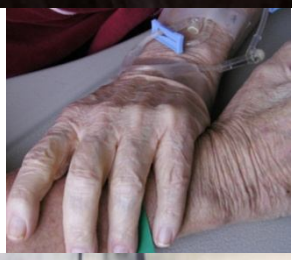
Literary review compilation on massage

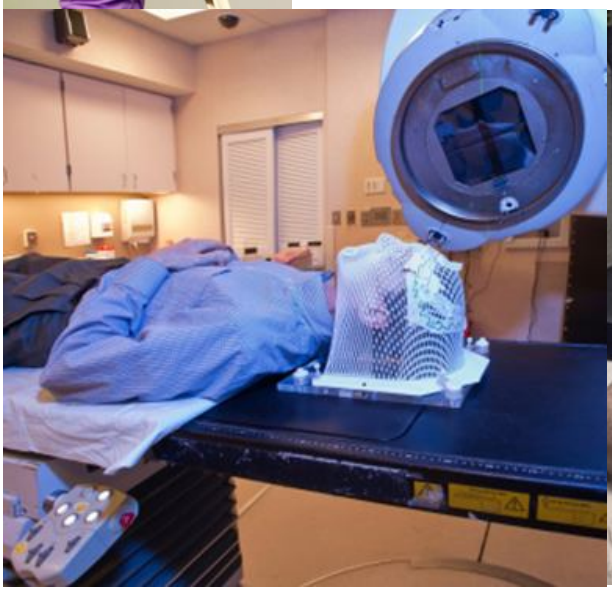
Compiled by AQTN, 2013

Including both benefits and limitations of massage

SHOULD MASSAGE BE INTEGRATED INTO QUEBEC HOSPITALS?

What is the opportunity cost?





Acronyms

AAP	American Academy of Pediatrics
ABM	Academy of Breastfeeding Medicine
ACDR CPR	Active compression-decompression cardiopulmonary resuscitation
ACR	American College of Rheumatology
ADHD	Attention deficit hyperactivity disorder
AMTA	American Massage Therapy Association
ART	Antiretroviral therapy
ATOM	Attitudes Towards Massage
BPI	Brief Pain Inventory
BMTs	Bone marrow transplants
CAM	Complementary and alternative medicine
CBT	Cognitive-behavioral therapy
CES-D	Center for Epidemiological Studies-Depression Scale
CDI	Children's Depression Inventory
CF	Cystic fibrosis
CGH	Cervicogenic headache
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CK	Creatine kinase
CNCP	Chronic non-cancer pain
CRF	Cancer-related fatigue
CRAO	Central retinal artery occlusion
CSE	Combined spinal epidural
EFA	Essential fatty acid
FAP	Functional abdominal pain
FM	Fibromyalgia
HADS	Hospital Anxiety and Depression Scale
HCT	Hematopoietic cell transplantation
IBS	Irritable bowel syndrome
IPT	Interpersonal Psychotherapy
JIA	Juvenile idiopathic arthritis
LBP	Low-back pain
LBW	Low birthweight
MLD	Manual lymph drainage
NAS	Neonatal abstinence syndrome

NCC	National Cancer Centre
NICU	Neonatal intensive care unit
NIH	National Institutes of Health
NIHR	National Institute for Health Research
NK	Natural killer
NRP	Neonatal Resuscitation Program
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
OA	Osteoarthritis
PCG	Pregnancy and Childbirth Group
PD	Parkinson's disease
PIPP	Premature Infant Pain Profile
POMS	Profile of Mood State
PPD	Postpartum depression
PPI	Present pain intensity
PROMIS	Patient-Reported Outcomes Measurement Information System
PROQOLID	Patient-Reported Outcome and Quality of Life Instruments Database
QOL	Quality of life
RA	Rheumatoid arthritis
RCTs	Randomized controlled trials
RDQ	Roland Disability Questionnaire
RLS	Restless legs syndrome
ROM	Range of motion
RP	Retinitis pigmentosa
RSCL	Rotterdam Symptom Checklist
SCT	Stem cell transplantation
SMT	Spinal manipulative therapy
STAI	State-Trait Anxiety Inventory
STIs	Sexually transmitted infections
TENS	Transcutaneous electrical nerve stimulation
TM	Therapeutic massage
WHO	World Health Organization

Here are the sources of data employed to compile this literary review, published in September 2013. The original list of articles was compiled in July and was not revisited thereafter.

Cochrane Library – 140 articles

http://www.thecochranelibrary.com/

Searching title, abstract and keywords for: "massage benefits", all results are included. Many articles were excluded due to being either non-relevant or removed content. Their titles and links are included in this paper, but are excluded from the table of contents to reduce text size. In total over 50 articles were retained from The Cochrane Library.

Medscape – 48 articles

http://www.medscape.com/

We retained 48 articles from the search “massage therapy”, with quotes. All results were included for the last five years.

Pub Med – 58 articles

http://www.ncbi.nlm.nih.gov/

We ran a search for: (“massage therapy” and benefits) – without parenthesis, and included all results.

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Introduction

This literary review sets out to explore the evidence about the benefits and limitations of massage therapy as documented in the scientific literature. Special attention is given to massage therapy studies that provide insights and suggestions to optimize savings in the hospital setting.

This document may also serve as an information source for the growing number of people suffering from illness or afflictions and are interested in complementary alternative medicine (CAM) and massage therapy (MT) in particular.

It is only through a comprehensive literary review that one can begin to establish massage's place within the current Western medicine framework. This paper includes a section on the benefits of massage such as proven short and long term results. We will compare various massage techniques as documented in the literature and include tips for best results in a section titled specifications. We will also address massage's limitations, its dangers and what is known about its mechanisms of impact, using the literature as a basis. This literary review may more accurately be described as a compilation of the most recent research available on reputable online journals.

Although massage therapy is one of the most commonly used CAM approaches. It is important that the reader understand that **the use of CAM and the benefits provided from CAM are two entirely distinct issues**. Here are three examples to illustrate and exemplify this distinction, which is often a source of confusion.

1) In ancient times, sacrificing an animal or even a human to the Gods to ask for their favor for rain in dry seasons is an example that requires no explanation, its use and its benefits are (thankfully) distinct.

2) In modern times, knocking on wood is a common ritualized behavior in North America. We understand that it does not substantially decrease the risk of bad-luck. Use of this behavior does not imply that is has benefits.

3) In the same train of thought but more specific to massage therapy, if we find that many people are relying on massage therapy for treating tendinitis, it would be false to conclude that massage must be effective for treating tendinitis. It would also be false to conclude that massage is not effective, the relationship, also called correlation, must be established by other means; essentially its effects must be measured.

Defining massage therapy

Defining massage therapy poses a difficult challenge because it is varied and multidimensional. There are many variations of massage such as Swedish, Californian, Shiatsu, Polarity and hundreds more[1][2][3]. In addition, massage therapists who learn more than one modality tend to combine their knowledge to

[1] http://www.massagetherapy.com/glossary/
[2] http://aamt.com.au/about-massage/massage-modalities/
[3] http://livinglifeforce.tripod.com/massagetech.html

create their own unique flavor. In addition, training requirements differ depending on the region and regulations where a clinical study may take place. Interestingly, it is often reported that the most important variable for students choosing a training program in massage is the teacher, rather than the school.

Let's begin by presenting various definitions encountered in the literature:

- The American Massage Therapy Association (AMTA) defines massage as: '*manual soft tissue manipulation, [including] holding, causing movement, and/or applying pressure to the body*'.
    - This broad definition of massage therapy includes methods from clinical practice, ex: optic nerve massage, light compressive massage for congenital dacryocystocele[4] or cardiac massage. These are not relevant for this review.
- One article defines massage as: "*a form of systematic tactile and kinesthetic stimulation*".
- Another article defines massage as: "*the manual manipulation of soft tissue, performed by a person other than the recipient, intended to promote health and well-being*".
- Shiatsu massage involves primarily pressure, rotation and stretching, typically with the client on the floor on a mat, clothed and with no oil.
- Swedish massage involves primarily kneading, stroking, friction, tapping and vibration, limited clothing, and oil.

In short, we all know what a massage is, but none of the definitions were found to be both encompassing and specific enough to be universally used. Massage therapy therefore remains understood but undefined. This adds a layer of complexity to comparing clinical trials, not to mention the difficulty of creating a placebo massage for a double-blind trial.

Massage may include either single-dose (one treatment) or multiple-dose. It may be self-administered, as in self-massage, or received by another person. Our quality of life is a complex mix that includes our physical, mental, emotional, social, and spiritual qualities, each in varying degrees. As a result, the measured outcomes of massage on clients will differ based on these attributes. Massage therapy is inherently multi-dimensional; it includes three broad classifications of in terms of the response elicited from the client.

These three are:

1) Primary affective (feelings, emotions) ;
2) Physiological (organismic processes) ;
3) Behavioral (observable responses).

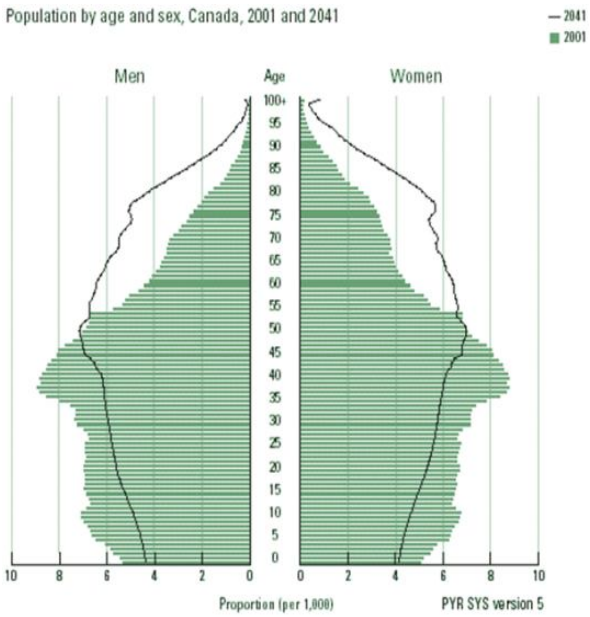
[4] http://en.wikipedia.org/wiki/Dacryocystitis

Methodology used

We used three of the most important free online databases including The Cochrane Collaboration[5], PubMed[6] and Medline[7]. We ran searches using keywords such as *Massage*, *massage therapy* and *"massage therapy" and benefits*. We then proceeded to review and synthesize the literature. We extracted excerpts to create the supporting arguments found in this document, which makes up the bulk of this text. As such, this is a comprehensive compilation of literary reviews of top quality sources.

Demographics

A basic understanding of demographics is essential if we are going to be assessing the role of massage therapy in the hospital and clinical setting.



Most of the Canadian population is between 30 and 55 years old. Life expectancy has been increasing for a long time, although there is speculation this is about to change with the current generation[8].

There is a known correlation between age and prescription medication use, dementia / Alzheimer's as well as cancer incidence – it is associated with the aging of the cells and the body. New and improved imaging and diagnostic tools will likely increase the number of cases reported. This suggests an increase in the number of people diagnosed with disease and illness. One survey showed that up to 20% of cancer patients use massage therapy[9].

Should massage be integrated in the Quebec hospital sector?

The answer, primarily a political decision, ultimately depends on whether massage therapy can generate savings as opposed to incur additional costs, in the form of either equipment, space, overhead and in particular: salaries.

[5] http://www.cochrane.org/
[6] http://www.ncbi.nlm.nih.gov/pubmed
[7] http://www.nlm.nih.gov/bsd/pmresources.html
[8] http://www.heart.org/HEARTORG/GettingHealthy/Overweight-in-Children_UCM_304054_Article.jsp
[9] Not a Quebec or Canadian survey, taken from article "25. Integrative Oncology: Complementary Therapies in Cancer Care"

Given that it is well established that the integration of multiple health care modalities is beneficial to patient health, "*Should Quebec integrate massage into the hospital sector*" **is the *wrong* question**, for several reasons.

For one, it is narrow-minded and oblivious to the reality of massage's place within the complementary alternative medicine spectrum. Putting forth such a question and backing up the answer with facts would require multiple large scale studies, including literary reviews and extensive field work analysis, due the inherent complexity involved. It is beyond the scope of this paper to establish which CAM modality would be best suited for hospitals, as we are evaluating massage therapy in isolation from other therapeutic modalities.

A more proper question to ask would be "*Which of the complementary therapeutic modalities would provide the most benefit to patients in hospitals, and for which illnesses and under which conditions*".

We now present a list of complementary alternative medicine approaches that is neither complete nor comprehensive. It is included to emphasize that considering massage therapy in isolation would be an obvious mistake in judgment.

Other approaches found in literary reviews include, in no specific order of importance:

- Cutaneous Stimulation
- Transcutaneous Electrical Nerve Stimulation
- Exercise
- Aerobic exercise
- Conditioning / strength managers
- Chiropractic manipulative techniques
- Spinal manipulation
- Osteopathic manipulative techniques
- Relaxation Techniques
- Breathing exercises
- Mindfulness-based Stress Reduction
- Hypnosis
- Psychotherapy
- Acupuncture
- Mind-body therapy
- Magnet therapy
- Eating well
- Sleep hygiene
- Biofeedback
- Trigger point
- Trager
- Physical exercise
- Botanical use
- Stress management
- Vitamin therapy
- Natural products (nonvitamin)
- Mineral products
- Herbal supplements
- Dietary supplements
- Antioxydants
- Prayer
- Spiritual healing
- Healing touch
- Hand and face stretching exercises
- Splints
- Resistance training
- Heat therapy / hot, cold compresses
- Electrotherapy
- Calming voices
- Deep breathing
- Humor
- Therapeutic touch
- Touch focused care
- Ultrasound
- Laser therapy
- Team coaches
- Life coaching
- Patient education
- Energy conservation

- Engergy therapy
- Proper nutrition and hydration
- Cranio-sacral therapy
- Bowen technique
- Reiki
- Yoga
- Meditation
- Reflexology
- Visualization
- Iridology
- Foot baths
- Music therapy
- Aromatherapy
- Essentials oils
- Bach flowers
- Cognitive-behavioral therapy
- Homeopathy
- Bright-light therapy
- Education
- Naturopathy
- Alexander's technique

Many complementary alternative therapies are seeking government recognition. Naturopaths and homeopaths in Quebec have been unsuccessfully lobbying to be recognized as primary care providers or to have an Order created in which they can operate. Some of these individuals and organizations have gone on record implying that physicians are scared they'd lose their job to alternative medicine. This literary review allows AQTN to postulate that this argument is predominantly one of ignorance, but not necessarily because CAM[10] would do a worse job (homeopathy heart surgery, anyone?) but because *the most important change required for a healthier society lies outside the scope of physicians, CAM providers and the Government.*

Lifestyle changes

The government and Western medicine, namely physicians, can't make you exercise, eat healthy and take time out of your day to relax. Lifestyle changes are personal choices, and **that** is the real key to a healthier society, it's no secret. Some call this preventative medicine, and herald education as the key. This is also misleading, as **education is not the key** in most instances. This may seem like a bold and false statement at first. However, if you dig a little deeper, there is an obvious and intuitive reason. Education is not the key because we are already educated! What does our society have to do for its population to make these lifestyle changes, given that physicians, CAM and the Government exert limited influence?

First, let's briefly establish the concept of meta-cognition, which means being aware that you are aware, it is extremely simple[11]. This is a first step towards action and driving change. You can become aware of anything, but awareness is akin to focus. Metaphorically it is like a flashlight in the dark; at any given moment your focus is too small to see the whole picture. It also is a skill you can improve over time with practice (just like massage).

[10] Complementary alternative medicine
[11] It does not iterate further, humans cannot be aware that we are aware that we are aware.

As you become increasingly aware of your actions - you can more easily shape them to how you want to live your life. Meta-cognition of your posture or your grocery list items are practical examples. So how can we explain the bad choices we all make? AQTN has a theory, consisting of a rational argument that is really nothing more than an opinion – we surmise that you, the reader, will agree.

We all recurrently make the same bad choices because of (1) a lack of meta-cognition and through (2) the rationalization of our choices.

Making it personal

The following few pages have been given a grey background color as they represent a discussion that is not directly in line with the main topic of this literary review on massage therapy.

Within the context of a therapist-client relationship, therapists are well positioned to provide certain elements of advice which, as demonstrated below, are generally common sense and would take the form of reminders rather than teaching. In addition, this section represents opinions and therefore is not being put forward as backed by scientific evidence.

Our actions and behaviors are not easily associated with their outcome in our daily lives. This makes us less likely to be proactive. A smoker may smoke until the doctor tells them they have lung cancer; most then stop. People eat fatty foods until there are overweight, continue to eat fatty foods until they're obese, only then do they start to worry and diet.

You may not exercise 20 minutes 3x/week or meditate because it does not really help you in your life - taking the metro to work, being stuck in traffic, sitting at a desk working or studying, watching TV or cooking supper. You may actually experience sore muscles after exercising for the first time in months: not a pleasant feeling.

We often do not see immediate results from positive lifestyle changes in our day-to-day lives.

Let's return to meta-cognition: being aware that you are aware. What if you never ate another store-bought cookie or drank another soft drink? What if you never ate another donut, greasy pizza or a serving of French fries or a "*poutine*[12]"? What if your supper had more vegetables than red meat, every day – with only natural fruit as dessert, no ice cream! No more birthday cakes, whether yours or someone else's? What if you devoted two hours a week to keep your brain healthy and volunteered in a social activity? What if you had a regular bedtime seven nights a week? What if you read each label on the food products you consumed, and researched those foreign to you to find answers? What if you wore sunscreen while under the sun and ate an apple a day? What if you chose water over fruit juice, while also showing restraint on alcohol consumption? What if you had a daily activity to limit or reduce

[12] http://en.wikipedia.org/wiki/Poutine

stress and anxiety? What if you only bought whole grain bread (not white); never smoked, never allowed anger or resentment to linger, what if you made an effort to laugh more, care more and be more socially involved?

- *Who even has time for all this?*

These are all lifestyle changes and hopefully are nothing new to the reader. The intent here is that all readers will see at least one change they could make.

We are already educated; education is not the problem. What's a birthday cake when we live in a city full of non-electric polluting cars and smog? What's a can of soda when 1 in 5 persons will suffer from depression[13] at some point and use prescription medication?

The conceptual distance between behavior and outcome (fewer strokes, reduced risk of melanoma, etc.) makes us less likely to make the right choices. We choose instant gratification rather than sacrifice for our own well-being. We only live once, this is the ultimate justification. We rationalize away the bad with the good; it is essential. Any justification, true or false, is valid.

So first is meta-cognition, identifying the bad decisions we make. Perhaps most people are already aware of these decisions. Second is justification. To live a normal life, in which we are aware of our bad decisions, we must justify them to maintain our sanity.

If you find yourself constantly making the wrong choices and you are aware of them with no justification, you are in trouble. You will be guilt-ridden, you will erode your self-esteem, your self-worth, your self-confidence and your self-valuation; each time the event happens you chip away a small piece. Unjustified bad lifestyle choices have serious consequences for the psyche.

Some people blame marketing for our poor lifestyle choices. Ads nag us to buy chips, chocolate and other feel-good or look-good products. One big food marketing ploy is the "no-fat" items at the grocery store.

We know that a bag of sugar contains "no-fat". Sugar is broken-down and converted into fat once it enters your body by the body. Companies market their foods as not having any fat, which is true, albeit misleading. Then there are special "Umbrella names" for chemical names that hide or at least conceal the real ingredients. In many mega large food stores entire aisles are filled with products we should not be consuming. Consumer preference is driven by price, marketing tactics, novelties, innovations, etc. Convenience stores sell cigarettes because people want to buy them. Who would want to buy a cigarette in 2013? The addicted.

To end this brief discussion on lifestyle changes, it is clear that education is important for lifestyle

[13] http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionmentalhealthstatistics.aspx

changes, but answers are only a few clicks away (Internet). Becoming aware of our choices and then modifying them cannot be accomplished by Governmental ads or by your physician or CAM provider.

They are a societal problem that can only be remedied by each individual. It's like the prevalence of violence in society, more education, more job opportunities and stronger family ties are tools to reduce violence, but in the end each violent act is a momentary lifestyle choice that an individual makes.

Education is important but is like a flashlight. Not in a dark room, but looking up at the stars – our lives, needs, wants and emotions are insanely complex and we are all unique.

Who will fund massage in hospitals?

