all.

The analysis updated an earlier review by the Cochrane Collaboration which was published in 1999 and captured many new research studies. The studies looked at the usefulness of exercise therapy for patients in the acute stage (defined as symptoms lasting up to six weeks), those in the sub-acute stage (symptoms lasting from six to 12 weeks), and finally those with chronic low-back pain (symptoms lasting longer than three months).



Lead investigator Jill Hayden.

“By combining the results of these studies, we are able to better understand the true effect of exercise,” says Hayden. “We found that adults with chronic low-back pain had modest improvements in physical function and pain with exercise therapy.”

Hayden’s review did not provide evidence that exercise therapy is more effective than other treatments for patients with acute low-back pain. However, she cautions that exercise is not the same as keeping active, which is strongly recommended for acute low-back pain patients.

“The majority of people in the acute phase will get better on their own, without treatment, so it is difficult to identify more effective strategies,” says Hayden.

Only a small number of studies examined exercise for sub-acute low-

The Institute for Work & Health is an independent, not-for-profit organization whose mission is to conduct and share research with workers, labour, employers, clinicians and policy-makers to promote, protect and improve the health of working people.

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What Researchers Mean By...

“CONFOUNDING VARIABLES”

In the simplest experiment, one investigates the relationship between two things by deliberately producing change in one of them and...observing the change in the other. These “things” in which change takes place are called “variables.”

—Robson, 1994

Are workers who wear supportive back belts on the job less prone to back strain compared to those who don't?

Before researchers design a study to answer this question, they must carefully consider all the variables that could affect their findings. If they fail to do so, the results of their study might not be valid.

Let's say a study* found that, over a 12-month period, one group of lumberyard workers who wore back belts had half the rate of back strain compared to another group of workers who didn't wear the belts. (In this case, wearing the belts is what researchers call the “independent variable,” while the occurrence of back strain is the “dependent variable.”)

Based on this finding, it would be tempting to recommend that all lumberyard workers protect themselves from back strain by wearing supportive belts. But are the study results valid? Was one group of workers protected by the independent variable—their use of back belts—or was something else going on?

The “something else” would be a confounding variable, defined as “an unforeseen and unaccounted-for variable that jeopardizes the reliability and validity of an experiment's outcome.”

Before designing their study, the researchers should have known that the two groups of workers—who were employed in different lumberyards—didn't do the same amount of heavy lifting. One lumberyard typically used forklifts to load and deliver orders by truck, while the workers at the other location were sometimes expected to load orders into the customers' vehicles. So this variable—the amount of lifting—rather than back belt use could explain the different rates of back strain in the two groups.

When researchers design a study or interpret data, they must make every

effort to account for variables that might introduce errors into the results. These include participant variables like age, gender and education, situational variables—some aspect of the task or environment—or even temporary variables like hunger or fatigue that might influence what happens during the study.

It's important to understand that while many such variables exist, they are not necessarily confounding in each and every study. Also, it would be impossible for researchers to control for every possible confounding variable. In the real world, they try to control only those variables that might be relevant to the outcome.

One way researchers try to avoid confounding variables is to use a randomized experiment design. With randomization, all the background characteristics should be similar in the groups being studied, which minimizes the influence of confounding factors.

In the back belt study, they might have observed or surveyed the workers at both lumberyards to determine how much lifting they actually did and then designed the study comparing the effects of back belt use in two more similar groups of workers. Researchers can also use a number of analytic and statistical strategies such as stratified analysis and multivariate analysis to control for certain variables and thus protect the validity of their findings. ▲▲

*The case example presented here is fictional. However, in their 2003 report “The use of back belts for prevention of occupational low back pain,” Institute researchers Carlo Ammendolia, Mickey Kerr and Claire Bombardier stated that most randomized controlled trials reviewed failed to show positive results with the use of a back belt. The Canadian Centre for Occupational Health and Safety and the U.S. National Institute for Occupational Safety and Health currently do not support the use of back belts as a measure to prevent back pain.

In the Fall 2005 issue of At Work, we will look at what researchers mean by “observational studies,” “case control studies,” “cohort studies” and “controlled clinical trials.”



Researchers

IWH REVISES POLICIES TO BETTER SAFEGUARD PRIVACY OF RESEARCH SUBJECTS

The Institute has just completed an intensive year-long process to revise its privacy policies, partly in response to recent changes in federal and provincial privacy legislation.