Any integration into the Quebec health care system would require the cooperation and endorsement of doctors and other health professionals. We know that many doctors are already recommending massage to their clients. Certain insurance policies actually require their written recommendation as a condition for reimbursement. The important issue here is funding: who foots the bill for massage if integrated? There are various options, we will outline a few. For those who think "outside-the-box", there may be others.

1) **The Quebec government.**

   The government does not seem to be in a position to increase budget expenditures to pay for massage therapists for patients in hospitals, CLSC's, etc., most especially not at the average 60$[14] an hour that is seen in the private sector. Hospitals in Quebec are struggling to keep and pay their nurses, doctors, psychologists, occupational therapists and social workers along with other staff. The Quebec government also has other budgetary problems, such as road infrastructure and bridges in dire need of repairs.

   Let's assume the government pays an hourly-rate. Based on the duration of the massage therapy training program (400-1000 hours, 6-12 months), it is equivalent to the training of a medical secretary or a duly trained orderly. Their salary ranges from 15$ to 22$ an hour.

   If the government created thousands of jobs at 20$ an hour, this would probably have a ripple effect and reduce the average hourly-rate of massage in the private sector. Now, given that the average yearly income of a massage therapist[15] is already near 20,000$[16], many might have to go out of business. The argument of new job creation seems to be ill-founded, although it *is all speculation when talking about the future*. If the total # of jobs increases, the average would

[14] This literary review will assume 1$ a minute as an average price, Quebec spa's may charge over 100$ an hour while students may charge 20$.
[15] Honest as opposed to erotic massage parlors, who evidently earn enough to advertise in print …
[16] http://www.association.quebec.aqtn.ca/links.php?action=results&poll_ident=10

probably decrease (60$ versus 20$). More demand would satiate the supply. Prices go up when demand exceeds supply. Right now most massage therapists should be incredibly proud of themselves to be practicing, because many cannot make a living out of their practice.

There's a need for better medical equipment in hospitals, new infrastructure, not to mention shortening the waiting lists Canadians must endure for medical procedures. *People are dying while they wait on our health care system's waiting list, yet we entertain massage for pain knowing that pain can be decreased with almost all CAM modalities and that massage is not the safest modality (prayer, meditation and reflexology, among others, are considered safer). Cleary massage therapy is in fact among the TOP safest alternative medicine modalities* as per the scientific literature. *While cruel and added here without a reference, the point is that* ***there is an opportunity cost for introducing massage into the Quebec's health care team****, and by definition economics allows us to point the opportunity cost anywhere, such as the consequences of waiting lists*[17]*.*

2) **CSST** could pay. This only makes sense if it were cost-effective. We can suppose that physiotherapy shows better results in most cases, as this literary review will attempt to demonstrate later.

3) Funding from **charities** is unlikely to reach significant and sustained proportions.

4) **Donations and fundraising** might be viable, but is unlikely to reach significant and sustained proportions.

5) **Operating privately** – this is already being done. There is essentially no barrier between a massage therapist willing to provide their services to a client except money and proximity. If one can afford a 60$ / hour massage daily, the option is there. The problem is most cancer-stricken individuals can't afford this; nor can the average Quebec household.

6) **Volunteering** by-passes the entire issue of who pays; and is also already being done. We should commend those who are devoting their time to helping the sick. Many AQTN members are actively engaged in Montreal with such rewarding but time-consuming activities.

7) **Insurance companies** can pay. They already reimburse massage in many policies. Insurance companies are in the business of making money. If the cost/benefit of massage cut their costs, massage therapy would be prevalent. They offer short-term disability, long-term disability, group benefits, life insurance, annuities… The fact that massage is not mandated in these polices tells us that insurance companies and their actuaries have deemed massage not to save them money. This implies that the hospital sector would likely not benefit from savings either.

[17] http://en.wikipedia.org/wiki/Opportunity_cost

8) **We could train nurses** to perform the 20 minute massage typically seen as beneficial. This has also already been done and tested at various hospitals. Nurses know anatomy, have a code of ethics, know proper medical record-keeping, they understand sexuality and they already have a relationship with the patients. The training they'd need would be minimal. The same applies to orderly's, to a lesser extent.

The underlying premise here is that massage therapy can help manage or cure or improve the health of hospital patients. As we will see, this is by and large not the case.

> *When massage is combined with individualized education and in particular exercise, it is highly effective - chiefly because of the lifestyle changes that accompany it. It borderlines on being a cure, preventatively: less obesity leads to less diabetes, better fit bodies lead to less heart problems, less ultraviolet sunlight leads to less melanoma, less stress and isolation leads to less depression, better sleep leads to a sharper mind, etc. But once a person has diabetes, a heart problem, melanoma, severely disrupted sleep patterns or depression, massage does not help; it's too late. Someone who is truly clinically depressed cannot go for a massage because they can't, by definition, leave the house.*

Massage therapy does not seem to be able to reduce the costs of hospitalizations. The most promising cost-reduction application of massage seen in this literary review is the reduced length of a hospital stay for infants. There's a catch - the massage is provided by the essentially untrained mother.

The remainder of this discussion will be much more positive, devoted to exploring the benefits of massage therapy as documented in the scientific literature.

The avid reader will note some contradictions in the literature study conclusions. This is because the scientific literature abounds with studies with different outcomes. The pillar upon which evidence based medicine (EBM) rests is that when clinical trials are replicated with similar findings, the specific issue gains credibility. Once there is enough evidence for a given treatment for a given cause, the treatment usually becomes accepted as part of best-practices. It is therefore normal, for example, that some studies show change in cortisol levels while others don't.

Short versus long term benefits

RHEUMATIC DISEASES

- Literary articles suggest there are short-term benefits for rheumatic diseases.
- Few studies show long term benefits for rheumatic diseases ;
- One hour of Swedish massage for 4 weeks showed benefits for up to 8 weeks after the end of the 4 weeks ;

ANXIETY, RELAXATION, STRESS

- Anxiety reduction is the most common longer term benefit of all reported benefits ;
- Literary articles suggest massage offers short-term reduction of stress ;
- Long-term benefits for anxiety ;
- Relaxation from massage is sustained for at least 16 to 18 hours post intervention ;

PAIN

- Either musculoskeletal or chronic pain: improvement at 1 week after treatment, but not sustained at 4 weeks.
- Another study on chronic back pain showed benefits lasting at least 6 months.

OTHER

- Biweekly 30 minute massage on back & neck for five weeks showed a sustained reduction in fatigue for 6 additional weeks ;
- Six weeks of massage in older persons resulted in immediate and long-term improvements in postural stability and blood pressure ;
- 20 minute sessions via employer-funded, on-site massage therapy demonstrated no long term effects ;
- Swedish or light massage showed a reduction in symptoms for up to 48 hours (oncology).

We see some contradictions in the results of the studies, which is quite normal. However, if we put all of the evidence above together, it is clear that there are no long term benefits when considering a period of more than six months. It seems rather obvious that a massage does not offer long-term benefits, unless of course if treatments are sustained. Interestingly, we see this same pattern in many spheres of our lives. Body builders who stop lifting weights for months lose their muscle mass. People who stop taking vitamins lose the added protection and value of those vitamins. The elderly who stop exercising their brain see parts of it shrink on MRI's. This suggests that for sustained results, massage ought to be part of a regular routine - integrated somehow into the lifestyle as a regular activity. This recommendation is made in a vacuum, however, as we are only focused on massage. There are multiple other alternative medicine modalities that would argue that their approach should be integrated instead of massage, and in many cases they are correct with regards to the benefits.

Specifications

We have already seen that massage therapy is multi-dimensional. Other factors that impact results include the duration of treatment, the location of massage, the massage intensity and the psychological

impact, referring to the practitioner-client relationship. There is also the issue of qualifications of the therapist and the type of massage. Here are specifications noted in the literature:

- The optimal duration for knee osteoarthritis is one hour of massage per week ;
- Massage should be painless ;
- Massage intensity should be increased gradually ;
- Moderate pressure is almost always better than light pressure. Moderate pressure is necessary for massage effects to be therapeutic ;
- The physiological response of the muscle depends on the pattern of applied pressure during the massage ;
- The most significant effect occurs 15 minutes after the massage intervention (article dealing with pain in metastatic bone disease).

Proven health benefits of massage

There can be a positive snowball effect with regards to health benefits. Key elements include better quality sleep, which itself favors healing, and reduced anxiety. But are massage's health benefits blown out of proportion or are they underreported?

Massage advertising frequently says it can "reduce muscular tension" or "increase blood circulation". These are true physiological effects from massage, but you can reduce muscular tension by lying on a flat surface (such as your bed) and closing your eyes and relaxing; or by gently exercising which is actually better than massage for sore muscles according to multiple studies. You can increase blood circulation by going for a brief walk. If you are incapacitated and cannot walk, perhaps a massage is not the best solution for you, although it may provide comfort. As we are about to see, there are many other benefits less frequently advertised!

- Massage can benefit people with HIV/AIDS when used *in conjunction* with other techniques such as meditation and relaxation training ;
- Anxiety, pain, nausea, sleep quality and general quality of life - one 30 minute massage for three consecutive weeks is deemed sufficient ;

- Easing general aches and pains, especially in patients who are bed-bound or have limited mobility ;
- Sleep quality, reducing sleep disturbances and increasing restorative sleep ;
- Connective tissue massage *combined* with joint manipulation for scleroderma helped improve fist closure, hand motion, hand function and quality of life. Fist closure, however, also improved under the control group in this study ;
- Reducing side effects of chemotherapy and radiation (breast cancer patients). Also reduces depression, anger, distress, nausea, fatigue, anxiety and pain and improves mood (administered to patients following bone marrow transplantation) ;
- Pain relief and better satisfaction for pain management in labor (but so did immersion in water, relaxation, acupuncture) – small study size ;
- Relaxation for preventing preterm labor – there is some evidence that mind-body therapies (meditation, massage, yoga, reflexology, breathing exercises, visualization, music therapy and aromatherapy) are effective ;
- Massage treatments attenuates stress-driven body fat acquisition in male preterm infants, a great non-invasive therapy. Also reduces metabolic problems to preterm infants as they age ;
- May shorten hospital stay in premature infants ;
- Pain, stiffness, physical functional stability for knee osteoarthritis ;
- Effective for posterior shoulder tightness (less effective in patients who'd had symptoms for longer duration) ;
- Massage decreases neonatal abstinence syndrome ;
- Massage is more effective than TENS or Sham TENS for fibromyalgia ;
- Massage may help those who have an eating disorder such as anorexia nervosa[18], a complex eating disorder.

[18] http://www.helpguide.org/mental/anorexia_signs_symptoms_causes_treatment.htm

Pain and massage

Pain is a highly intricate, variable, individual experience. Genetic research has discovered that a predisposition to some pain conditions can be inherited, such as migraine or fibromyalgia. In addition, each person has a unique response to pain[19]. Acute pain is immediate, severe and short-lived, while chronic pain usually lasts longer than six months.

There is also psychic pain, such as after a sudden job loss, a family break-up, during depression or following a devastating disaster.

What does pain really mean, how does it differ from suffering[20]? It functions as a warning signal that our body sends us. It is akin to automatic meta-cognition. Pain is only part of us, the part saying "*pay attention*". One might even say that pain is a manifestation of the sub-conscious taking over the consciousness for us to do something: take an Advil for a headache, remove our hand from a hot stove, etc.

Massage's most commonly treated types of pain are back, neck, knee and shoulder. Many literary studies suggest that massage is not effective for *acute* back pain. For chronic back pain, however, benefits may last up to 6 months! However, no clinically meaningful difference was shown between relaxation and structural massage in terms of relieving disability or symptoms.

Back pain is one of the most reported health ailments in North America. It is allegedly the second most common reason given for missing a workday and the #1 most common cause of disability. Reducing the impact of back pain on the economy could reduce health care costs, short and long-term disability costs, insurance costs and most importantly lead to better health.

All literary reviews by AQTN[21] to date cite some degree of effectiveness for pain, a fascinating observation. In fact, most of the health benefits derived from complementary alternative medicine (CAM) in the scientific literature overlap to some extent. To understand why the relief of pain is such a commonly treated symptom, we must first understand pain. Let's start by examining the top 10 causes for pain[22] - the items in bold are benefits noted from all AQTN CAM literary reviews[23].

1. Un-medicated childbirth ;
2. Burn pain and the process of debridement (removing dead skin) ;
3. Shingles ;

[19] Pain: the science and culture of why we hurt, Marni Jackson, ISBN 0-679-31190-4.
[20] The difference between paid and suffering will not be addressed here.
[21] Reflexology, homeopathy, traditional Chinese medicine and massage
[22] Pain: the science and culture of why we hurt, Marni Jackson, ISBN 0-679-31190-4.
[23] Reflexology review, homeopathy review, traditional Chinese medicine review and massage therapy review.

4. **Cancer pain (bone pain in particular) ;**
5. Cluster headaches and trigeminal neuralgia ;
6. Kidney stones ;
7. **Rheumatoid arthritis ;**
8. **Migraine ;**
9. **Depression (psychic pain) ;**
10. **Fibromyalgia.**

Pain is subjective and experienced differently among people. It is also remembered differently. If the terms "*experiencing self*" and "*remembering self*" are not clear to the reader, please visit our website to watch a video from arguably the most influential living psychologist alive; founder of behavioral economics and receiver of a Nobel laureate. It's not a technical video – everyone will understand. However, without understanding the distinction between the "*experiencing self*" and the "*remembering self*", the reader lacks the foundation to understand how we experience pain. You can find the video here:

www.AQTN.ca >> Literary Reviews >> Massage Literary Review >>

Watch the embedded TED talk.

To complete our understanding of pain and CAM, we turn to Dr. Kelly, a psychologist who teaches meditation techniques to people with chronic pain. He once ran a hospital pain clinic and believes that the most important element in addressing chronic pain may not be drugs or technology, but the compassionate presence of a therapist. He spent eleven years as the director of a "*stress, pain and chronic-disease clinic*" at the Toronto Hospital in Ontario. His approach views pain as having three levels: (1) sensory, (2) cognitive, and (3) affective or emotional. His meditation courses help people feel the distinction between these three levels, and to gain some control.

He goes on to say that after looking extensively at the research, he finds that the therapies that are the most effective work because the patients do the work[24].

We now have the understanding required to see the link between pain (cancer, rheumatoid arthritis, migraines, head-aches, mild depression) and complementary alternative medicine. The therapist's focus on the client, irrespective of the actual therapy, plays an important role. According to Dr. Kelly, 15% is attributable to the therapeutic technique and 30% to the therapist-client relationship. Obviously these statistics are an interpretation of his professional career devoted to understanding and managing pain. The percentages are by no means scientific, but the inference is that the *relationship* is twice as important as the *therapy*, and, even when combined, represent less than half of the total impact on

[24] Pain: the science and culture of why we hurt, Marni Jackson, ISBN 0-679-31190-4; could be reworded as lifestyle changes.

pain, which is attributable to other causes, including the prominent role of the patient while not in therapy. Remember also that his approach is meditation, not massage.

We saw in our introduction on pain that it is subjective and cannot be measured. This is important to remember when interpreting the results of feel-good therapies such massage.

While AQTN did not find any articles suggesting that participants receiving a massage in a clinical study exaggerated when they completed their pain questionnaires (McGill Pain Questionnaire[25], BPI[26], PPI[27] or other), this must certainly have happened at times. Why? The patient understands the implications of their answers. Given the pleasure and general sense of well-being that massage provides, there is an implicit social incentive to slightly exaggerate, and altruistic sense of civic duty.

By providing researchers with slightly exaggerated results at times, they knowingly increase the probable use of massage, thus sharing the experience with strangers. Now, because pain is subjective, participants cannot be caught if the exaggeration is reasonable.

There are volumes of books written about honesty and such behavior. Some books chronicle the lives of people who undergo clinical trials as a primary source of revenue – suffice it to say that it is documented that some participants regularly provide the "right" answer as opposed to the "true" answer to stay in the study to earn the full payout.

We must also consider the recruitment practices for some of the scientific studies. They often provide a financial incentive. So now a participant gets offered (1) money, (2) free massages, (3) they can fake pain without being caught, (4) they have an altruistic incentive to exaggerate results. Researchers can limit this, but cannot eliminate it. They can't cancel out outliers statistically, because the outliers are most likely to be exaggerating in the same direction: less pain.

We will conclude with two final notes on pain and massage. First, The American College of Physicians and the American Pain Society[28] are on record endorsing massage, acupuncture and chiropractic care for the treatment of chronic back pain, as opposed to acute. Second, a better understanding of pain does not diminish the value of the results found in the clinical studies on massage. It simply provides us with a broader context in which to better position massage's role with regards to pain and serves a reminder that massage therapy exists within the continuum of complementary alternative medicine.

[25] http://en.wikipedia.org/wiki/McGill_Pain_Questionnaire
[26] Brief Pain Inventory (see acronyms)
[27] Present pain intensity (see acronyms)
[28] Article Americans Spend $34 Billion on Alternative Medicine

No massage therapist required

Studies show massage to be beneficial when provided by a parent (with no or little massage training) in a hospital setting.

- Perinatal massage undertaken by the woman or her partner (once a week for 35 weeks) reduces likelihood of perinatal trauma & pain ;
- Promoting growth and development of premature and low birth-weight infants: parents can provide massage without much training. It is deemed time consuming for nurses ;
- Massage on neonates helps with weight gain, better sleep-wake patterns, enhanced neuromotor development, better emotional bonding, reduced rates of nosocomial infection (and thus reduced infant mortality in hospitals) ;
- Oils helps. Ideally the massage on neonates is performed by the mother, not a massage therapist. Another study compared massage between mother and skilled therapists on preterm infants and found no statistical difference. Mothers exhibited reduced depression symptoms and 3-6 days SHORTER hospital stay. This finding suggests that putting up posters within neonatal NICU's in hospitals could foster the brief exchange necessary for mothers to massage their child by making the information visible ;
- Juvenile rheumatoid arthritis: 15 minutes of massage by a parent per day for 30 days reduces anxiety and stress hormone cortisol ;
- Arm massage decreases pain and promotes a sense of closeness and support between partners ;
- Women whose husbands or partners massage them during labor experience shorter labors.

Comparing massage techniques

- Pressure point massage provides more relief than classic Swedish massage for low-back pain, and much more so when combined with exercise and education ;
- Manual lymph draining therapy was found more effective than connective tissue massage for rheumatic diseases / fibromyalgia (as does reflexology).

Massage versus exercice

- Exercise-related groin pain from sports: exercise therapy is superior to both conventional physiotherapy and / or massage ;
- Light exercise is preferred to ease pain than receiving a massage for sore muscles.

Limitations for massage

INFANTS LIMITATIONS

- Preterm infants: massage had no impact on weight gain, length of stay, motor scores or breastfeeding duration ;
- Opiate treatment for newborn infants – massage is not as effective as opiates ;

PAIN LIMITATIONS

- Neck pain: side effects of massage are temporary and benign. Massage was not superior to no treatment, hot packs, active range-of-movement exercises, acupuncture, exercises, sham laser, manual traction, mobilization and education;
- No firm conclusion for the effectiveness of massage for improving neck pain ;
- Chronic back pain: not effective compared to spinal manipulation, which is better. Chronic or sub-acute low back pain is ok with massage.

INFANTS LIMITATIONS

- Breast milk for breast feeding is significantly better than massage or placebo ;
- Not enough evidence for massage in treating antenatal depression ;
- Reducing perinatal trauma in second stage of labor, warm compresses is superior to massage ;
- Insufficient evidence for massage for pain management in labor ;
- In children having received a stem cell transplant, massage, relaxation, imagery work and humor were no more likely to increase happiness in healthy children at week 24 ;
- In treating cervicogenic head ache, upper cervical spine mobilization offers more clinical benefits than massage for headache-pain and neck mobility ;

- One study showed no immune system improvement from massage, or cortisol reduction ;
- No benefit of deep transverse friction massage combined with physiotherapy for tendinitis ;
- Dementia and related: insufficient evidence even when combined with pharmacological treatments ;
- Ice for osteoarthritis of the knee is preferable to massage of the knee ;
- Massage for idiopathic facial paralysis is ineffective (as is electro stimulation to hot packs and facial exercises) ;
- Limited evidence that massage, cognitive-behavioral therapy, relaxation or music-making reduce stress in healthcare workers ;
- Insufficient evidence to support the use of massage in reducing pain in preterm infants ;
- Manual lymph drainage followed by self-administered massage provides no benefit for reducing and controlling lymphedema of the limbs. Compression sleeves are better.

OTHER LIMITATIONS

- Low-dose vaginal estrogen is better as a first-line treatment to reverse the atrophy in postmenopausal breast cancer survivors.

Dangers and adverse side effects

Massage therapy is, in general, very safe. Complications are quite rare. Healthy patients may at times experience the occasional bruising, swelling of massaged muscles or a temporary increase in muscular pain. There may also be an allergic reaction to skin lubricants or oil used. Open wounds are obviously of great concern. One study showed that 10% of clients experienced minor discomfort, starting within 12 hours of massage, but lasting no more than 36 hours.

More serious complications include the following:

- Fractures ;
- Dislocations ;
- Internal hemorrhage ;
- Hepatic hematoma ;
- Dislodging of deep venous thrombosis ;

- Displacement or a ureteral stent.

Special care is required for cancer patients, such as coagulation disorders and low platelet count. Patients on Coumadin, Acetylsalicylic acid or Heparin medication also warrant special care.

Specialized training and experience is essential for massage therapists working with cancer patients, with a focus on communication with oncologists, recordkeeping and general safety.

AQTN[29] Tip: It is important for massage therapists that work with the general public be protected with liability insurance.

Mechanism of massage

The mechanism by which massage therapy exerts its effects on our bodies remains unknown. Modern Western medicine still has a lot of discovering to do, mainly as a result of our limited understanding of the brain, where emotions, pain and anxiety are manifested.

Some prevailing theories in the literature on the mechanism of how massage works include:

THE DIMENSIONS AT PLAY

- The therapist-client experience plays a role in the emotional dimension, which affects the efficacy of the physiological effects ;
- Massage elicits both physiological and psychological responses.

MEASURABLES

- Massage induces local biochemical changes that modulate the local blood flow and oxygenation in muscles ;
- Improved blood pressure, heart rate and respiratory rate ;
- Massage might help drain fluids in the context of pin site care ;
- It is thought massage helps clear out metabolic byproducts associated with tissue damage ;
- Reduces excitation of visceral afferent fibers ;
- Chronically tense muscles restrict blood flow and may be associated with fatigue ;
- Massage apparently does NOT clear lactic acid from tired muscles ;

[29] http://www.association.quebec.aqtn.ca

- Reduction in diastolic blood pressure ;
- Oxytocin is increased during skin-to-skin contact (in babies, oxytocin levels spike when newborn's hand massages the mother's breast) ;
- A foot massage may increase blood circulation, promotes relaxation, stimulates endorphin secretion (resulting in a reduction of pain and anxiety) ;

BRAIN and CORTISOL

- Subconscious mechanisms are certainly involved, however which ones are unknown. The reciprocal interplay between the body and mind is evident ;
- Reducing pain may be a subconscious effect on the parts of the brain associated with pain and emotions (tautological argument, very weak[30]) ;
- Dampen central pain perception processing ;
- Increased dopamine and serotonin along with decreased cortisol levels.
- Lowers serum cortisol levels ;
- Swedish massage results in significantly reduced salivary cortisol ;
- One study argues that the effect of massage on cortisol is so small it is not relevant and concludes other causal mechanisms are yet to be identified.

IMMUNE SYSTEM / INFLAMMATION

- 10 minutes of massage can help repair exercise-induced muscle damage by subduing inflammation and renewing mitochondria ;
- Increase in natural killer (NK) cells and lymphocyte levels in breast cancer patients ;
- Massage increases immune function (the mechanism is unknown), including NK cell number and cytotoxicity (adults, HIV-infected adults, adults with cancer, 2 to 4 year old children). One theory postulates an interplay between cell types, namely hormones and cytokines.

OTHER MECHANISMS

- Helping with sleep disturbances (helps restorative sleep) ;
- Essential oils might prolong and enhance the effects of massage ;

[30] AQTN comment

- The theory is that massage treatments attenuates stress-driven body fat acquisition in male preterm infants ;
- The use of oils (coconut oil or safflower oil) is absorbed and increases triglycerides in infants.

Concluding remarks

The aging demographics suggest that physical and mental illness and disease incidence will become much more prevalent in the next 20-30 years. Massage may play a small role in prevention, but it is not suited to treat these serious health conditions. Lifestyle changes are the single most important step we can take for prevention, and the decision is an individual one. We are each responsible for our own basic health – we are essentially alone in a fast-paced, stressful and individualized society.

A common thread throughout this review has been the incorporation of massage into hospitals. We have seen that, in terms of return on investment, is reasonable to conclude that massage should not be integrated into the hospital care system in Quebec based on budgetary criterion, if not only for the opportunity cost argument.

Massage's #1 strength is on the front of stress and anxiety reduction. As a preventative form of therapy, massage can generate substantial savings (millions of dollars), but so could relaxation, meditation, reflexology and yoga, all four of which can be self-administered and which require less formal training.

On the topic of pain, we see that if its cause is postural or related to daily activities, the pain will return and massage becomes an expensive Band-Aid. Massage can have a snowball effect: a few massages allow pain to subdue so exercise can be started and then massage may cease and the individual continues to strengthen muscles, or massage can improve sleep which improves the body's healing.

The largest reduction in costs for hospitals was when a massage was rendered by a parent to a newborn. AQTN contends that for the cost of a few posters in strategic places in Neonatal intensive care units (NICU's), Quebec can save money and have healthier children and possibly a lower infant mortality rate.

Conventional care for patients with cancer can safely incorporate massage therapy, although cancer patients may be at higher risk of rare adverse events. Oncologists should feel comfortable discussing massage therapy with patients and be able to refer patients to a qualified massage therapist as appropriate. The same holds true for other complementary alternative medicine approaches.

You may visit www.Association.Quebec.AQTN.ca to find a massage therapist near you in Quebec. There is also www.iMassageTherapist.org, a free online directory for all provinces, states and countries for massage therapists to advertise their own unique approaches.

Should YOU get a massage? Absolutely.

COCHRANE LIBRARY ARTICLES (140)

1. Uterine massage for preventing postpartum haemorrhage

http://summaries.cochrane.org/CD006431/uterine-massage-for-preventing-postpartum-haemorrhage

Bleeding after childbirth (postpartum haemorrhage) is the leading cause of maternal deaths in Sub-Saharan Africa and Egypt, and yet it is largely preventable. Possible causes of heavy bleeding directly following childbirth or within the first 24 hours are that the uterus fails to contract after delivery (uterine atony), a retained placenta, inverted or ruptured uterus, and cervical, vaginal, or perineal tears.

In well-resourced settings haemorrhage is reduced by routine active management of delivery of the placenta, called the third stage of labour, using a drug to stimulate contraction of the uterus such as oxytocin. Uterine massage after delivery of the placenta can also promote contraction of the uterus. This involves placing a hand on the woman's lower abdomen and stimulating the uterus by repetitive massaging or squeezing movements.

The results of this review are inconclusive.

2. Massage therapy for people with HIV/AIDS

http://summaries.cochrane.org/CD007502/massage-therapy-for-people-with-hivaids

This review of the literature supports that massage therapy can benefit people with HIV/AIDS by improving quality of life, particularly if they receive the therapy in conjunction with other techniques, such as meditation and relaxation training, and provide more benefit than any one of these techniques individually. Furthermore, it may be that massage therapy can improve their body's ability to fight the disease; however, this is not yet convincingly proven.
Further research required.

3. Antenatal perineal massage for reducing perineal trauma

http://summaries.cochrane.org/CD005123/antenatal-perineal-massage-for-reducing-perineal-trauma

Antenatal perineal massage helps reduce both perineal trauma during birth and pain afterwards.

Most women are keen to give birth without perineal tears, cuts and stitches, as these often cause pain and discomfort afterwards, and this can impact negatively on sexual functioning. Perineal massage during the last month of pregnancy has been suggested as a possible way of enabling the perineal tissue to expand more easily during birth. The review of four trials (2497 women) showed that perineal massage, undertaken by the woman or her partner (for as little as once or twice a week from 35 weeks), reduced the likelihood of perineal trauma (mainly episiotomies) and ongoing perineal pain. The impact was clear for women who had not given birth vaginally before, but was less clear for women who had. Women should be informed about the benefits of digital antenatal perineal massage.

4. Deep transverse friction massage for the treatment of tendinitis

http://summaries.cochrane.org/CD003528/deep-transverse-friction-massage-for-the-treatment-of-tendinitis

These RCTs showed no benefit of deep transverse friction massage combined with concurrent physiotherapy modalities, when compared to either a control group with the same physiotherapy modalities, excluding deep transverse friction massage, or other active therapies such as phonophoresis or therapeutic ultrasound combined to placebo ointment, for the following outcomes: pain relief involved in the iliotibial band friction syndrome in runners, pain relief, improved functional status and increased grip strength involved in extensor carpi radialis tendinitis. These conclusions are limited by the lack of studies available, the use of subjective and non-validated scales for measuring pain, the combination of several physiotherapy modalities and the low sample size of the RCTs included in this systematic review.

5. Massage for low-back pain | Cochrane Summaries

http://summaries.cochrane.org/CD001929/massage-for-low-back-pain

Low-back pain (LBP) is one of the most common and costly musculoskeletal problems in modern society. Seventy to 85% of the population will experience LBP at some time in their lives. Proponents of massage therapy claim it can minimize pain and disability, and speed return to normal function.

Massage in this review is defined as soft-tissue manipulation using hands or a mechanical device on any body part. Non-specific LBP indicates that no specific cause is detectable, such as infection, neoplasm, metastasis, osteoporosis, rheumatoid arthritis, fracture, inflammatory process or radicular syndrome (pain, tingling or numbnness spreading down the leg.

Thirteen randomized trials (1596 participants) assessing various types of massage therapy for low-back pain were included in this review. Eight had a high risk and five had a low risk of bias. Massage was more likely to work when combined with exercises (usually stretching) and education. The amount of benefit was more than that achieved by joint mobilization, relaxation, physical therapy, self-care

education or acupuncture. It seems that acupressure or pressure point massage techniques provide more relief than classic (Swedish) massage, although more research is needed to confirm this.
No serious adverse events were reported by any patient in the included studies. However, some patients reported soreness during or shortly after the treatment. Some patients also reported an allergic reaction (e.g. rash or pimples) to the massage oil.
In summary, massage might be beneficial for patients with subacute (lasting four to 12 weeks) and chronic (lasting longer than 12 weeks) non-specific low-back pain, especially when combined with exercises and education.

6. Massage for promoting mental and physical health in infants under the age of six months

http://summaries.cochrane.org/CD005038/massage-for-promoting-mental-and-physical-health-in-infants-under-the-age-of-six-months

This review aimed to assess the impact of infant massage on mental and physical outcomes for healthy mother-infant dyads in the first six months of life. A total of 34 randomized trials were included. Twenty of these had significant problems with their design and the way they were carried out. This means that the we are not as confident as we would otherwise be that the findings are valid. That is to say, the findings of these 20 included studies may over- or under-estimate the true effect of massage therapy.

We combined the data for 14 outcomes measured physical health and 18 outcomes measured aspects of mental health or development. The results show limited statistically significant benefits for a number of aspects of physical health (for example, weight, length, head/arm/leg circumference, 24-hour sleep duration; time spent crying or fussing; blood bilirubin and number of episodes of illness) and mental health/development (for example, fine/gross motor skills personal and social behaviour and psychomotor development). However, all significant results were lost either at later follow-up points or when we removed the large number of studies regarded to be at high risk of bias.

These findings do not currently support the use of infant massage with low-risk population groups of parents and infants. The results obtained from this review may be due to the poor quality of many of the included studies, the failure to address the mechanisms by which infant massage could have an impact on the outcomes being assessed, and the inclusion of inappropriate outcomes for population groups (such as weight gain). Future research should focus on the benefits of infant massage for higher-risk population groups (for example, socially deprived parent-infant dyads), the duration of massage programmes, and could address differences between babies being massaged by parents or healthcare professionals.

7. Massage for promoting growth and development of premature and low birth-weight infants

http://summaries.cochrane.org/CD000390/massage-for-promoting-growth-and-development-of-premature-and-low-birth-weight-infants

In utero, infants are exposed to physical stimulation. This raises the question whether gentle physical massage helps babies born before 37 weeks gestation or weighing less than 2500 grams (5.5 pounds) to develop after birth, and if it can improve their behaviour. The review only included randomized controlled trials, studies in which a group of babies received massage and was compared with a similar group which did not. The authors searched the medical literature and contacted experts and found 14 studies. In most of these studies babies were rubbed or stroked for about 15 minutes, three or four times a day, usually for five or ten days. Some studies also included "still, gentle touch", in which nurses put their hands on babies but did not rub or stroke them. On average, the studies found that when compared to babies who were not touched, babies receiving massage, but not "still, gentle touch", gained more weight each day (about 5 grams). They spent less time in hospital, had slightly better scores on developmental tests and had slightly fewer postnatal complications, although there were problems with how reliable these findings are. The studies did not show any negative effects of massage. Massage is time consuming for nurses to provide, but parents can perform massage without extensive training.

8. Insufficient evidence to draw conclusions about the possibility that massage and touch interventions are effective for dementia or associated problems

http://summaries.cochrane.org/CD004989/insufficient-evidence-to-draw-conclusions-about-the-possibility-that-massage-and-touch-interventions-are-effective-for-dementia-or-associated-problems

Massage and touch interventions have been proposed as an alternative or supplement to pharmacological and other treatments to counteract anxiety, agitated behaviour, depression, and if possible to slow down cognitive decline in people with dementia. This review provides an overview of existing research on the use of massage for people with dementia. Eighteen studies of the effects of massage interventions were located, but only two small studies were of a sufficient methodological rigour to count as evidence to answer the question of effect.

The small amount of evidence currently available is in favour of massage and touch interventions, but is too limited in scope to allow for general conclusions. Further, high-quality randomized controlled trials are required.

9. Abdominal massage for the treatment of constipation

http://summaries.cochrane.org/CD009089/abdominal-massage-for-the-treatment-of-constipation

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

10. Aromatherapy and massage for symptom relief in patients with cancer

http://summaries.cochrane.org/CD009873/aromatherapy-and-massage-for-symptom-relief-in-patients-with-cancer

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

11. Massage for mechanical neck pain | Cochrane Summaries

http://summaries.cochrane.org/CD004871/massage-for-mechanical-neck-pain

We included 15 trials in this review that assessed whether massage could help reduce neck pain and improve function. Results showed that massage is safe, and any side effects were temporary and benign. However, massage did not show a significant advantage over other comparison groups. Massage was compared with no treatment, hot packs, active range-of-movement exercises, acupuncture, exercises, sham laser, manual traction, mobilization, and education.

There were a number of challenges with this review. Overall, the quality of the studies was poor and the number of participants in most trials was small. Most studies lacked a clear definition, description, or rationale for the massage technique used. Details on the credentials or experience of the person giving the massage were often missing. There was such a range of massage techniques and comparison treatments in the studies that we could not combine the results to get an overall picture of the effectiveness of massage. Therefore, no firm conclusions could be drawn and the effectiveness of massage for improving neck pain and function remains unclear.

12. Massage, reflexology and other manual methods for managing pain in labour

http://summaries.cochrane.org/CD009290/massage-reflexology-and-other-manual-methods-for-managing-pain-in-labour

We found six studies, with data available from five trials on 326 women, looking at the use of massage in labour for managing pain. There were no studies on any of the other manual healing methods. The six studies were of reasonable quality but more participants are needed to provide robust information. We

found that women who used massage felt less pain during labour when compared with women given usual care during first stage. However, more research is needed.

13. Massage therapy for preventing pressure ulcers

http://summaries.cochrane.org/CD010518/massage-therapy-for-preventing-pressure-ulcers

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

14. Active compression-decompression using a hand-held device for emergency heart massage

http://summaries.cochrane.org/CD002751/active-compression-decompression-using-a-hand-held-device-for-emergency-heart-massage

Does not refer to a massage in the context of this literary review.

15. Interventions (other than pharmacological, psychosocial or psychological) for treating antenatal depression

http://summaries.cochrane.org/CD006795/interventions-other-than-pharmacological-psychosocial-or-psychological-for-treating-antenatal-depression

There is not enough evidence available to determine if acupuncture, maternal massage, bright light therapy, or omega-3 fatty acids are effective interventions in treating antenatal depression.

Approximately 12% of women will suffer from depression during their pregnancy. Research suggests that women who experience significant stress, have a history of depression, lack social support, have a history of domestic violence, are not married and living alone, and have an unintended pregnancy or poor relationships may be at a higher risk than other women of developing antenatal depression. Symptoms can include overwhelming feelings of sadness and grief, loss of interest or pleasure in activities that are usually enjoyed, feelings of worthlessness or guilt, poor sleep, a change in appetite, severe fatigue and difficulty concentrating. Unfortunately, depression during pregnancy is related to poor maternal self-care behaviours, which may influence the baby's health; it also places a woman at significant risk of developing postpartum depression. Many women prefer not to take medication during their pregnancy and they are often interested in other complementary forms of treatment. The review found only six randomized controlled trials involving 402 women evaluating depression-specific acupuncture (the insertion of needles into the superficial body tissues for remedial purposes), maternal massage, bright light therapy, and omega-3 fatty acids for the treatment of antenatal depression. The included trials were too small to reach any conclusions; they also used a variety of interventions,

outcome measures and comparisons. The trials provided insufficient evidence to determine if these therapies are effective treatments for antenatal depression. Further research is needed.

16. Perineal techniques during the second stage of labour for reducing perineal trauma

http://summaries.cochrane.org/CD006672/perineal-techniques-during-the-second-stage-of-labour-for-reducing-perineal-trauma

The objective of this review was to assess the effect of perineal techniques during the second stage of labour on the incidence of perineal trauma. We included eight randomised trials (involving 11,651 women) conducted in hospital settings in six countries. The participants in the included studies were women with no medical complications who were expecting a vaginal birth. We conclude that there is sufficient evidence to support the use of warm compresses to prevent perineal tears. The procedure has been shown to be acceptable to both women and midwives. From the meta-analyses we found significant effect of the use of warm compresses compared with hands off or no warm compress on the incidence of third- and fourth-degree tears. We also found a reduction in third- and fourth-degree tears with massage of the perineum versus hands off; and of 'hands off' the perineum versus 'hands on' to reduce the rate of episiotomy. The studies in our systematic review have considerable clinical variation and the terms 'hands on', 'hands off', 'standard care' and 'perineal support' can mean different things and are not always defined sufficiently. The methodological quality of the included studied also varied.

The question of how to prevent the tears is complicated and involves many other factors in addition to the perineal techniques that are evaluated here, e.g. birth position, women's tissue, speed of birth. More research is necessary in this field, to evaluate perineal techniques and also to answer the questions of determinants of perineal trauma.

Main results:

We included eight trials involving 11,651 randomised women. There was a significant effect of warm compresses on reduction of third- and fourth-degree tears (risk ratio (RR) 0.48, 95% confidence interval (CI) 0.28 to 0.84 (two studies, 1525 women)). There was also a significant effect towards favouring massage versus hands off to reduce third- and fourth-degree tears (RR 0.52, 95% CI 0.29 to 0.94 (two studies, 2147 women)). Hands off (or poised) versus hand on showed no effect on third- and fourth-degree tears, but we observed a significant effect of hands off on reduced rate of episiotomy (RR 0.69, 95% CI 0.50 to 0.96 (two studies, 6547 women)).

Authors' conclusions:
The use of warm compresses on the perineum is associated with a decreased occurrence of perineal trauma. The procedure has shown to be acceptable to women and midwives. This procedure may therefore be offered to women.

17. Complementary and alternative therapies for pain management in labour

http://summaries.cochrane.org/CD003521/complementary-and-alternative-therapies-for-pain-management-in-labour

The pain of labour can be intense, with tension, anxiety and fear making it worse. Many women would like to labour without using drugs, and turn to alternatives to manage pain. Many alternative methods are tried in order to help manage pain and include acupuncture, mind-body techniques, massage, reflexology, herbal medicines or homoeopathy, hypnosis and music. We found evidence that acupuncture and hypnosis may help relieve labour pain. There is insufficient evidence about the benefits of music, massage, relaxation, white noise, acupressure, aromatherapy, and no evidence about the effectiveness of massage or other complementary therapies.

Fourteen trials were included in the review with data reporting on 1537 women using different modalities of pain management; 1448 women were included in the meta-analysis.
Few other complementary therapies have been subjected to proper scientific study.