The revised policies, which were publicly launched this spring, govern practices and procedures for handling data and personal information in three main areas: research, communications and human resources.

“Ensuring the confidentiality of personal information has always been paramount at the Institute,” says President



Dr. Cameron Mustard. “We applied the best national and international standards in developing the new policies, which encompass ten guiding principles.”

For example, in the area of research, there are firm limits on how personal information about study participants can be collected and used. Researchers may collect only that information which is required by the project, Mustard explains.

“If a researcher doesn’t need to know the subjects’ marital status in order to answer their particular research question, for example, they cannot ask for that information.”

The Institute has appointed Dr. Sheilah Hogg-Johnson as IWH Privacy Officer. Hogg-Johnson, who heads the Institute’s Data and Information Systems team, played a key role in updating the privacy policies.

Another key feature of the revised privacy policies involves safeguarding personal data collected during the course of IWH studies. This includes preventing unauthorized access to or disclosure of information.

“Ensuring the confidentiality of personal information has always been paramount at the Institute.”

– Dr. Cameron Mustard, IWH President & Senior Scientist

“We adhere to this principle by maintaining a high level of physical and technical security, including safe storage of information in locked cabinets and offices,” explains Hogg-Johnson. “We also use firewalls to guard our electronic databases and, if necessary, we encrypt sensitive data—that is, convert it to code.”

All Institute staff will have received training in the revised privacy policies and procedures by mid-summer, and a privacy audit will be conducted later in the year.

Information on the Institute’s privacy statements will be available on the web site (www.iwh.on.ca).

To read about the impact of privacy legislation on research, please read this issue of Infocus.

Exercise helps relieve chronic low-back pain according to new systematic reviews (continued from page 1)

back pain. There was some evidence that this group benefited from exercise programs that gradually increase in intensity (type and amount).

Hayden conducted a second systematic review of 43 research studies about back pain and exercise. These studies were aimed at identifying particular characteristics of exercise interventions that contributed to decreased pain and improved function in patients with chronic low-back pain. It’s the first time a review has comprehensively examined

the characteristics of exercise interventions for low-back pain.

“When we analyzed the research, we found that the most effective strategy seemed to be supervised, individually tailored exercise programs,” says Hayden. “Stretching and strengthening exercises were the most effective in improving pain and function in adults with chronic low-back pain.”

Both systematic reviews were published in the May 3, 2005 issue of the *Annals of Internal Medicine*. ▲

The articles are available for a fee from: www.annals.org.

**COMING
THIS FALL**

**AtWork gets
a new look!**



U.S. WORKERS WITH JOB-RELATED BACK PAIN MORE LIKELY TO BE TREATED BY MEDICAL DOCTORS

When it comes to seeking care for low-back pain, physicians are the first choice among American workers, according to a recent study by Institute for Work & Health Scientist Dr. Pierre Côté.

The study of 1,104 injured workers with occupational back pain—defined as back pain related to work—found that nearly 90 per cent of U.S. workers who received care consulted a medical doctor. In some cases, injured workers opted for exclusive care from their physician, while others combined medical care with services from chiropractors or physical therapists.

“Despite public attention to alternative modes of care for back pain, medical doctors still are the primary source of treatment among workers with back pain,” says Côté, who was part of the research team which included Dr. Marjorie Baldwin and was led by Dr. William Johnson, both from Arizona State University.

Using data from the Arizona State University Healthy Back Study, the researchers looked at how quickly injured workers from five large U.S. employers entered the health care system. They also tracked which type or types of care providers were consulted by the workers during the first one to four months after injury.

Besides finding that nine out of 10 injured workers chose to be cared for by physicians, the researchers also noted that the ultimate choice of provider depended on who was making the selection—the worker or the employer. For example, when workers had the choice, they were much more likely to receive care from a chiropractor than workers

whose employers had the power to select an initial care provider.

These patterns tend to reflect the U.S. workers’ compensation systems which are very different from the compensation systems in Canada, says Côté. “In some states, the selection of the first health care provider is decided by the employer,” he explains.

Research by Côté and others has found that people who consult a care provider for back pain are likelier to

“Despite public attention to alternative modes of care for back pain, medical doctors still are the primary source of treatment among workers with back pain.”