18. Physical therapies for reducing and controlling lymphoedema of the limbs

http://summaries.cochrane.org/CD003141/physical-therapies-for-reducing-and-controlling-lymphoedema-of-the-limbs

One crossover study of manual lymph drainage (MLD) followed by self-administered massage versus no treatment, concluded that improvements seen in both groups were attributable to the use of compression sleeves and that MLD provided no extra benefit at any point during the trial.
All three trials have their limitations and have yet to be replicated, so their results must be viewed with caution.

19. Non-invasive physical treatments for chronic/recurrent headaches

http://summaries.cochrane.org/CD001878/non-invasive-physical-treatments-for-chronicrecurrent-headaches

Twenty-two studies with a total of 2628 patients (age 12 to 78 years) met the inclusion criteria. Five types of headache were studied: migraine, tension-type, cervicogenic, a mix of migraine and tension-type, and post-traumatic headache. Ten studies had methodological quality scores of 50 or more (out of a possible 100 points), but many limitations were identified.

For the prophylactic treatment of chronic tension-type headache, amitriptyline is more effective than spinal manipulation during treatment. However, spinal manipulation is superior in the short term after cessation of both treatments. Other possible treatment options with weaker evidence of effectiveness are therapeutic touch; cranial electrotherapy; a combination of TENS and electrical neurotransmitter modulation; and a regimen of auto-massage, TENS, and stretching. For episodic tension-type headache, there is evidence that adding spinal manipulation to massage is not effective.

20. Thermotherapy (heat treatment) for treating osteoarthritis of the knee

http://summaries.cochrane.org/CD004522/thermotherapy-heat-treatment-for-treating-osteoarthritis-of-the-knee

How well does thermotherapy work?

One study showed that massaging with ice for 20 minutes, 5 days a week for 2 weeks, improved muscle strength in the leg, the range of motion in the knee and decreased time to walk 50 feet compared to no treatment.

Another study showed that ice packs for 3 days a week for three weeks improved pain just as well as no treatment.

Another study showed that cold packs for 20 minutes for 10 periods decreased swelling more than no treatment. Hot packs for the same amount of time had the same effect on swelling as no treatment.

Three randomized controlled trials, involving 179 patients, were included in this review.

In one trial, administration of 20 minutes of ice massage, 5 days per week, for 3 weeks, compared to control demonstrated a clinically important benefit for knee OA on increasing quadriceps strength (29% relative difference). There was also a statistically significant improvement, but no clinical benefit in improving knee flexion ROM (8% relative difference) and functional status (11% relative difference).

Ice massage compared to control had a statistically beneficial effect on ROM, function and knee strength. Cold packs decreased swelling.

More well designed studies with a standardized protocol and adequate number of participants are needed to evaluate the effects of thermotherapy in the treatment of OA of the knee.

21. Pain management for women in labour: an overview of systematic reviews

http://www.cochrane.org/features/pain-management-women-labour-overview-systematic-reviews

There was less evidence for immersion in water, relaxation, acupuncture, massage and local anaesthetic nerve blocks or non-opioid drugs. The authors classed these interventions as what "may work".

The second group of pain relief approaches, although less well-supported by clinical evidence, were better tolerated, with women reporting improved satisfaction with pain relief for all except massage. The least supported or "insufficient evidence" group of pain relief interventions included hypnosis, biofeedback, sterile water injection, aromatherapy, transcutaneous electrical nerve stimulation (TENS) and injected or intravenous opioids.

Most of the evidence on non-drug interventions was based on just one or two studies and so the findings are not definitive. However, we found that immersion in water, relaxation, acupuncture and massage all gave pain relief and better satisfaction with pain relief.
We identified 15 Cochrane reviews (255 included trials) and three non-Cochrane reviews (55 included trials) for inclusion within this overview.

There is some evidence to suggest that immersion in water, relaxation, acupuncture, massage and local anaesthetic nerve blocks or non-opioid drugs may improve management of labour pain, with few adverse effects. Evidence was mainly limited to single trials. These interventions relieved pain and improved satisfaction with pain relief (immersion, relaxation, acupuncture, local anaesthetic nerve blocks, non-opioids) and childbirth experience (immersion, relaxation, non-opioids) when compared with placebo or standard care. Relaxation was associated with fewer assisted vaginal births and acupuncture was associated with fewer assisted vaginal births and caesarean sections.

22. Conservative treatment for exercise-related groin pain

http://summaries.cochrane.org/CD009565/conservative-treatment-for-exercise-related-groin-pain

Exercise-related groin pain is common in sports especially those involving running, kicking and changing directions, such as in soccer and hockey.

One study, based on an intention-to-treat analysis, found a significant difference favouring exercise therapy (strengthening with an emphasis on the adductor and abdominal muscles and training muscular co-ordination) compared with 'conventional' physiotherapy (stretching exercises, electrotherapy and transverse friction massage) in successful treatment at 16-week follow-up.

The second study (54 participants) found no significant differences at 16-week follow-up.
Further randomized trials are necessary to reinforce their findings.

23. Manipulation and Mobilisation for Mechanical Neck Disorders

http://summaries.cochrane.org/CD004249/manipulation-and-mobilisation-for-mechanical-neck-disorders

Neck pain is a common musculoskeletal complaint. It can cause varying levels of disability for the affected individual and is costly to society. Neck pain can be accompanied by pain radiating down the arms (radiculopathy) or headaches (cervicogenic headaches). Manipulation (adjustments to the spine) and mobilisation (movement imposed on joints and muscles) can be used alone or in combination with other physical therapies to treat neck pain.

This updated review included 27 trials (1522 participants) that compared manipulation or mobilization against no treatment, sham (pretend) treatments, other treatments (such as medication, acupuncture, heat, electrotherapy, soft tissue massage), or each other.

24. Manual therapy for asthma

http://summaries.cochrane.org/CD001002/manual-therapy-for-asthma

Various manual forms of therapy are used to try and relieve asthma. Chiropractic and osteopathic techniques aim to increase movement in the rib cage and the spine to try and improve the working of the lungs and circulation. Other manual techniques include chest tapping, shaking, vibration, and postures to help shift and cough up phlegm. Massage is also used. Various therapists use these techniques, including chiropractors, physiotherapists, osteopaths and respiratory therapists. The review found there is not enough evidence from trials to show whether any of these therapies can improve asthma symptoms, and more research is needed.

25. Aromatherapy for pain management in labour

http://summaries.cochrane.org/CD009215/aromatherapy-for-pain-management-in-labour

Aromatherapy draws on the healing power of plants with the use of essential oils to enhance physical and mental wellbeing. The oils may be massaged into the skin, in a bath or inhaled using a steam infusion or burner. The pain of labour can be intense, with tension, fear and anxiety making it worse. Many women would like to labour without using drugs, or invasive methods such as an epidural, and turn to complementary therapies to help reduce their pain perception Many complementary therapies are tried and include acupuncture, mind-body techniques, massage, reflexology, herbal medicines or homoeopathy, hypnosis, music and aromatherapy.

The trials found no difference between groups for pain intensity, assisted vaginal birth, caesarean section or the use of pharmacological pain relief (epidural). Overall, there is insufficient evidence from randomised controlled trials about the benefits of aromatherapy on pain management in labour. More research is needed.

26. Acupuncture for neck pain

http://summaries.cochrane.org/CD004870/acupuncture-for-neck-pain

The study also included individuals with neck pain that lasted for at least six weeks, but they considered it to be chronic. Acupuncture was compared to sham acupuncture, waiting list, other sham treatments (sham laser, sham TENS) or other treatments (mobilization, massage, traction).

Neck pain is one of the three most frequently reported complaints of the musculoskeletal system. Treatments for neck pain are varied, as are the perceptions of benefits. Acupuncture has been used as an alternative to more traditional treatments for musculoskeletal pain. This review summarizes the most current scientific evidence on the effectiveness of acupuncture for acute, subacute and chronic neck pain.

There was limited evidence that acupuncture was more effective than massage at short-term follow-up. For chronic neck disorders with radicular symptoms, there was moderate evidence that acupuncture was more effective than a wait-list control at short-term follow-up.

There is moderate evidence that acupuncture relieves pain better than some sham treatments, measured at the end of the treatment. There is moderate evidence that those who received acupuncture reported less pain at short term follow-up than those on a waiting list. There is also moderate evidence that acupuncture is more effective than inactive treatments for relieving pain post-treatment and this is maintained at short-term follow-up.

27. There is insufficient evidence to support the use of acupuncture for the symptomatic treatment of restless legs syndrome.

http://summaries.cochrane.org/CD006457/there-is-insufficient-evidence-to-support-the-use-of-acupuncture-for-the-symptomatic-treatment-of-restless-legs-syndrome.

Another trial found that dermal needle therapy used in combination with medications and massage was more effective than medications and massage alone.

There is insufficient evidence to determine whether acupuncture is an efficacious and safe treatment for RLS. Further well-designed, large-scale clinical trials are needed.

28. Acupuncture for tension-type headache

http://summaries.cochrane.org/CD007587/acupuncture-for-tension-type-headache

Three of the four trials in which acupuncture was compared to physiotherapy, massage or relaxation had important methodological shortcomings. Their findings are difficult to interpret, but collectively suggest slightly better results for some outcomes with the latter therapies. In conclusion, the available evidence suggests that acupuncture could be a valuable option for patients suffering from frequent tension-type headache.

Eleven trials with 2317 participants (median 62, range 10 to 1265) met the inclusion criteria.

29. Physical treatments for idiopathic facial paralysis

http://summaries.cochrane.org/CD006283/physical-treatments-for-idiopathic-facial-paralysis

Bell's palsy (idiopathic facial paralysis) is commonly treated by various physical therapy strategies and devices, but there are many questions about their efficacy.

For this update to the original review, the search identified 65 potentially relevant articles. Twelve studies met the inclusion criteria (872 participants).

Low quality comparisons of electrostimulation with prednisolone (an active treatment) (149 participants), or the addition of electrostimulation to hot packs, massage and facial exercises (22 participants), reported no significant differences.

30. Relaxation therapy for preventing and treating preterm labour

http://summaries.cochrane.org/CD007426/relaxation-therapy-for-preventing-and-treating-preterm-labour

Preterm birth, before 37 completed weeks' gestation, is likely to have an effect on a baby's survival and health.

We investigated the effectiveness of relaxation or mind-body therapies such as meditation, massage, yoga, reflexology, breathing exercises, visualization, music therapy and aromatherapy, etc. for preventing or treating preterm labour or preventing preterm birth.

According to the results of this review, there is some evidence that relaxation during pregnancy reduces stress and anxiety. However, there was no effect on PTL/PTB. These results should be interpreted with caution as they were drawn from included studies with limited quality.

31. Methods of pin site care for reducing infection and complications associated with external bone fixators and pins

http://summaries.cochrane.org/CD004551/methods-of-pin-site-care-for-reducing-infection-and-complications-associated-with-external-bone-fixators-and-pins

Metal pins are sometimes used to apply traction or to attach other external fixation devices into broken arms or legs. These pins pierce through the skin. The way they are cared for may affect the frequency of infection. Different solutions are used for cleaning around pins, different dressings can be used, scabs may or may not be removed and massage might be used to drain fluids around them. Few clinical trials have investigated this area, and they were of poor quality. As a result, this review found no strong evidence that one pin care technique was better than any other for reducing the chance of infection and other complications.

The available trial evidence was not extensive, was very heterogeneous and generally of poor quality, so there was insufficient evidence to be able to identify a strategy of pin site care that minimises infection rates.

32. Placenta delivery at caesarean section

http://summaries.cochrane.org/CD004737/placenta-delivery-at-caesarean-section

Worldwide, caesarean section is the most common major operation performed on women. Some of the reported short-term morbidities include haemorrhage, postoperative fever and endometritis. The method of delivering the placenta is one procedure that may contribute to an increase or decrease in the morbidity of caesarean section. Two common methods used to deliver the placenta at caesarean section are cord traction and manual removal.

There are various methods of delivery of placenta at caesarean section. These include placental drainage with spontaneous delivery, cord traction and manual removal. The last two methods: cord traction (usually combined with massage or expression of the uterus) and manual removal are frequently used.
We included 15 studies (4694 women). There was significant heterogeneity for the duration of surgery, blood loss and haematological outcomes. The only possible contributing factor found was greater protection from blood loss in two trials in which cord traction was combined with uterine massage. A random-effects model meta-analysis was used for these outcomes.

33. Pain management for women in labour – an overview

http://summaries.cochrane.org/CD009234/pain-management-for-women-in-labour---an-overview

We found that immersion in water, relaxation, acupuncture and massage all gave pain relief and better satisfaction with pain relief.

There is some evidence to suggest that immersion in water, relaxation, acupuncture, massage and local anaesthetic nerve blocks or non-opioid drugs may improve management of labour pain, with few adverse effects. Evidence was mainly limited to single trials. These interventions relieved pain and improved satisfaction with pain relief (immersion, relaxation, acupuncture, local anaesthetic nerve blocks, non-opioids) and childbirth experience (immersion, relaxation, non-opioids) when compared with placebo or standard care. Relaxation was associated with fewer assisted vaginal births and acupuncture was associated with fewer assisted vaginal births and caesarean sections.

34. Combined chiropractic interventions for low-back pain

http://summaries.cochrane.org/CD005427/combined-chiropractic-interventions-for-low-back-pain

For this review, chiropractic was defined as encompassing a combination of therapies such as spinal manipulation, massage, heat and cold therapies, electrotherapies, the use of mechanical devices, exercise programs, nutritional advice, orthotics, lifestyle modification and patient education.

35. Individual Patient Education for low-back pain

http://summaries.cochrane.org/CD004057/individual-patient-education-for-low-back-pain

Patient education was no more effective than other interventions such as cognitive behavioural group therapy, work-site visits, x-rays, acupuncture, chiropractic, physiotherapy, massage, manual therapy, heat-wrap therapy, interferential therapy, spinal stabilisation, yoga, or Swedish back school.

Individual patient education was compared with no intervention in 12 studies; with non-educational interventions in 11 studies; and with other individual educational interventions in eight studies. Results showed that for patients with subacute LBP, there is strong evidence that an individual 2.5 hour oral educational session is more effective on short-term and long-term return-to-work than no intervention.

36. The McKenzie method for (sub)acute non-specific low-back pain

http://summaries.cochrane.org/CD009711/the-mckenzie-method-for-subacute-non-specific-low-back-pain

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

37. Reflexology for treatment of constipation

http://summaries.cochrane.org/CD008156/reflexology-for-treatment-of-constipation

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

38. Aminophylline for bradyasystolic cardiac arrest in adults

http://summaries.cochrane.org/CD006781/aminophylline-for-bradyasystolic-cardiac-arrest-in-adults

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

39. Cognitive behavioural therapy (CBT) for adults with HIV

http://summaries.cochrane.org/CD006494/cognitive-behavioural-therapy-cbt-for-adults-with-hiv

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

40. Adrenaline and vasopressin for cardiac arrest

http://summaries.cochrane.org/CD003179/adrenaline-and-vasopressin-for-cardiac-arrest

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

41. The McKenzie method for chronic non-specific low-back pain

http://summaries.cochrane.org/CD009712/the-mckenzie-method-for-chronic-non-specific-low-back-pain

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

42. Muscle energy technique for non-specific low-back pain

http://summaries.cochrane.org/CD009852/muscle-energy-technique-for-non-specific-low-back-pain

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

43. Probiotics for fibromyalgia

http://summaries.cochrane.org/CD010451/probiotics-for-fibromyalgia

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

44. Spring 2002 CAM_NEWS

http://www.cochrane.org/sites/default/files/uploads/Newsletters/Comp_Med_Spring_2002.pdf

45. Cognitive behavioural therapies for fibromyalgia syndrome

http://summaries.cochrane.org/CD009796/cognitive-behavioural-therapies-for-fibromyalgia-syndrome

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

46. Acupuncture for migraine prophylaxis

http://summaries.cochrane.org/CD001218/acupuncture-for-migraine-prophylaxis

Two small low-quality trials comparing acupuncture with relaxation (alone or in combination with massage) could not be interpreted reliably.

47. Exercise for Neck Pain

http://summaries.cochrane.org/CD004250/exercise-for-neck-pain

Neck pain is common; it can limit a person's ability to participate in normal activities and is costly. Exercise did show an advantage over the other comparison groups (including massage).

There appears to be a role for exercises in the treatment of chronic neck pain and cervicogenic headache if stretching and strengthening exercises are focused on the neck and shoulder blade region. There appears to be no advantage to arm stretching and strengthening exercises or a general exercise program.

48. Chinese herbal medicine may help reduce menstrual pain.

http://summaries.cochrane.org/CD005288/chinese-herbal-medicine-may-help-reduce-menstrual-pain.

Study not relevant to this literary review.

49. Wheelchairs for children under 12 with physical impairments

http://summaries.cochrane.org/CD010154/wheelchairs-for-children-under-12-with-physical-impairments

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

50. Cochrane Complementary Medicine Field Bursary Scheme

http://www.cochrane.org/policy-manual/251-cochrane-complementary-medicine-field-bursary-scheme

The list of Complementary Medicine Field topics comprises the entire spectrum of heath delivery mechanisms, including treatments that a person largely administers to him or herself (e.g. botanicals, nutritional supplements, health food, meditation, magnetic therapy); treatments that providers administer (e.g. acupuncture, massage therapy, reflexology, laser therapy, balneotherapy, chiropractic

and osteopathic manipulations, certain types of psychological counselling, naprapathy); and treatments that a person administers to him or herself under the periodic supervision of a provider (e.g. yoga, biofeedback, Tai Chi, homeopathy, hydrotherapy, Alexander therapy, nutritional therapy, Ayurveda).
Article not pertinent for this literary review.

51. Cochrane Complementary Medicine Field Bursary Scheme

http://www.cochrane.org/organisational-policy-manual/261-cochrane-complementary-medicine-field-bursary-scheme

Article also not pertinent for this literary review.

52. Ayurvedic medicine for schizophrenia

http://summaries.cochrane.org/CD006867/ayurvedic-medicine-for-schizophrenia

Treatment in an ayurvedic system is holistic, involving natural medicine, massage, diet and the regulation of lifestyle. Ayurveda has been used for the treatment of schizophrenia, a serious long-term mental health condition, since its formulation (c1000 BCE) although nowadays Western-style medication using antipsychotics and hospital treatment are also used.

Article not pertinent for this literary review.

53. Opiate treatment for opiate withdrawal in newborn infants

http://summaries.cochrane.org/CD002059/opiate-treatment-for-opiate-withdrawal-in-newborn-infants

An opiate such as morphine or dilute tincture of opium should probably be used as initial treatment to ameliorate withdrawal symptoms in newborn infants with an opiate withdrawal due to maternal opiate use in pregnancy. Use of opiates (commonly prescribed methadone or illicit heroin) by pregnant women may result in a withdrawal syndrome in their newborn infants. This may result in disruption of the mother-infant relationship, sleeping and feeding difficulties, weight loss and seizures. Treatments for newborn infants used to ameliorate these symptoms and reduce complications include opiates, sedatives (phenobarbitone or diazepam) and supportive treatments (swaddling, settling, massage, relaxation baths, pacifiers or waterbeds).

Opiates compared to supportive care may reduce time to regain birth weight and duration of supportive care but increase duration of hospital stay.

The conclusions of this review should be treated with caution.

54. Therapeutic ultrasound for postpartum perineal pain and dyspareunia

http://summaries.cochrane.org/CD000495/therapeutic-ultrasound-for-postpartum-perineal-pain-and-dyspareunia

Article not pertinent for this literary review.

55. Antibiotic prophylaxis for third- and fourth-degree perineal tear during vaginal birth

http://summaries.cochrane.org/CD005125/antibiotic-prophylaxis-for-third-and-fourth-degree-perineal-tear-during-vaginal-birth

Article not pertinent for this literary review.

56. Day care for pre-school children

http://summaries.cochrane.org/CD000564/day-care-for-pre-school-children

Article not pertinent for this literary review.

57. Psychological treatments to help people with cystic fibrosis and their carers manage the disease

http://summaries.cochrane.org/CD003148/psychological-treatments-to-help-people-with-cystic-fibrosis-and-their-carers-manage-the-disease

The review includes 13 studies (five new at this update) representing data from 529 participants. Studies mainly assessed behavioural and educational interventions:
1. gene pre-test education counselling for relatives of those with CF;
2. biofeedback, massage and music therapy to assist physiotherapy;
3. behavioural and educational interventions to improve dietary intake and airway clearance;
4. self-administration of medication and education to promote independence, knowledge and quality of life; and
5. systemic interventions promoting psychosocial functioning.

Currently no clear evidence exists on the best psychological interventions to help people with CF and their carers manage the disease.

58. Nutritional interventions for reducing morbidity and mortality in people with HIV

http://summaries.cochrane.org/CD004536/nutritional-interventions-for-reducing-morbidity-and-mortality-in-people-with-hiv

Article not pertinent for this literary review.

59. Non-drug therapies for lower limb muscle cramps

http://summaries.cochrane.org/CD008496/non-drug-therapies-for-lower-limb-muscle-cramps

About one in every three adults are affected by lower limb muscle cramps. For some people, these cramps reduce quality of life, quality of sleep and participation in activities of daily living. Many interventions are available for lower limb cramps, but some are controversial, no treatment guidelines exist, and often people experience no benefit from the interventions prescribed.

Non-drug treatments are described as being effective for the treatment of muscle cramps. Non-drug treatments include muscle stretching, physical exercise, avoidance of physical fatigue, massage, relaxation, heat therapy, weight loss, sensory nerve stimulation, ankle splints worn while sleeping, and changes to sleeping and sitting positions.

There is limited evidence on which to base clinical decisions regarding the use of non-drug therapies for the treatment of lower limb muscle cramp. Serious methodological limitations in the existing evidence hinder clinical application.

60. Acupuncture for elbow pain
http://summaries.cochrane.org/CD003527/acupuncture-for-elbow-pain

Article not pertinent for this literary review.

61. Electronic News Bulleting May 29, 2008

http://www.cochrane.org/sites/default/files/uploads/Newsletters/ccinfo/CCInfo29May2008.txt

Article not pertinent for this literary review.

62. [Plain language title]

http://summaries.cochrane.org/CD010595/plain-language-title

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

63. Carbetocin for preventing postpartum haemorrhage

http://summaries.cochrane.org/CD005457/carbetocin-for-preventing-postpartum-haemorrhage

Article not pertinent for this literary review.

64. Interventions for preventing and treating pelvic and back pain in pregnancy

http://summaries.cochrane.org/CD001139/interventions-for-preventing-and-treating-pelvic-and-back-pain-in-pregnancy

Article not pertinent for this literary review.

65. Prescription drug use for managing agitation and aggression in people with acquired brain injury

http://summaries.cochrane.org/CD003299/prescription-drug-use-for-managing-agitation-and-aggression-in-people-with-acquired-brain-injury

Article not pertinent for this literary review.

66. Spiritual and religious interventions for adults in the latter stage of a disease

http://summaries.cochrane.org/CD007544/spiritual-and-religious-interventions-for-adults-in-the-latter-stage-of-a-disease

When meditation was combined with massage in the medium term it buffered against a reduction in quality of life.

The paucity of quality research indicates a need for more rigorous studies.

67. Lumbar supports for the prevention and treatment of low-back pain

http://summaries.cochrane.org/CD001823/lumbar-supports-for-the-prevention-and-treatment-of-low-back-pain

One study (164 people) reported mixed results on whether back supports improved function more than massage

Conclusions from this review should be viewed with caution due to the low quality of many of the studies.

68. Needling for encapsulated trabeculectomy filtering blebs

http://summaries.cochrane.org/CD003658/needling-for-encapsulated-trabeculectomy-filtering-blebs

Article not pertinent for this literary review.

69. Sedatives for opiate withdrawal in newborn infants

http://summaries.cochrane.org/CD002053/sedatives-for-opiate-withdrawal-in-newborn-infants

Treatments for newborn infants used to ameliorate these symptoms and reduce complications include opiates, sedatives (phenobarbitone or diazepam) and supportive treatments (swaddling, settling, massage, relaxation baths, pacifiers or waterbeds).

70. Management of faecal incontinence and constipation in adults with central neurological diseases

http://summaries.cochrane.org/CD002115/management-of-faecal-incontinence-and-constipation-in-adults-with-central-neurological-diseases

Objective: determine the effects of management strategies for faecal incontinence and constipation in people with neurological diseases affecting the central nervous system.

Currently such individuals are commonly advised to have a good fluid intake, a balanced diet, sufficient physical exercise, scheduled bowel routine and moderate use of medications. Bowel management employs a combination of medications (e.g. bulking agents, laxatives, enemas) and mechanical interventions (e.g. digital stimulation, manual evacuation, abdominal massage, rectal irrigation) established on a trial and error basis.

There is still remarkably little research on this common and, to patients, very significant condition. It is not possible to draw any recommendation for bowel care in people with neurological diseases from the trials included in this review.

71. Amifostine for salivary glands in high-dose radioactive iodine treated differentiated thyroid cancer

http://summaries.cochrane.org/CD007956/amifostine-for-salivary-glands-in-high-dose-radioactive-iodine-treated-differentiated-thyroid-cancer

Until better data become available, the use of sour candy or lemon juice to increase salivation might be more appropriate during radioactive iodine treatment for patients with differentiated thyroid cancer. Patients should be well informed of the importance of hydration, acid stimulation and glandular

massage after radioactive iodine treatment. In addition, early recognition and treatment of xerostomia may improve outcomes.

No health-related quality of life and other patient-oriented outcomes were evaluated in the two included trials.

72. Octreotide for treatment of chylothorax in newborns

http://summaries.cochrane.org/CD006388/octreotide-for-treatment-of-chylothorax-in-newborns

Article not pertinent for this literary review.

73. Electrotherapy for neck pain

http://summaries.cochrane.org/CD004251/electrotherapy-for-neck-pain

For patients with acute whiplash, iontophoresis was no more effective than no treatment, interferential current or a combination of traction, exercise and massage for relieving neck pain with headache; pulsed electro-magnetic field was more effective than 'standard care'.

74. Interventions for preventing hamstring injuries

http://summaries.cochrane.org/CD006782/interventions-for-preventing-hamstring-injuries

Hamstring (muscles situated at the back of the thigh) injuries are common in sports such as football and basketball. These injuries are often serious, causing pain, long rehabilitation times and a distinct proneness to re-injury. Various interventions targeting the prevention of such injuries are in common use.

One small trial found that manual therapy (involving manipulation, massage and specific stretches to joints and muscles of the spine and leg) may prevent injuries of leg muscles, including the hamstrings.

There is insufficient evidence from randomised controlled trials to draw conclusions on the effectiveness of interventions used to prevent hamstring injuries in people participating in football or other high risk activities for these injuries. The findings for manual therapy need confirmation.

75. Ultrasound therapy had no clinical benefit on pain relief or muscle strength in people with patellofemoral knee pain syndrome

http://summaries.cochrane.org/CD003375/ultrasound-therapy-had-no-clinical-benefit-on-pain-relief-or-muscle-strength-in-people-with-patellofemoral-knee-pain-syndrome

This review has been withdrawn.

76. Immersion in water in labour and birth

http://summaries.cochrane.org/CD000111/immersion-in-water-in-labour-and-birth

Article not pertinent for this literary review.

77. Preventing occupational stress in healthcare workers

http://summaries.cochrane.org/CD002892/preventing-occupational-stress-in-healthcare-workers

Healthcare workers suffer from work-related or occupational stress often resulting from high expectations coupled with insufficient time, skills and/or social support at work. This can lead to severe distress, burnout or physical illness, and finally to a decrease in quality of life and service provision. The costs of stress and burnout are high due to increased absenteeism and turnover.

We identified 14 RCTs, three cluster-randomised trials and two crossover trials, including a total of 1,564 participants in intervention groups and 1,248 controls. Two trials were of high quality.

Interventions were grouped into 1) person-directed: cognitive-behavioural, relaxation, music-making, therapeutic massage and multicomponent; and 2) work-directed: attitude change and communication, support from colleagues and participatory problem solving and decision-making, and changes in work organisation.

There is limited evidence that person-directed interventions can reduce stress

Limited evidence is available for the effectiveness of interventions to reduce stress levels in healthcare workers. Larger and better quality trials are needed.

78. Biphasic versus monophasic waveforms for transthoracic defibrillation in out-of-hospital cardiac arrest

http://summaries.cochrane.org/CD006762/biphasic-versus-monophasic-waveforms-for-transthoracic-defibrillation-in-out-of-hospital-cardiac-arrest

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

79. Superficial heat or cold for low back pain

http://summaries.cochrane.org/CD004750/superficial-heat-or-cold-for-low-back-pain

Heat and cold are commonly utilised in the treatment of low-back pain by both health care professionals and people with low-back pain.

The evidence for the application of cold treatment to low-back pain is even more limited, with only three poor quality studies located. No conclusions can be drawn about the use of cold for low-back pain. There is conflicting evidence to determine the differences between heat and cold for low-back pain.

80. Radiofrequency denervation for neck and back pain

http://summaries.cochrane.org/CD004058/radiofrequency-denervation-for-neck-and-back-pain

Article not pertinent for this literary review.

81. Spinal manipulative therapy for low-back pain

http://summaries.cochrane.org/CD000447/spinal-manipulative-therapy-for-low-back-pain

This review has been withdrawn.

82. Relaxation techniques for pain management in labour

http://summaries.cochrane.org/CD009514/relaxation-techniques-for-pain-management-in-labour

The pain of labour can be intense, with body tension, anxiety and fear making it worse. Many women would like to go through labour without using drugs, or invasive methods such as an epidural, and turn to complementary therapies to help to reduce their pain perception and improve management of the pain. Many complementary therapies are tried, including acupuncture, mind-body techniques, massage, reflexology, herbal medicines or homoeopathy, hypnosis, music and aromatherapy. Mind-body

interventions such as relaxation, meditation, visualisation and breathing are commonly used for labour, and can be widely accessible to women through teaching of these techniques during antenatal classes. Relaxation and yoga may have a role with reducing pain, increasing satisfaction with pain relief and reducing the rate of assisted vaginal delivery. There was insufficient evidence for the role of music and audio-analgesia. However, there is a need for further research.

83. Patient support and education for promoting adherence to highly active antiretroviral therapy for HIV/AIDS

http://summaries.cochrane.org/CD001442/patient-support-and-education-for-promoting-adherence-to-highly-active-antiretroviral-therapy-for-hivaids

Article not pertinent for this literary review.

84. Micronutrient supplementation for children and adults with HIV infection

http://summaries.cochrane.org/CD003650/micronutrient-supplementation-for-children-and-adults-with-hiv-infection

Article not pertinent for this literary review.

85. Tranexamic acid for preventing bleeding after delivery

http://summaries.cochrane.org/CD007872/tranexamic-acid-for-preventing-bleeding-after-delivery

Article not pertinent for this literary review.

86. Active management of third stage of labour with ergot alkaloid drugs (e.g. ergometrine)

http://summaries.cochrane.org/CD005456/active-management-of-third-stage-of-labour-with-ergot-alkaloid-drugs-e.g.-ergometrne

Article not pertinent for this literary review.

87. Mechanical traction for neck pain with or without symptoms that radiate to the neck or arm

http://summaries.cochrane.org/CD006408/mechanical-traction-for-neck-pain-with-or-without-symptoms-that-radiate-to-the-neck-or-arm

Article not pertinent for this literary review.

88. Dance/movement therapy for cancer patients

http://summaries.cochrane.org/CD007103/dancemovement-therapy-for-cancer-patients

Article not pertinent for this literary review.

89. Prostaglandins for preventing postpartum haemorrhage

http://summaries.cochrane.org/CD000494/prostaglandins-for-preventing-postpartum-haemorrhage

Article not pertinent for this literary review.

90. Giving iron supplements to improve outcomes in children with HIV/AIDS

http://summaries.cochrane.org/CD006736/giving-iron-supplements-to-improve-outcomes-in-children-with-hivaids

Article not pertinent for this literary review.

91. Saline irrigation for the management of skin extravasation injury in neonates

http://summaries.cochrane.org/CD008404/saline-irrigation-for-the-management-of-skin-extravasation-injury-in-neonates

Article not pertinent for this literary review.

92. Ward reduction without general anaesthesia versus reduction and repair under general anaesthesia for gastroschisis in newborn infants

http://summaries.cochrane.org/CD003671/ward-reduction-without-general-anaesthesia-versus-reduction-and-repair-under-general-anaesthesia-for-gastroschisis-in-newborn-infants

Article not pertinent for this literary review.

93. Exercise therapy for patellofemoral pain syndrome

http://summaries.cochrane.org/CD003472/exercise-therapy-for-patellofemoral-pain-syndrome

Article not pertinent for this literary review.

94. Continuous and individual interrupted sutures for repair of episiotomy or second-degree tears

http://summaries.cochrane.org/CD000947/continuous-and-individual-interrupted-sutures-for-repair-of-episiotomy-or-second-degree-tears

Article not pertinent for this literary review.

95. Postpartum misoprostol for preventing maternal mortality and morbidity

http://summaries.cochrane.org/CD008982/postpartum-misoprostol-for-preventing-maternal-mortality-and-morbidity

Article not pertinent for this literary review.

96. Routine prophylactic drugs in normal labour for reducing gastric aspiration and its effects

http://summaries.cochrane.org/CD005298/routine-prophylactic-drugs-in-normal-labour-for-reducing-gastric-aspiration-and-its-effects

Article not pertinent for this literary review.

97. Family support in reducing morbidity and mortality in HIV-infected persons

http://summaries.cochrane.org/CD006046/family-support-in-reducing-morbidity-and-mortality-in-hiv-infected-persons

Article not pertinent for this literary review.

98. Corticosteroid injection for de Quervain's tenosynovitis

http://summaries.cochrane.org/CD005616/corticosteroid-injection-for-de-quervains-tenosynovitis

Article not pertinent for this literary review.

99. Behavioural treatment for chronic low-back pain

http://summaries.cochrane.org/CD002014/behavioural-treatment-for-chronic-low-back-pain

Article not pertinent for this literary review.

100. Cycled light in the intensive care unit for preterm and low birth weight infants

http://summaries.cochrane.org/CD006982/cycled-light-in-the-intensive-care-unit-for-preterm-and-low-birth-weight-infants

Article not pertinent for this literary review.

101. Telemedicine for the support of parents of high-risk newborn infants

http://summaries.cochrane.org/CD006818/telemedicine-for-the-support-of-parents-of-high-risk-newborn-infants

Article not pertinent for this literary review.

102. Acupuncture for shoulder pain

http://summaries.cochrane.org/CD005319/acupuncture-for-shoulder-pain

Article not pertinent for this literary review.

103. Self-management interventions for people living with HIV/AIDS

http://summaries.cochrane.org/CD008731/self-management-interventions-for-people-living-with-hivaids

Article not pertinent for this literary review.

104. One-step techniques for primary distal hypospadias in children and adolescents

http://summaries.cochrane.org/CD010372/one-step-techniques-for-primary-distal-hypospadias-in-children-and-adolescents

Article not pertinent for this literary review.

105. Cooling the body after cardiac arrest

http://summaries.cochrane.org/CD004128/cooling-the-body-after-cardiac-arrest

Article not pertinent for this literary review.

106. Mechanical chest compression machines for cardiac arrest

http://summaries.cochrane.org/CD007260/mechanical-chest-compression-machines-for-cardiac-arrest

Article not pertinent for this literary review.

107. Physical activity programs for promoting bone mineralization and growth in preterm infants

http://summaries.cochrane.org/CD005387/physical-activity-programs-for-promoting-bone-mineralization-and-growth-in-preterm-infants

Article not pertinent for this literary review.

108. Personally-tailored activities for improving psychosocial outcomes for people with dementia in community settings

http://summaries.cochrane.org/CD010515/personally-tailored-activities-for-improving-psychosocial-outcomes-for-people-with-dementia-in-community-settings

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

109. Personally-tailored activities for improving psychosocial outcomes for people with dementia in long-term care

http://summaries.cochrane.org/CD009812/personally-tailored-activities-for-improving-psychosocial-outcomes-for-people-with-dementia-in-long-term-care

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

110. Aerobic exercise for adults living with HIV/AIDS

http://summaries.cochrane.org/CD001796/aerobic-exercise-for-adults-living-with-hivaids

Article not pertinent for this literary review.

111. There is no evidence that adjunctive therapies for AIDS dementia are effective, though they are well-tolerated and safe.

http://summaries.cochrane.org/CD006496/there-is-no-evidence-that-adjunctive-therapies-for-aids-dementia-are-effective-though-they-are-well-tolerated-and-safe.

Article not pertinent for this literary review.

112. Herbal medicine for low-back pain

http://summaries.cochrane.org/CD004504/herbal-medicine-for-low-back-pain

Article not pertinent for this literary review.

113. Screening methods for dislocated or improperly formed hips in newborn infants

http://summaries.cochrane.org/CD004595/screening-methods-for-dislocated-or-improperly-formed-hips-in-newborn-infants

Article not pertinent for this literary review.

114. Some physiotherapy interventions are effective for shoulder pain in some cases.

http://summaries.cochrane.org/CD004258/some-physiotherapy-interventions-are-effective-for-shoulder-pain-in-some-cases.

Article not pertinent for this literary review.

115. Drugs and pacemakers for transient loss of consciousness

http://summaries.cochrane.org/CD004194/drugs-and-pacemakers-for-transient-loss-of-consciousness

Neurally mediated reflex syncope is the most common cause of transient loss of consciousness. In patients not responding to non-pharmacological treatment, pharmacological or pacemaker treatment might be considered.

Article not pertinent for this literary review.

116. Breastfeeding or breast milk for procedural pain in neonates

http://summaries.cochrane.org/CD004950/breastfeeding-or-breast-milk-for-procedural-pain-in-neonates

The primary objective was to evaluate the effectiveness of breastfeeding or supplemental breast milk in reducing procedural pain in neonates. The secondary objective was to conduct subgroup analyses based on the type of control intervention, gestational age and the amount of supplemental breast milk given.

Breast milk was found not to be effective in reducing validated and non-validated pain scores such as NIPS, NFCS, and DAN; only being significantly better when compared to placebo (water) or massage.

If available, breastfeeding or breast milk should be used to alleviate procedural pain in neonates undergoing a single painful procedure rather than placebo, positioning or no intervention. Administration of glucose/sucrose had similar effectiveness as breastfeeding for reducing pain. The effectiveness of breast milk for painful procedure should be studied in the preterm population, as there are currently a limited number of studies in the literature that have assessed it's effectiveness in this population.

117. There is no compelling evidence to support the use of the herbal medicines identified in this review for treatment of HIV infection and AIDS.

http://summaries.cochrane.org/CD003937/there-is-no-compelling-evidence-to-support-the-use-of-the-herbal-medicines-identified-in-this-review-for-treatment-of-hiv-infection-and-aids.

Article not pertinent for this literary review.

118. Anabolic steroids for the treatment of weight loss in HIV-infected individuals

http://summaries.cochrane.org/CD005483/anabolic-steroids-for-the-treatment-of-weight-loss-in-hiv-infected-individuals

Article not pertinent for this literary review.

119. Co-bedding premature twins to optimise their growth and brain development

http://summaries.cochrane.org/CD008313/co-bedding-premature-twins-to-optimise-their-growth-and-brain-development

Article not pertinent for this literary review.

120. Motivational interviewing for young people living with HIV

http://summaries.cochrane.org/CD009748/motivational-interviewing-for-young-people-living-with-hiv

Article not pertinent for this literary review.

121. Spinal manipulative therapy for chronic low-back pain

http://summaries.cochrane.org/CD008112/spinal-manipulative-therapy-for-chronic-low-back-pain

Article not pertinent for this literary review.

122. There is insufficient evidence to determine the effectiveness of physical activity programs in managing or improving cognition, function, behaviour, depression, and mortality in people with dementia

http://summaries.cochrane.org/CD006489/there-is-insufficient-evidence-to-determine-the-effectiveness-of-physical-activity-programs-in-managing-or-improving-cognition-function-behaviour-depression-and-mortality-in-people-with-dementia

Article not pertinent for this literary review.

123. Absorbable stitches for repair of episiotomy and tears at childbirth

http://summaries.cochrane.org/CD000006/absorbable-stitches-for-repair-of-episiotomy-and-tears-at-childbirth

Article not pertinent for this literary review.

124. TENS (transcutaneous nerve stimulation) for pain relief in labour

http://summaries.cochrane.org/CD007214/tens-transcutaneous-nerve-stimulation-for-pain-relief-in-labour

Article not pertinent for this literary review.

125. Interventions for improving the psychosocial well-being of children affected by HIV and AIDS

http://summaries.cochrane.org/CD006733/interventions-for-improving-the-psychosocial-well-being-of-children-affected-by-hiv-and-aids

Article not pertinent for this literary review

126. Non-invasive interventions for improving well-being and quality of life in patients with lung cancer

http://summaries.cochrane.org/CD004282/non-invasive-interventions-for-improving-well-being-and-quality-of-life-in-patients-with-lung-cancer

Article not pertinent for this literary review.