—Dr. Pierre Côté, IWH Scientist

experience longer episodes of back pain, to have more severe pain, and to be more limited in their daily activities.

The latest study of U.S. workers confirms these earlier findings: those who received combined care from physicians, physical therapists and chiropractors reported more severe symptoms and more activity limitations than those who saw just a physician or just a chiropractor.

“In some cases, individuals may choose to see a combination of providers if their recovery expectations were not met after consulting one care provider,” explains Côté. In other cases, workers may be referred from their medical doctor to a chiropractor or physical therapist.



Côté says researchers were surprised to find that eight per cent of the U.S. workers with occupational back pain never sought any type of care, despite the fact that they filed a workers’ compensation claim. This was true even though all the workers were completely covered for any medical or treatment costs related to occupational injury, and their injuries were severe enough for them to file compensation claims.

It’s estimated that low-back pain is responsible for the loss of 149 million workdays annually in the U.S., with 102 million workdays lost because of occupational back pain.

“Our results indicate that employers play an important role in directing injured workers toward care. However, a small but significant number of injured workers do not seek care for their back pain,” says Côté. “Investigating how choices for care affect the costs and outcomes of low-back pain is an important topic for further research.” ▲

The study, “Early Patterns of Care for Occupational Back Pain” was published this past spring in SPINE, Volume 30, Number 5, p 581-587.

Two Institute-sponsored web sites get a new look

Users of the Cochrane Back Review Group (BRG) web site will probably notice some changes when they visit www.cochrane.iwh.on.ca.

The Cochrane BRG, which is hosted by the Institute for Work & Health, is one of 50 international review groups that make up the Cochrane Collaboration. The Back Review Group coordinates literature reviews of primary and secondary prevention and treatment of neck and back pain and other spinal disorders.

"We're very excited about the re-launch of this site," says BRG Coordinator Vicki Pennick. "A lot of user input, including consultation with our external editorial board has gone into the re-development."



The new Cochrane Back Review Group web site.

The site's content is now organized in a more user-friendly way, and users should find it easier to navigate through the site, says Pennick. The site also contains new information specific to consumers and review authors, including information about completed reviews.

Other enhancements include newsfeeds from the Cochrane Collaboration and a new interface design. "The site is built in such a way that it is more accessible to visually impaired individuals who use screen readers," explains IWH Graphic Designer Carol Holland who was responsible for the site re-development. The new design also features a search option to allow users to search the BRG and IWH web sites at the same time.

The Cochrane BRG team welcomes feedback from visitors to the site, Pennick says. Please submit comments and suggestions by e-mail to cochrane@iwh.on.ca.

The Disabilities of the Arm, Shoulder and Hand (DASH) web site has also undergone a recent facelift. The web site, www.dash.iwh.on.ca, which was re-launched this spring, is aimed mainly at clinicians who are interested in the DASH tool.



The new Disabilities of the Arm, Shoulder and Hand web site.

The DASH Outcome Measure is a 30-item, self-report questionnaire designed to measure physical function and symptoms in people with any of several musculoskeletal disorders of the upper limb. The tool gives clinicians and researchers the advantage of having a single, reliable instrument that can be used to assess any or all joints in the upper extremity.

The DASH Outcome Measure provides greater precision, it may be the best choice for clinicians who wish to monitor arm pain and function in individual patients.

You can download both the DASH Outcome Measure (PDF-EN) and the QuickDASH (PDF-EN) here. These working in languages other than English can also download a variety of approved translations.

For information about how to use the DASH tools and to learn how they were developed and tested, please consult the DASH Outcome Measure User's Manual which you can [access here](http://www.dash.iwh.on.ca).

The Institute for Work & Health respects the privacy of individuals with whom it communicates and recognizes the importance of protecting the privacy of all personal information. We take every precaution to ensure the privacy, accuracy and security of the personal information provided to us. We invite you to read our [Privacy Statement](http://www.dash.iwh.on.ca).

The web site content is now more reader-friendly and the site navigation has been simplified. Visitors will also find information about the shorter version of the DASH tool, called the QuickDASH, along with new translated versions and an updated list of research references.

Mark your calendars for the 2005 Alf Nachemson Lecture on September 19, 2005

The Institute for Work & Health is pleased to announce Dr. Glenn Pransky as the recipient of the 2005 Alf Nachemson Lectureship. Dr. Pransky is Director of the Center for Disability Research, Liberty Mutual Research Center for Safety & Health, in Massachusetts, USA.