127. Drug-based and non-drug-based interventions to improve the bone mineral density in patients living with HIV

http://summaries.cochrane.org/CD005645/drug-based-and-non-drug-based-interventions-to-improve-the-bone-mineral-density-in-patients-living-with-hiv

Article not pertinent for this literary review.

128. The one small trial published is insufficient evidence for the efficacy of aroma therapy for dementia

http://summaries.cochrane.org/CD003150/the-one-small-trial-published-is-insufficient-evidence-for-the-efficacy-of-aroma-therapy-for-dementia

Article not pertinent for this literary review.

129. Shock wave therapy for elbow pain

http://summaries.cochrane.org/CD003524/shock-wave-therapy-for-elbow-pain

Article not pertinent for this literary review.

130. Non-surgical interventions for flat feet in children

http://summaries.cochrane.org/CD006311/non-surgical-interventions-for-flat-feet-in-children

Article not pertinent for this literary review.

131. Micronutrient supplementation interventions to reduce harm in pregnant and lactating women living with HIV

http://summaries.cochrane.org/CD009755/micronutrient-supplementation-interventions-to-reduce-harm-in-pregnant-and-lactating-women-living-with-hiv-_

Article not pertinent for this literary review.

132. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants

http://summaries.cochrane.org/CD002771/kangaroo-mother-care-to-reduce-morbidity-and-mortality-in-low-birthweight-infants

Article not pertinent for this literary review.

133. Interventions for lateral hip pain (tendinopathy or bursitis)

http://summaries.cochrane.org/CD008924/interventions-for-lateral-hip-pain-tendinopathy-or-bursitis

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

134. Rehabilitation after surgery for Dupuytren's Contracture

http://summaries.cochrane.org/CD006508/rehabilitation-after-surgery-for-dupuytrens-contracture

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

135. Interventions for pes planus

http://summaries.cochrane.org/CD005120/interventions-for-pes-planus

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

136. Interventions for treating slipped upper femoral epiphysis (SUFE)

http://summaries.cochrane.org/CD010397/interventions-for-treating-slipped-upper-femoral-epiphysis-sufe

This Cochrane Review is at the protocol stage and there is no abstract or plain language summary.

137. Spinal manipulative therapy for acute low-back pain

http://summaries.cochrane.org/CD008880/spinal-manipulative-therapy-for-acute-low-back-pain

Article not pertinent for this literary review.

138. Local corticosteroid injection for trigger finger

http://summaries.cochrane.org/CD005617/local-corticosteroid-injection-for-trigger-finger

Article not pertinent for this literary review.

139. Issue 43 Cochrane News_final CA 12July2008

http://www.cochrane.org/sites/default/files/uploads/cochrane_news/Issue43CochraneNews_finalCA21Aug2008_000.pdf

140. Co-Chairs of the Cochrane Collaboration Steering Group

http://www.cochrane.org/sites/default/files/uploads/Newsletters/ccinfo/20020423.txt

The second issue of The Cochrane Library is out today, with 81 new and 50 updated Cochrane reviews in a wide range of areas, such as:

* Depositing your own blood to use for surgery: is it worthwhile? (With accompanying Hot Topic on Getting Ready for Surgery)

* Fluoride gels and tooth decay

* New surgical techniques for heavy menstrual bleeding

* Massage can give relief from low back pain

* Debriefing after psychological trauma may do more harm than good

And much more. See them all at:

www.cochraneconsumer.com ： just click on the "NEW" symbol, and see our quick guide to all the new and updated material. And you can download a printable version of "What's New" as well.

141. Structured treatment interruptions (STI) in chronic unsuppressed HIV infection in adults

http://summaries.cochrane.org/CD006148/structured-treatment-interruptions-sti-in-chronic-unsuppressed-hiv-infection-in-adults

Article not pertinent for this literary review.

142. Family planning programs for HIV-positive women

http://summaries.cochrane.org/CD010243/family-planning-programs-for-hiv-positive-women

Article not pertinent for this literary review.

143. Progressive resistive exercise interventions for adults living with HIV/AIDS

http://summaries.cochrane.org/CD004248/progressive-resistive-exercise-interventions-for-adults-living-with-hivaids

Article not pertinent for this literary review.

144. The Aubrey Sheiham Public Health and Primary Care Scholarship

http://www.cochrane.org/about-us/awards-scholarships-funding-initiatives/fellowships-scholarships-and-bursaries

Article not pertinent for this literary review.

145. Custom-made foot orthoses for the treatment of foot pain

http://summaries.cochrane.org/CD006801/custom-made-foot-orthoses-for-the-treatment-of-foot-pain_

Article not pertinent for this literary review.

146. Pushing/bearing down methods for the second stage of labour

http://summaries.cochrane.org/CD009124/pushingbearing-down-methods-for-the-second-stage-of-labour

Article not pertinent for this literary review.

MEDSCAPE (48 ARTICLES)

1. Massage Therapy May Relieve Chronic Back Pain

http://www.medscape.com/viewarticle/745953

We conducted a trial to determine whether relaxation massage reduces pain and improves function in patients with chronic low back pain and compared relaxation and structural massage for treating this condition

Massage therapist patients cannot be blinded.

At 52 weeks, there were persistent but small benefits of relaxation massage for function, but not for symptom reduction.

We found that patients receiving massage were twice as likely as those receiving usual care to report significant improvements in both their pain and function," Dr. Cherkin said in a news release. "After 10 weeks, about two-thirds of those receiving massage improved substantially, versus only about one-third in the usual care group."

A study limitation was the lack of blinding of massage therapists and the only partial blinding of participants to treatment assignment. In addition, the exercises recommended in the 2 massage groups differed slightly, and the massage therapists were atypical, in that they had practiced for at least 5 years and had learned structural massage techniques. Generalizability of the findings is limited because the trial included mostly women with nonspecific chronic low back pain who were enrolled in a single healthcare system that serves a mostly white and employed population.

"Massage therapy may be effective for treatment of chronic back pain, with benefits lasting at least 6 months," the study authors conclude. "No clinically meaningful difference between relaxation and structural massage was observed in terms of relieving disability or symptoms."

2. Massage May Improve Growth Quality of Male Preterm Infants

http://www.medscape.com/viewarticle/773087

The researchers randomized 22 preemies (12 girls and 10 boys) to massage for 20 minutes twice daily or control care. In the latter, the massage therapist simply stood quietly by the bedside during these periods.

At four weeks, energy and protein intake as well as increase in weight, length, and body circumferences were similar across groups.

However, there appeared to be sex-specific responses. Female infants in the massage group had larger increases in subscapular skinfold thickness compared to control females.

Among males, the massage group had a smaller ponderal index, triceps skinfold thickness, mid-thigh skinfold thickness, and subscapular skinfold thickness compared to the control group. "This finding," say the investigators, "suggests massage promotes lean mass over fat mass in male preterm infants."
Male massage infants' adiponectin concentrations decreased over time in contrast to a significant, sustained increase in male control infants. This increase was correlated to ponderal index.

The researchers concede that the study was small but conclude, "The stable circulating adiponectin concentrations with massage treatment support the theory that massage attenuates stress-driven body fat acquisition in male preterm infants."

Dr. Moyer-Mileur added, "Our findings are clinically important as the ability of massage, a non-invasive therapy, to improve body fat deposition during infancy may lessen the risk of metabolic problems to preterm infants as they age."

3. Exercise as Good as Massage for Sore Muscles

http://www.medscape.com/viewarticle/782424

The aches and pains people suffer after exercising more than usual can be relieved just as well by more exercise as by massage, according to a new study.

"It's a common belief that massage is better, but it isn't better. Massage and exercise had the same benefits," said Dr. Lars Andersen, the lead author of the study and a professor at the National Research Center for the Working Environment in Copenhagen.

The study suggests that "maybe (massage or exercise) has some benefit for individuals prior to an activity, even though the benefit may be short-lasting".

It's not clear how massage or exercise would relieve soreness, but Brumitt said that it's thought that they help to clear out metabolic byproducts associated with tissue damage.

Andersen recommends that people try light exercise to ease their pain. The effect is moderate, and only offers temporary relief, but the benefit of using exercise, Dr. Andersen said, is that it doesn't require a trained therapist or travel time.

4. Evidence-based Clinical Practice Guidelines on Management of Pain in Older People

http://www.medscape.com/viewarticle/779782

Pain in older people is not only under-recognized, but is also under-treated. Many professional bodies have documented that pain in this rapidly growing population is poorly controlled.[1–7]

Some types of complementary therapy [e.g. acupuncture, transcutaneous electrical nerve stimulation (TENS), massage] have been used for older adults with painful conditions, although the available studies lack methodological rigour.

Other therapies such as massage can be used to treat chronic pain, in particular shoulder or knee pain. Reflexology reduces anxiety in patients with breast or lung cancer.

5. Study Shows Why Massage Helps Exercise Recovery

http://www.medscape.com/viewarticle/757978

Ten minutes of massage therapy can help repair exercise-induced muscle damage by subduing inflammation and renewing mitochondria. This mechanism is similar to the way nonsteroidal anti-inflammatory drugs (NSAIDs) work. Data from the small controlled study also debunk the notion that massage clears lactic acid from tired muscles.

When administered to skeletal muscle that has been acutely damaged through exercise, massage therapy appears to be clinically beneficial by reducing inflammation and promoting mitochondrial biogenesis."

Our findings suggest that the perceived positive effects of massage are a result of an attenuated production of inflammatory cytokines, which may reduce pain by the same mechanism as conventional anti-inflammatory drugs such as NSAIDs. The results elucidate the biological effects of massage in skeletal muscle and provide evidence that manipulative therapies may be justifiable in medical practice," the researchers conclude.

"There's general agreement that massage feels good, now we have a scientific basis for the experience," said coauthor Simon Melov, PhD, from the Buck Institute for Research on Aging, Novato, California, in a press statement.

6. Fibromyalgia: Does CAM Work?

http://www.medscape.com/viewarticle/762475

This is a case study.

Massage therapy is widely used by patients with FMS.[18] It has been examined as a stand-alone therapy and compared with electrical nerve stimulation, relaxation, and usual care or control.[23,24] Benefits have been short-lived, and the evidence supporting its use is considered modest.

A 2012 overview of systematic reviews of CAM therapies for FMS confirmed that chiropractic therapy was of no benefit. Some beneficial effects were found for hydrotherapy and massage in this review. Homeopathy and acupuncture were found to have promise but require more evidence.

In summary, several reviews of treatments for FMS have examined diverse CAM modalities. Some evidence supports the efficacy of hydrotherapy, massage, yoga, and homeopathy for symptom control.

7. Massage Improves Immune Function in Preterm Infants

http://www.medscape.com/viewarticle/774535

Massage therapy has been shown to increase immune function, including NK cell number and cytotoxicity, in healthy adults, HIV-infected adults, adults with cancer, and two- to four-year-olds, but its effects on the immune system of premature infants have not been studied until now.

"The mechanism of how massage improves the immune system is still not known and may be due to interplay of various cell types, hormones, and cytokines," the researchers say.

8. Effects and Predictors of Shoulder Muscle Massage for Patients With Posterior Shoulder Tightness

http://www.medscape.com/viewarticle/764305

Fifty-two patients completed the study (29 for the massage and 23 for the control). Massage was an effective treatment for patients with posterior shoulder tightness, but was less effective in patients with longer duration of symptoms, higher functional limitation, and less posterior deltoid tightness.

9. Nurse, Can I Offer You a Chair Massage?

http://www.medscape.com/viewarticle/773306

Massage may be an effective intervention at least for alleviating short-term stress. The purpose of this study was to assess the feasibility of integrating chair massage into the daily workload of a small group of inpatient and outpatient nurses and measure its efficacy in alleviating stress-related symptoms.
Single-arm study with 203 nurses, 40 agreed to participate in the study. The nurses were invited to schedule a weekly 15-minute chair massage for a total of 10 weeks.

Nearly all (92%) of the nurses had positive comments about the massage program, reporting better sleep, reduced pain, and improved stress and anxiety. Most (79%) reported improved job satisfaction and more than half (61%) indicated that they would be willing to pay for chair massages if regularly available at their work place.

This study has a number of limitations, including a small, nonrandomized sample and no control group.

10. FDA Warns Consumers About ShoulderFlex Massager

http://www.medscape.com/viewarticle/755928

The FDA has issued a new warning to consumers against the use of a massage device called the Shoulder*Flex* Massager, which was recalled earlier this year after it was blamed for causing at least one death.

There have been reports of one death and one near-death, due to strangulation, associated with the use of the Shoulder*Flex* Massager.

11. Use of Complementary and Alternative Medicine Among Men With Prostate Cancer in a Rural Setting

http://www.medscape.com/viewarticle/752806

Not pertinent for the purposes of this literary review.

12. Effects of Rehabilitative Interventions on Pain, Function and Physical Impairments in People with Hand Osteoarthritis

http://www.medscape.com/viewarticle/738704

Massage therapy was shown to be effective in reducing pain in patients with hand OA; however, owing to the lower quality (3 on the PEDro scale) of the one study on massage,[27] it is hard to draw definitive conclusions about massage therapy.

The effects of all interventions, except massage, were investigated on hand function in six of the 10 studies.

Not pertinent for the purposes of this literary review.

13. Complementary and Alternative Medicine Use in England: Results from a National Survey

http://www.medscape.com/viewarticle/730431

Of all CAM modalities, massage had the highest lifetime prevalence of use (13.1%), followed by aromatherapy (11.2%) and acupuncture/acupressure (11.2%), relaxation (10.0%) and osteopathy (9.9%).

14. Musculoskeletal Rehabilitation in the Person with Scleroderma

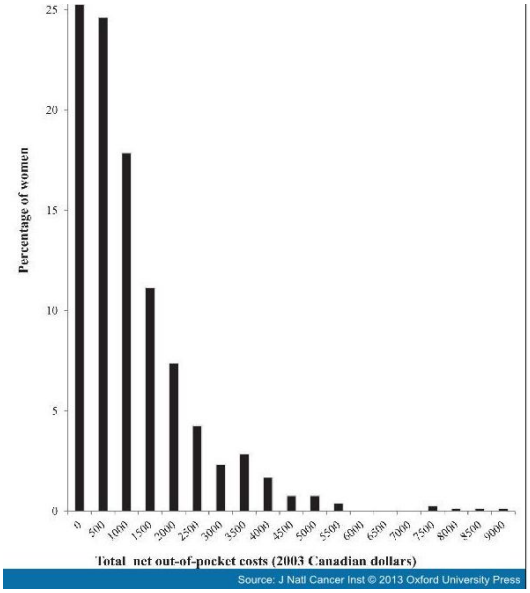
http://www.medscape.com/viewarticle/717087

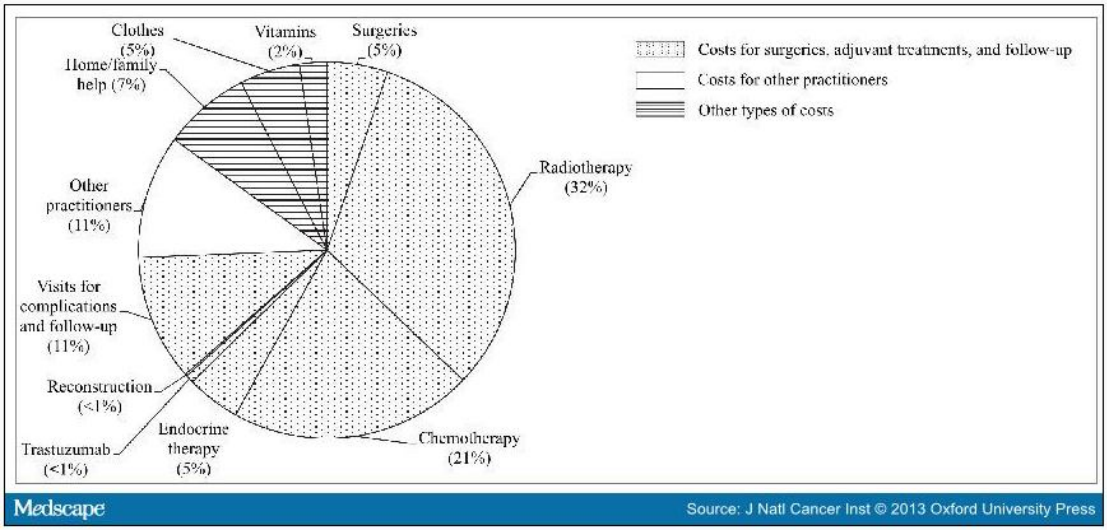
Recently, the efficacy of a combination of connective tissue massage and joint manipulation for the hand was assessed in a randomized controlled trial[26••] (Table 4). Forty participants with scleroderma were randomly assigned to an intervention group (combination massage, joint manipulation, and home exercise program for 1 h, two times a week) or a control group (home exercise program) and treated for 9 weeks. The intervention group had significant improvements in fist closure, hand motion (Hand Mobility in Scleroderma test), hand function (Cochin index), and quality of life (SF-36; HAQ). Only fist closure improved significantly in the control group.

15. Out-of-Pocket Costs in the Year After Early Breast Cancer Among Canadian Women and Spouses

http://www.medscape.com/viewarticle/780179

We also measured amounts paid for consultations with different types of practitioners for help coping with the disease or treatments. These practitioners included physiotherapists, dieticians, psychologists, massage therapists, chiropractors, acupuncturists, and homeopaths. Women were asked about the number of consultations they had had and whether they paid for them. Costs were then estimated by multiplying the number of consultations by an average rate for each type of care in Quebec in 2003.[21] Although we asked about consultations with a psychiatrist, social worker, and occupational therapist, these were virtually always provided as part of hospital care and therefore resulted in no out-of-pocket cost.





16. Neonatal Abstinence Syndrome Linked to Exorbitant Costs

http://www.medscape.com/viewarticle/803656

Dr. Roussos-Ross recommended ways that physicians can help decrease the incidence of neonatal abstinence syndrome, including the following: use nonopioid pharmacologic management of pain in pregnant women, such as physical therapy and massage therapy.

17. Assessment and Management of Cancer-related Fatigue

http://www.medscape.com/viewarticle/780777

The 2012 National Comprehensive Cancer Network defines cancer-related fatigue (CRF) as "a distressing persistent, subjective sense of physical, emotional and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning."[1] Fatigue is one of the most common symptoms that cancer patients experience when receiving treatment with chemotherapy and/or radiation.

The NCCN guidelines organize the nonpharmacologic interventions into 3 categories: activity enhancement (eg, exercise), physical therapies (eg, massage), and psychosocial interventions (eg, cognitive behavioral therapy).[1]

Several massage studies show clinical significance, but similar to acupuncture, more large-scale randomized control trials are needed for statistical significance to confirm efficacy.[10,68–70] One randomized control study (N = 86) looked at the efficacy of classical massage treatment for reducing symptoms related to breast cancer and improving mood.[70] Women with primary breast cancer were randomized into either the massage group or the waiting list. The intervention group received biweekly 30-minute classical massages in the back and neck area twice a week for 5 weeks. The control group did not receive additional treatment beyond usual care. Each intervention participant completed questionnaires at baseline (T1), at the end of intervention (T2), and at 11 weeks follow-up (T3). Results showed a reduction in fatigue at the end of the intervention, which was sustained over time and was statistically significant compared with the control group at week 11. If massage can be proven in larger studies to be effective for reducing CRF, it could be used as an additional intervention to medication and physical activity.[10]

18. After Stem Cell Transplant, Children Soon Recover Emotionally

http://www.medscape.com/viewarticle/758103

Dr. Phipps and colleagues examined whether children adjusted better long-term after SCT when additional therapies such as humor therapy and massage therapy were added to standard care, or when

a parent was also provided with massage therapy and relaxation/imagery work. They found that there was no significant difference between the groups, and to their surprise, most children who had undergone SCT were at least as happy as healthy children at week 24.

19. Pain Experience of the Elderly

http://www.medscape.com/viewarticle/754762

The aims of the study were to determine the prevalence of pain in an older population living in the community, to obtain a description of the older adult's pain experience, and to determine strategies used to manage their pain.

The participants in this study used a variety of modalities to alleviate their pain symptoms, including the use of nonsteroidal antiinflammatory drugs, antiinflammatory drugs, alternative measures, analgesics, and emollients. Oral medications were the predominant method of pain relief. Although pharmacologic strategies are effective, research indicates that physiologic changes in the elderly may alter the effectiveness of pharmacologic interventions owing to altered absorption rates or altered stomach pH (Davis & Srivastava, 2003). It has been effective to combine pharmacologic and nonpharmacologic therapies (home remedies, massage, topical agents, and heat/cold applications) for relief of chronic pain in the elderly (Davis & Srivastava, 2003). The present study shows that these methods were not found to be as useful as medication and inactivity for pain relief.

Research on alternative and complementary therapies has found that massage therapy can be useful in reducing stress and pain in the elderly (Trombley, Thomas, & Mosher-Ashley, 2003) and that foot massage increases blood circulation, promotes relaxation, and stimulates endorphin secretion, resulting in a reduction of pain and anxiety (Jirayingmongkoi, Chantein, Phengchomjan, & Bhangganda, 2002). Lansbury (2000) found that elders wish to be active in their treatment plan and given choices in addition to conventional treatments of medication, exercise, and physiotherapy. The focus in the treatment of pain should be improved physical function, as well as enhanced quality of life (Weiner, 2007).

20. Pain Interventions in Premature Infants

http://www.medscape.com/viewarticle/771825

Evidence-based practice is not new. It is traceable to the 1700s but not defined and used until the 1980s.

Controversial evidence is based on research findings better termed *research based evidence* [5,6] that entails making decisions about how to provide care by integrating the best available evidence with practitioner expertise and other resources, but there have not been sufficient experimental studies to provide conclusive evidence. An example is massage therapy to reduce pain during painful procedures in

premature infants. Most researchers prefer using the term *levels of evidence*, which indicates the strength or weakness of the published research.[18,19] For practical purposes, this article will use the terms conclusive evidence and controversial evidence.

Massage therapy is a form of systematic tactile and kinesthetic stimulation that has been noted to enhance the infant's developmental outcomes, lower serum cortisol levels, shorten hospital stay, and enhance weight gain.[95–98] However, in terms of reducing painful experiences, only two studies are published. Gentle massages of the leg before heel prick in 23 preterm infants decreased behavioral pain responses on the NIPS and decreased HR, but there were no differences in RR or SO_2 levels.[70] Another study randomly allocated infants to one of three groups: (1) moderate pressure massage, (2) light pressure massage, and (3) no massage therapy.[71] Preterm infants who received 15 minutes of moderate pressure massage therapy exhibited lower HRs than infants who did not receive massage therapy or who received light pressure massage therapy after removal of the surgical tape.[71] Currently, there is insufficient evidence to support the use of massage in reducing pain in preterm infants, mostly because the term is not clearly defined.

Massage, swaddling, breastfeeding, and rocking remain inconclusive, as very few studies have assessed the benefits of these interventions.

21. Informal Caregivers of Hematopoietic Cell Transplant Patients

http://www.medscape.com/viewarticle/752728

Self-care Module Hematopoietic cell transplantation caregivers in the study of Wilson et al[33] reveal that it is important to balance the "me and my world" with the "us and our world". Balancing the 2 worlds through integration of self-care strategies is a particular challenge for caregivers in light of all of the new caregiving responsibilities. Health-promotion techniques such as regular exercise, yoga, massage, eating well, and sleep hygiene offer caregivers an opportunity to focus on their own health and physical well-being.[45–47] Simply teaching caregivers to plan healthy meals is a method of self-care and provides a measure of attainable control and assists with health promotion. Regular exercise provides caregivers with a physical outlet for the stresses associated with caregiving. It also improves the body's cardiovascular, immune system, and mental well-being. Yoga, a combination of breathing exercise, physical postures, and meditation to reduce the health effects of daily stress, is the fifth most common complementary and alternative medicine technique used among Americans (http://nccam.nih.gov/news/report.pdf). Yoga with patients and caregivers in a palliative day-care environment suggested that caregivers benefited from a restorative form of yoga.[47] Massage therapy is another complementary therapy designed to reduce stress. Improvement of caregiver physical and psychological wellbeing through relaxing with a massage has been demonstrated.[45]

22. Chronic Non-cancer Pain

http://www.medscape.com/viewarticle/750409

Understanding this complex biopsychosocial nature of CNCP for many patients, clinicians readily used or referred for a variety of treatment modalities for their patients. Massage therapy was used by 78% of clinicians, acupuncture by 73%, and some other type of alternative treatment by 65% of clinicians (for example, yoga, meditation, biofeedback, trigger point, chiropractic or osteopathic manipulation). Clinicians who reported participation in CNCP continuing medical education (CME) within the last 5 years also reported higher use of cognitive behavioral therapy (41% vs. 29%, *P* = .04), and biofeedback/meditation/relaxation training (38% vs. 21%, *P* < .001).

23. The Management of Pain in Metastatic Bone Disease

http://www.medscape.com/viewarticle/761904

Massage therapy can help ease general aches and pains, especially in patients who are bed-bound or who have limited mobility. A recent pilot study that included 30 Taiwanese cancer patients with bone metastases assessed the effects of massage therapy on pain, anxiety, and physiologic relaxation over a 16- to 18-hour period.[11] Massage therapy had a positive impact on pain and anxiety, providing an effective immediate benefit [t(29) = 16.5, *P* = .000; t(29) = 8.9, *P* = .000], short-term benefit, in 20 to 30 minutes [t(29) = 9.3, *P* = .000; t(29) = 10.1, *P* = .000], intermediate benefit, in 1 to 2.5 hours [t(29) = 7.9, *P* = .000; t(29) = 8.9, *P* = .000], and long-term benefit, in 16 to 18 hours [t(29) = 4.0, *P* = .000; t(29) = 5.7, *P* = .000]. The most significant effect occurred 15 minutes after the intervention [F = 11.5 (1, 29), *P* < .002] or 20 minutes after the intervention [F = 20.4 (1, 29), *P* < .000], and no patients have reported any adverse effects as a result of massage therapy.

24. Effectiveness of an Intensive Multidisciplinary Headache Treatment Program

http://www.medscape.com/viewarticle/710317

Concerning headache treatment, there are few empirical studies comparing multidisciplinary headache programs to other treatment regimes.

In a controlled randomized trial, Lemstra et al[8] found positive treatment results for a less intensive multidisciplinary migraine treatment program (1 dietary and 2 group stress-management lectures, 2 massage therapy sessions, 18 exercise therapy sessions, a neurologist and physical therapist intake and discharge) for patients with chronic migraines; however, the pre-post changes were based on self-perceived improvement and not on headache diary documentation.

25. Integrative Oncology: Complementary Therapies in Cancer Care

http://www.medscape.com/viewarticle/586874

Randomized controlled studies indicate that many complementary therapies control treatment-related physical and emotional symptoms including pain, fatigue, nausea, xerostomia, anxiety, and depression in both adult and pediatric cancer patients. Importantly, many of these interventions produce long-lasting improvement.

Complementary therapies include massage therapy, acupuncture, mind-body therapies, music therapy, physical exercise, and herb and botanical use. Of these, herbs are the most commonly employed complementary medicine by cancer patients[2,3].

Massage has long been used to reduce tension, anxiety, and pain in various populations including cancer patients. Surveys indicate that over 20% of cancer patients use massage therapy.[4,5] Through the application of pressure and motion to the muscle and connective tissues of the body, massage therapy elicits both physiological and psychological responses.

In a study involving breast cancer patients, massage therapy was shown to reduce depression, anger, and pain.[6,7] In patients undergoing bone marrow transplantation, reductions in diastolic blood pressure, distress, nausea, and anxiety were detected immediately after receiving upper body massage.[8] Furthermore, massage therapy reduced central nervous system/neurologic complications, which include anxiety, depression, and fatigue, in patients following bone marrow transplantation compared to those receiving therapeutic touch or friendly visits.[9] Data from another study indicate that massage therapy and light therapeutic touch (without deep tissue stimulation) reduced fatigue and pain, resulting in decreased four-week nonsteroidal anti-inflammatory use and improved mood in cancer patients. Improvements were also reported in blood pressure, heart rate, and respiratory rate.[10]
Although most studies have reported the effects of massage in adult patients, pediatric cancer patients also experienced reduced pain after massage therapy.[11] Massage is one of the most commonly used pain management strategies for pediatric patients newly diagnosed with leukemia.[12]

In addition to massage, foot reflexology offers beneficial effects such as reductions in pain, anxiety, and nausea in cancer patients.[13] Reflexology teaching protocols have been successfully administered to caregivers, and subsequent relief in pain intensity and anxiety has been reported in metastatic cancer patients.[14]

Most types of massage (i.e. Swedish, light touch, and foot) result in various levels of symptom relief for patients; however, those receiving Swedish or light touch massages reported a significantly greater

reduction in symptoms compared to those receiving foot massages and the beneficial effects persisted for up to 48 hours.[15]

Although the mechanism by which massage induces symptom relief is not fully known, increased dopamine and serotonin along with decreased cortisol levels have been reported following massage.[7,16] In addition, there was an increase in natural killer cells and lymphocyte levels in breast cancer patients following massage therapy.[6] However, conflicting results were reported in a recent study.[17] It is possible that many factors including location of massage, massage intensity, or psychological impact of surgery, chemotherapy, or radiation may impact the efficacy of massage therapy.

26. Acupuncture May Successfully Lift Depression in Pregnant Women

http://www.medscape.com/viewarticle/716657

Approximately 10% of women who are pregnant have clinical depression. Of those, 20% experience worsened symptoms during pregnancy. Although this rate of depression is similar to that of postpartum and nonpregnant women, concerns about using antidepressants leave pregnant women with few alternatives.

27. Providing Palliative Care to Family Caregivers Throughout the Bone Marrow Transplantation Trajectory

http://www.medscape.com/viewarticle/735542

In an attempt to treat both the patient and caregiver in a holistic manner, use of integrative services should be considered as part of the plan of care. Massage therapy has been shown to decrease anxiety, depression, and fatigue in BMT caregivers when compared with healing touch therapy and control groups. Participants in this study felt that receiving undivided attention and having time away from caregiving responsibilities were associated with improvements in positive energy and strength. Although the sample size of this particular study was small (n = 36), the findings suggest the need for further research in the use of other integrative techniques to relieve both patient and caregiver burden.[22]

28. Managing Vulvovaginal Complaints in a Postmenopausal Breast Cancer Survivor

http://www.medscape.com/viewarticle/579096

Acupuncture, massage therapy (specifically directed to the pelvic floor), relaxation, and stress management can also improve quality of life even if they are not particularly effective in decreasing atrophic symptoms.

If a woman is willing to use a short course of a locally administered, low-dose vaginal estrogen, I recommend this as my first-line treatment to reverse the atrophy before she starts a nonhormonal intervention. I follow this course even for breast cancer survivors, with the consent of the patient and her oncologist. If the woman cannot or will not use estrogen, even for as short as 2 to 3 months, I work with her to find the best combination of lifestyle and over-the-counter vaginal treatments for satisfactory results. To date, I have not found just one nonhormonal management algorithm that gives satisfactory results for all of my patients.

29. Low Back Pain: Evaluating Presenting Symptoms in Elderly Patients

http://www.medscape.com/viewarticle/712253

For patients who do not improve with self-care options, certain nonpharmacologic therapies have proven benefits. For acute low back pain, spinal manipulation has been helpful. For chronic or subacute low back pain, helpful therapies may include intensive interdisciplinary rehabilitation, exercise therapy, acupuncture, massage therapy, spinal manipulation, yoga, cognitive-behavioral therapy, or progressive relaxation.[4] Once the pain is significantly relieved, low stress activities such as walking, stationary biking, or swimming can be recommended. Physical therapy is often helpful.

30. Complementary Medicine for Children and Young People Who Have Attention Deficit Hyperactivity Disorder

http://www.medscape.com/viewarticle/744677

Not applicable for this literary review.

31. Diagnosing Premenstrual Syndrome

http://www.medscape.com/viewarticle/718973

Premenstrual symptoms are common among menstruating women, with approximately 75% reporting some discomfort with their cycles.

Recommended activities for regular exercise include brisk walking, swimming, cycling, or other aerobic activity for at least 30 to 60 minutes 3 to 5 days a week. Suggest stress-reduction techniques such as

biofeedback, massage therapy, and yoga. Although the safety and efficacy of herbal remedies have not been established, many women report relief with black cohash root and evening primrose oil.
The most effective pharmacological treatment options are the non-steroidal anti-inflammatory drugs (NSAIDs).

32. Are the Economics of Complementary and Alternative Medicine Different to Conventional Medicine?

http://www.medscape.com/viewarticle/705608

> "In our opinion any therapy that makes specific claims for being able to treat specific conditions should have evidence of being able to do this above and beyond the placebo effect". [103]

When it comes to the practicalities of undertaking economic analyses of CAM therapies, a number of arguments can be found in the literature as to why the evaluation of this modality may differ to that of conventional medicine.[11,19,24] One such argument is that CAM offers something that cannot be detected by existing health outcomes measurement, such as the experience of holistic-practitioner care by the patient.[19,25] Others claim that it is not feasible to conduct randomized trials for therapies that are not well defined.[26] For example, how is a 'course of massage therapy' defined? Such arguments are valid to the extent that they identify challenges to be overcome. However, these arguments do not fully acknowledge that the economic evaluation of pharmaceuticals, despite its general acceptance, is still faced with many of the same challenges.[27]

33. Nurses Journal Scan, July 2008

http://www.medscape.com/viewarticle/578395

Current therapy for OA of the knee is focused on symptom relief because there is no disease-modifying therapy available. Many older people use alternative therapies such as herbal and massage treatment for relief of knee pain.

Massage therapy also has been shown to have positive effects on musculoskeletal or chronic pain. It has been suggested that massage leads to increased serotonin and dopamine and "closes the gate" to the pain stimulus. Massage may also increase endorphin levels and enhance local blood flow, linked to the clearance of local pain mediators. Massage therapy has been shown to be an effective treatment in some areas of musculoskeletal problems, such as low back pain, neck pain, or chronic pain. It has also been suggested that an essential oil might prolong the effects of massage.
The aim of this study was to assess the efficacy of massage with aromatic ginger essential oil (*Zingiber officinale*) in relieving knee pain and stiffness as well as enhancing physical functionality and quality of

life among older persons. The participants' satisfaction as well as any adverse events from this add-on treatment were also measured.

Fifty-nine older persons were enrolled in a double-blind, placebo-controlled experimental study group from the Community Centre for Senior Citizens, Hong Kong. Participants in the intervention and placebo groups received a session of 30-35 minutes of aroma massage on both lower limbs 6 times within 2-3 weeks.

The massage consisted of effleurage and petrissage applied over the front and back of both legs of the participants. Various muscles on the thigh and leg were massaged; tendons in the lower limbs were massaged also. The massage treatment was given by a nurse with training in leg aroma-massage. The intervention was 6 massage sessions with ginger and orange oil over a 3-week period. The placebo control group received the same massage intervention with olive oil only, and the control group received no massage. Assessment was done at baseline and at 1 and 4 weeks after treatment. Changes from baseline to the end of treatment were assessed on knee pain intensity, stiffness level, and physical functioning and quality of life using standardized tools.

The findings indicated that there were statistically significant mean changes between the 3 time-points timepoints within the intervention group on 3 of the outcome measures: knee pain intensity, stiffness level, and enhancing physical function, but these were not apparent with the between-groups comparison 4 weeks after the massage. The improvement of physical function and pain was also superior in the intervention group compared with both the placebo and control groups at 1 week after treatment but was not sustained at 4 weeks. The changes in quality of life were not statistically significant for any of the 3 groups.

The researchers concluded that aroma-massage therapy with ginger seems to have potential as an alternative method for short-term knee pain relief.

Editor's Comment

Asian cultures have relied on herbal medicine and massage for centuries. Given the frequently occurring problem of knee pain, these effective techniques may well be offered to individuals in other cultures as additional treatment options.

34. A Review of Complementary and Alternative Medicine Practices among Cancer Survivors

http://www.medscape.com/viewarticle/727404

About 4 of 10 adults in the United States use some type of complementary or alternative medicine (CAM) therapy, with the rate being higher among patients with serious illnesses, such as cancer.
Studies have reported higher rates of use among patients with serious illnesses, including cancer (Miller et al., 2008; Saxe et al., 2008). Several specific therapies had marked increases as well, including deep breathing exercises, meditation, massage therapy, and yoga (NIH, 2007).

35. Palliative Care for Cancer Patients: An Interdisciplinary Approach

http://www.medscape.com/viewarticle/582054

Additionally, the use of complementary non-drug techniques may play an increasing role as they are studied. For example, it has recently been reported that massage therapy is an effective and safe adjuvant therapy for the relief of acute postoperative pain after a major operation.[19]

36. Postpartum Depression

http://www.medscape.com/viewarticle/736748

Postpartum depression (PPD) is a cross-cultural form of major depressive disorder that affects some 13% of women and can have serious health consequences for both the mother and her child.

Standard treatments for PPD include psychotherapy and antidepressants. However, treatment of a thyroid condition or insomnia, or even regular exercise or massage may also be beneficial.

Another non-pharmacologic intervention for PPD that has reportedly resulted in significant improvement is massage therapy for either the mother, or for the infant as administered by the mother. Dimidjian et al[17] reported that when a woman's partner provided 20 minutes of massage to her twice a week for 16 weeks, depression and anxiety symptoms significantly decreased over controls, and infant outcomes improved. Although results for infant massage were less clear, five weekly sessions of infant massage by the mother, as taught in an infant massage class, were associated with greater self-reported improvements over controls.[17]

37. Americans Spend $34 Billion on Alternative Medicine

http://www.medscape.com/viewarticle/706996

"Americans turn to treatments like acupuncture, chiropractic care, and massage therapy to deal with these painful conditions," she said, adding that groups like the American College of Physicians and the American Pain Society are on record as endorsing these therapies as useful options for the treatment of chronic back pain.

38. Management of Functional Abdominal Pain and Irritable Bowel Syndrome in Children and Adolescents

http://www.medscape.com/viewarticle/723605

Massage therapy has been hypothesized to reduce excitation of visceral afferent fibers and possibly dampen central pain perception processing, but there are limited data on the usefulness of massage therapy for FAP or IBS.

The conditions were, in order of frequency: stress/anxiety; headaches/migraine; back pain; respiratory problems; insomnia; cardiovascular problems; and musculoskeletal problems. Thus, the likelihood of patients with fibromyalgia being referred for CAM therapies would be expected to increase as they see more CAM practitioners.

39. The Case of an Educated Woman With Fibromyalgia Seeking CAM Therapies

http://www.medscape.com/viewarticle/731309

People are most likely to seek CAM therapies for conditions that are chronic and do not have an effective single remedy,[7,8] and fibromyalgia meets both of these criteria.

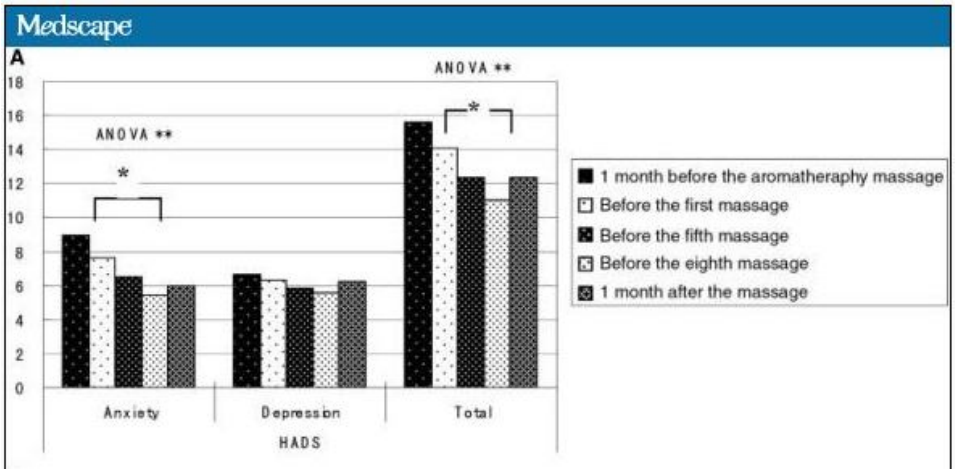
The highest frequency of use was reported for exercise for a specific medical problem (48% of respondents). This was followed by prayer (45%); massage (44%); chiropractic treatment (37%); and vitamin C, vitamin E, magnesium, or vitamin B complex (ranging from 25% to 35%).