Dr. Pransky will deliver his remarks at a special lecture in Toronto on Monday, September 19, 2005.

The Alf Nachemson Lectureship was established in 2002 to honour Dr. Nachemson's

significant contribution to research evidence in clinical decision-making. Nachemson, a distinguished orthopedic surgeon and researcher from Sweden, is a founding member of the IWH Scientific Advisory Committee and was co-editor of the Institute-based Cochrane Collaboration Back Review Group from 1995 to 2002. Throughout his career, Nachemson has integrated research knowledge into clinical decision-making related to work and health.

The lectureship is awarded annually to a prominent national or international individ-

ual who has made a significant and unique contribution to a number of work and health-related themes, including the interface between work and health, the role of evidence in decision-making or evidence-based practice in the prevention of work-relevant injury, illness or disability.

Look for details about the event on the IWH web site at http://www.iwh.on.ca/about/nach_lecture.php.

If you are interested in attending, please RSVP to Melissa Cohen at 416-927-2027 ext. 2173 or by e-mail at mcohen@iwh.on.ca.

National meeting features IWH “mini-symposium” on systematic reviews

The Canadian Association for Research on Work and Health (CARWH) recently held its third bi-annual symposium in Vancouver, British Columbia. The national event offers researchers and other health professionals the chance to share knowledge about improving the health and safety of working Canadians.

The Institute chaired a mini-symposium on systematic reviews that defined and highlighted this specialized type of research. IWH Information Specialist Emma Irvin and Research Associate Kim Cullen explained the complex process of doing a systematic review of the scientific literature in a particular area.

“In recent years, IWH has developed substantial expertise in conducting systematic reviews in occupational health,” says Sandra Sinclair, IWH Director of Operations,

who chaired the mini-symposium. “We do whatever we can to share this experience with others.”

Three Institute researchers presented the results of their own systematic reviews completed in the last 18 months: Dr. Renée-Louise Franche discussed her review of “Workplace-based Return-to-work Interventions” and Dr. Emile Tompa and Kim Cullen presented the results of the review on “Workplace-based Participatory Ergonomic Interventions.”

Those attending the CARWH conference also heard about the Institute’s activities in transferring knowledge from systematic reviews from IWH Knowledge Transfer & Exchange Associate Rhoda Reardon.

“It was fascinating to meet with a diverse group of researchers in work and health who

were so interested in how we’re structuring systematic reviews,” says Reardon. “It was affirming to see that people are interested in learning how we incorporate knowledge transfer into systematic reviews.”

Institute President Dr. Cameron Mustard and PhD candidate Jacob Etches presented their research on income dynamics and adult mortality in Canada, and Dr. Emile Tompa discussed his study on the health consequences of precarious employment experiences. PhD candidate Heather Scott also presented her thesis work on work-related insecurity. Finally, Dr. Jaime Guzman and Research Associate Debbie Jones highlighted their current research which aims to identify key modifiable factors that might be used to prevent disability in people with back pain.

For more information about CARWH, visit their web site at <http://www.workhealth.ca>.

SAC member commends Institute researchers and staff

This spring, the Institute held its annual Scientific Advisory Committee (SAC) meeting to discuss the direction, scope and focus of IWH research activities. The current eight-member SAC includes academics and researchers from North America and Europe who have a special interest in workplace health research.

SAC members engage in an open dialogue with Institute scientists, staff and executive in a number of areas: they assess the merit and quality of research at the Institute; they discuss the recruitment of scientific staff; and they suggest strategies for developing networks which will advance the Institute’s research agenda.

The newest member of the SAC who attended the April meeting is Dr. Sherine Gabriel, Chair of the Department of Health Sciences at the Mayo Clinic in Rochester, Minnesota.



Dr. Sherine Gabriel

She commended the Institute, both on the quality of its research and on its growth over the past 15 years.

“There is some impressive talent and capabilities within this group,” she said. She encouraged the Institute to collaborate more with other organizations and to continue focusing on research excellence.



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Manager, Communications: Kathy Knowles Chapeskie
Editor: Reshma Mathur
Layout & Design: Carol Holland
Contributors: Kathy Knowles Chapeskie, Melissa Cohen, Evelyne Michaels, Reshma Mathur, Elizabeth Resendes
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