40. Anxiolytic Effect of Aromatherapy Massage in Patients with Breast Cancer

http://www.medscape.com/viewarticle/718370

We examined how aromatherapy massage influenced psychologic and immunologic parameters in 12 breast cancer patients in an open semi-comparative trial. We compared the results 1 month before aromatherapy massage as a waiting control period with those during aromatherapy massage treatment and 1 month after the completion of aromatherapy sessions. The patients received a 30 min aromatherapy massage twice a week for 4 weeks (eight times in total). The results showed that anxiety was reduced in one 30 min aromatherapy massage in State-Trait Anxiety Inventory (STAI) test and also reduced in eight sequential aromatherapy massage sessions in the Hospital Anxiety and Depression Scale (HADS) test. Our results further suggested that aromatherapy massage ameliorated the immunologic state. Further investigations are required to confirm the anxiolytic effect of aromatherapy in breast cancer patients.

Since immunologic activity is a critical factor in determining a patient's prognosis, it is very important to examine the effect of aromatherapy on immunologic activity.

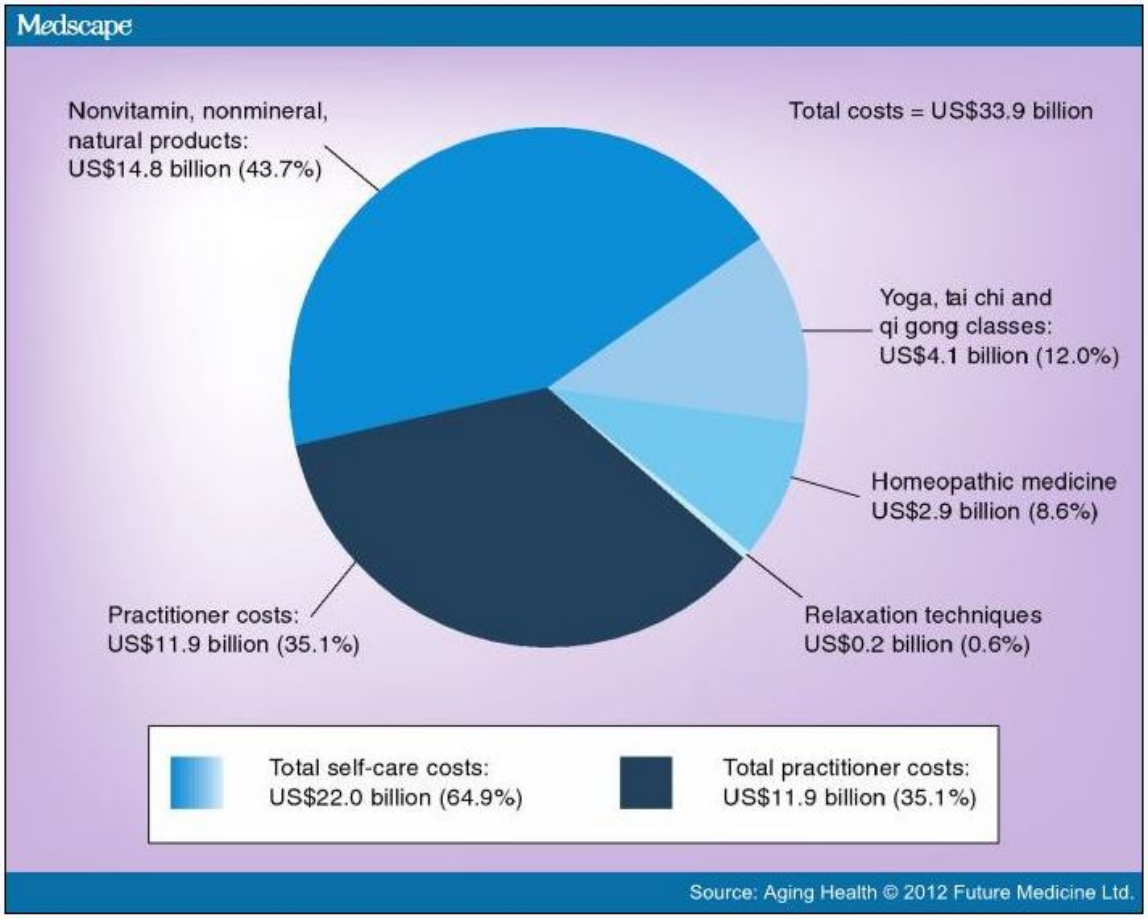


Our results suggest that aromatherapy massage is a viable complementary therapy that significantly reduces anxiety in breast cancer patients.

41. Complementary and Alternative Medicine for Rheumatic Diseases

http://www.medscape.com/viewarticle/770898

The most commonly used therapies were nonvitamin, nonmineral, natural products (17.7%), deep-breathing exercises (12.7%), meditation (9.4%), chiropractic or osteopathic manipulation (8.6%), massage (8.3%) and yoga (6.1%). Between 2002 and 2007, increased use was seen among adults for acupuncture (28% increase), deep-breathing exercises (9%), massage therapy (66%), meditation (24%), naturopathy (50%) and yoga (20%).[1] On the other hand, use of CAM modalities, such as herbal medicines, has decreased significantly.



Massage Therapy

Manual therapy techniques are composed of a variety of procedures directed at the musculoskeletal structures in the treatment of pain. Two major subcategories exist: those that produce joint motion and those that do not. The first subcategory includes manipulation, mobilization and manual traction. The second subcategory involves massage therapy.[33] Massage is one of the most popular CAM therapies in

the USA.[34] Between 2002 and 2007, the 1-year prevalence of the use of massage by the US adult population increased from 5% (10.05 million) to 8.3% (18.07 million).[34]

Massage therapy is widely used by patients with FM seeking symptom relief. A recent review article to determine whether massage therapy can be a viable treatment of FM symptoms included two single-arm studies and six randomized controlled trials.[35] All reviewed studies showed short-term benefits of massage, but only one single-arm study reported long-term benefits. The review authors suggested that, optimally, massage should be painless, its intensity should be increased gradually from session to session in accordance with patient's symptoms and that sessions should be performed once or twice a week at a minimum. A more recent study presented the results of treatment of 70 subjects for FM with vibration massage by deep oscillations.[36] The efficiency of treatment was evaluated using the FIQ, a visual analog scale, and the Pain Sensation Scale. This study demonstrated improvement of symptoms, improvement of quality of life, and reduction in pain when participants were re-evaluated 2 months after treatment. In another study, manual lymph drainage therapy, in which the lymph vessels are gently massaged, and connective tissue massage, which uses a shear force at connective tissue interfaces, were tested in 50 FM patients. The patients were divided randomly into two groups. Twenty five participants received manual lymph drainage therapy; the other 25 underwent connective tissue massage. The treatment program was carried out five-times a week for 3 weeks in each group. Pain was evaluated by a visual analog scale. The FIQ and Nottingham Health Profile were used to describe health status and health-related quality of life. In both treatment groups, significant improvements were found in pain intensity, pain pressure threshold and health-related quality of life. However, manual lymph drainage therapy was found to be more effective than connective tissue massage according to some sub-items of FIQ (morning tiredness and anxiety) and by the total FIQ score.[37] Another study, using reflexology, a specific pressure technique that works on precise points of the feet, helped decrease the experience of pain in subjects with FM.[38] Thus, the existing literature provides modest support for the use of massage therapy in FM. Additional rigorous research is needed in order to establish massage therapy as a safe and effective intervention for FM. Considerably more information is required on which patient characteristics might predict response since many patients with FM experience tenderness to the touch.

Massage therapy is being utilized by OA patients, and represents a potentially effective option to manage pain in this disorder as well. A pilot study of massage therapy for OA of the knee included 68 adults with radiographically confirmed OA of the knee. Participants were randomized to biweekly (for 4 weeks), then weekly (for four additional weeks) Swedish massage performed during 1 h sessions or a wait-list control group. Subjects receiving massage therapy demonstrated significant improvements in the WOMAC pain, stiffness, physical functional disability domains and visual analog pain scale compared with usual care. Notably, the benefits persisted up to 8 weeks following the cessation of massage.[39] A randomized dose-finding trial completed in 2012 included 125 adults with OA of the knee and sought to identify the optimal dose of massage within an 8-week treatment regimen. Participants were randomized to one of four regimens of a standardized Swedish massage regimen (30 or 60 min weekly

or biweekly) or to a usual care control.[39] WOMAC global scores and visual analog pain scales improved significantly in the 60-min massage groups compared with usual care at 8 weeks. A dose–response curve based on WOMAC global scores showed increasing effect with greater total time of massage, but with a plateau at the 60 min per week dose. Given the superior convenience of a once-weekly protocol, cost savings and consistency with a typical real-world massage protocol, the 60 min once weekly dose was determined to be optimal, establishing a standard for future trials.[4] More definitive research is needed investigating not only the efficacy, but also cost–effectiveness, of massage for OA of the knee and other joints, as well as research exploring the mechanisms by which massage may exert its effects in this clinical application and in general.

42. When the Going Gets Tough

http://www.medscape.com/viewarticle/804220

Levodopa-induced motor complications of Parkinson's disease, including motor fluctuations and dyskinesias, become increasingly frequent as the disease progresses, and are often disabling. Oral and transdermal therapies have limited efficacy in controlling these problems. Advanced device-aided therapies, including continuous infusion of apomorphine, deep brain stimulation and levodopa-carbidopa intestinal gel can all ameliorate these complications. This review summarises the principles of each of these therapies, their modes of action, efficacy and adverse effects, and gives advice on timely identification of suitable patients and how to decide on the most appropriate therapy for a given patient.

Scrupulous hygiene, proper needle insertion technique and site rotation may help. Unproven techniques, such as massage, ultrasound and silicone gel dressings may reduce nodule formation in individual patients.[27]

43. Sports and Exercise-Related Tendinopathies

http://www.medscape.com/viewarticle/804326

This should be considered an update and a signposting document rather than a comprehensive review. The document is developed for use by physiotherapists, physicians, athletic trainers, massage therapists and other health professionals as well as team coaches and strength/conditioning managers involved in care of sportspeople or workers with tendinopathy.

44. Adherence Issues for Oral Antineoplastics

http://www.medscape.com/viewarticle/804754

Cancer is the leading cause of death in the United States among men and women younger than 85 years of age.

Nonadherence to antineoplastics is a growing concern because of the increasing number of novel oral targeted anticancer therapies. Many of these agents are administered on a chronic continuous schedule for an indefinite period of time where adherence is crucial to achieve optimal disease control and prolong survival. Many factors are known to contribute to medication nonadherence. Prevention, early detection, and management of adverse drug reactions associated with oral targeted therapies require close vigilance. Knowing how to prevent and manage adverse drug reactions will help clinicians develop strategies to promote patient adherence to oral anticancer treatment regimens. Optimal adherence requires a dynamic patient-provider alliance through education, communication, ongoing monitoring, and follow-up.

Hand-foot syndrome reaction (HFSR) is a significant problem associated with the TKIs axitinib, lapatinib, and also vemurafenib[57,83] and the MKIs, sorafenib and sunitinib.[84,85]

The onset of HFSR usually occurs 2 to 12 days after initiation of therapy and may progress 3 to 4 days later into symmetrical edema and erythema of the palms and soles.[84,85] Symptoms usually precede lesions and may include paresthesias, tingling, burning, and painful sensations on the palms and soles as well as decreased tolerance to contact with hot objects. The lesions are localized and tender and appear as blisters or hyperkeratosis in areas of trauma or friction on the soles of the feet and palms of the hand and sometimes on the elbows as well. The hyperkeratosis typically presents as yellowish, painful, hyperkeratotic plaques localized to the pressure sole areas (heels and metatarsals).

An orthotic device is encouraged for patients with signs of abnormal weight bearing; also, constrictive footwear, excessive friction on the skin when applying lotions, massages, or performing everyday tasks such as typing or using handheld electronic devices should be avoided.

Vigorous exercise that places undue stress on the palms and/or soles of the feet should also be avoided, particularly during the first month of therapy. Patients should be counseled to wear shoes with padded insoles to reduce pressure on the feet and to wear thick cotton gloves or socks to prevent injury and keep the palms and soles dry.

45. Biopsychosocial Care and the Physiotherapy Encounter

http://www.medscape.com/viewarticle/782158

Conclusions As psychosocial issues, alongside biomechanical factors, command a prominent place within the back pain consultation, physiotherapists may benefit from further specific training and mentoring support in identifying specific strategies for combining the best of traditional physiotherapy approaches with greater focus on patients' beliefs, fears and social context.

Physiotherapists found patients' unrealistic expectations about the likely success of treatment difficult to manage during consultations. Although they recognised the importance of discussing psychosocial obstacles to recovery with patients, they also stressed that patients had a duty to follow the physiotherapy advice and acknowledge responsibility for their own LBP rehabilitation.

B5997: You certainly get a gut feel of the ones that you're wasting your time on...They perhaps think they're coming to me for a massage or something to be done to them to make them feel better, and I won't go along that line. So they are difficult and there are times when I've had to say "well, look if you don't want to follow what I'm saying I'm afraid I can't help you."

46. Uninterrupted Skin-to-Skin Contact Immediately After Birth

http://www.medscape.com/viewarticle/806325

Oxytocin is one such hormone that has been particularly well studied in relationship to attachment and is often referred to as the "love hormone." It has been shown to increase relaxation, attraction, facial recognition, and maternal care-giving behaviors, all necessary to ensure infant survival. Oxytocin is increased during skin-to-skin contact and levels spike whenever the newborn's hand massages mother's breasts.[5]

47. Predictors and Use of Nonpharmacologic Interventions for Procedural Pain Associated With Turning Among Hospitalized Adults

http://www.medscape.com/viewarticle/804948

This study found that nonpharmacologic interventions were used frequently for turning. The specific interventions used most often included calming voice, information, and deep breathing, ones that can be initiated spontaneously and

Table 3. Frequency of Nonpharmacologic Interventions Used During Turning (n = 1,395)

▪	%	n
Calming voice	65.7%	917
Information	60.6%	845
Deep breathing	37.9%	528
Gentle touch/hand holding	36.6%	510
Distraction	34.2%	474
Pillow splinting	34.0%	473
Humor	25.9%	361
Massage	15.4%	215
Presence of family/friends	13.7%	191
Therapeutic touch	10.1%	141
Progressive relaxation	8.1%	113
Other	4.7%	65

without specific equipment or training. These data suggest that patients, nurses, and family members may be aware of patients' pain during turning and respond to their increased pain by using nonpharmacologic interventions available in that situation, such as calm voice and deep breathing, Randomized controlled trials are needed that examine the effectiveness of nonpharmacologic interventions for procedural pain, especially considering that some are frequently used in clinical practice.

48. Agreement of General Practitioners With the Guideline-based Stepped-care Strategy for Patients With Osteoarthritis of the Hip or Knee

http://www.medscape.com/viewarticle/782746

Three other frequently-used modalities (massage, manual therapy, and other passive physical therapy treatment modalities, such as cold or heat therapy, ultrasound, laser therapy, or electrotherapy) are not recommended in the SCS, i.e. non-recommended modalities.

PUBMED (59 ARTICLES)

1. The efficacy of massage on short and long term outcomes in preterm infants.

http://www.ncbi.nlm.nih.gov/pubmed/23932956

Infant massage is a developmentally supportive intervention that has been documented for several decades to have a positive effect on both full term and preterm infants. The purpose of this study was to assess the short and long term benefits of massage on stable preterm infants.

Infants who were massaged had significantly lower scores on the PIPP after a heel-stick compared to before the massage and had lower PIPP scores at discharge compared to the control group. Massaged infants had higher cognitive scores at 12 months corrected age. Weight gain, length of stay, breastfeeding duration and motor scores did not differ between groups.

Stable preterm infants benefit from massage therapy given by their mothers and may be a culturally acceptable form of intervention to improve the outcomes of preterm infants.

2. Effects of Anma massage therapy (Japanese massage) for gynecological cancer survivors: study protocol for a randomized controlled trial.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3726337/

Cancer patients and survivors regularly feel anxious about cancer recurrence or death, even after the conclusion of medical treatment, and they are often highly physiologically and psychologically stressed. Massage therapy is one of the most widely used complementary and alternative therapies used in the hope of alleviating such stress and physical and psychological complaints and to improve health-related quality of life. This randomized phase III, two-armed, parallel group, clinical trial was designed after obtaining positive findings in a preliminary study. The primary objective is to verify the effects of continuous Japanese massage therapy, referred to as Anma therapy, for cancer survivors. The secondary objective is to confirm the immediate effects of a single Anma massage session for cancer survivors.

Randomly allocated to two groups (n = 30 each): an Anma massage group receiving a 40-min Anma massage session once weekly over a 2-month intervention period (total of eight Anma massage sessions) and a control group being followed by medical doctors and receiving no Anma massage sessions.

Using the evidence-based findings of this trial, medical professionals should be able to explain the benefits conferred by *Anma* massage to cancer survivors and provide higher-quality information to better inform patients in their decisions about whether to receive such therapy.

3. Rheumatoid arthritis in upper limbs benefits from moderate pressure massage therapy.

http://www.ncbi.nlm.nih.gov/pubmed/23561068

METHODS:
Forty-two adults with rheumatoid arthritis in the upper limbs were randomly assigned to a moderate pressure or a light pressure massage therapy group. A therapist massaged the affected arm and shoulder once a week for a 4-week period and also taught the participant self-massage to be done once daily.

RESULTS:
The moderate pressure vs. the light pressure massage therapy group had less pain and perceived greater grip strength following the first and last massage sessions. By the end of the one month period the moderate pressure massage group had less pain, greater grip strength and greater range of motion in their wrist and large upper joints (elbows and shoulders).

4. Mobilization versus massage therapy in the treatment of cervicogenic headache: a clinical study.

http://www.ncbi.nlm.nih.gov/pubmed/23411644

In this study the effect of cervical mobilizations was compared with that of massage therapy in the management of CGH.

DESIGN:
Thirty-six subjects with CGH, randomly assigned into two groups, participated in the study. The first group was treated with spinal mobilization techniques of the upper cervical spine, while the second group was treated with massage therapy of the neck region. All subjects underwent active neck range of motion, isometric and dynamic strengthening and endurance exercises in two sessions per week for 6 weeks. Pre- and post-treatment outcomes were assessed with means and standard error of the means of measured headache pain intensity, frequency and duration of headache attacks as well as via the functional Neck Disability Index (NDI) and active neck range of motion.

RESULTS:
The results of the study showed significant improvement in all measured variables in each treatment group. Comparison between the two groups showed significant differences in all measured variables after intervention in favor of mobilization techniques with the exception of the functional NDI.

CONCLUSION:
Upper cervical spine mobilization demonstrated more clinical benefits than massage therapy with regard to headache pain parameters and neck mobility for CGH subjects.

5. Six weeks of massage therapy produces changes in balance, neurological and cardiovascular measures in older persons.

http://www.ncbi.nlm.nih.gov/pubmed/23087776

This project assessed the effects of six weeks of TM treatment on balance, nervous system, and cardiovascular measures in older adults.

RESULTS:
The TM group showed significant differences relative to controls in cardiovascular and displacement area/velocity after the week six session, with decreasing blood pressure and increasing stability over time from immediate post-TM to 60 minutes post-TM. The TM group revealed lower H-max/M-max ratios 60-minutes post-treatment. Long-term differences between the groups were detected at week seven in displacement area/velocity and systolic blood pressure.

CONCLUSIONS:
Results suggest six weeks of TM resulted in immediate and long-term improvements in postural stability and blood pressure, compared to a controlled condition.

6. Recent non-interventional advances in cancer pain among Singapore patients.

http://www.ncbi.nlm.nih.gov/pubmed/23052435

A questionnaire was distributed for self-administration by patients while waiting for consultation at the NCC outpatient departments. Literature searches on advances in pain management were conducted, reviewed and discussed.

Pain is a significant symptom in outpatients attending a cancer centre, affecting 41.2% of the patients. Although majority of patients who suffered from pain reported this to doctors, much more medical effort is needed to help patients to relieve their pain and proper complementary therapy could be considered.

7. Reflexology versus Swedish Massage to Reduce Physiologic Stress and Pain and Improve Mood in Nursing Home Residents with Cancer: A Pilot Trial.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3409545/

Cancer is a leading cause of morbidity and mortality in the older population. Demographic trends in the aging of the population, coupled with trends in cancer diagnoses and treatment, will shift much of the care of older cancer survivors to the nursing homes setting.

Two of the most widely accepted manual CAM therapies are reflexology and massage therapy.
Recent reviews suggest that these modalities may have beneficial effects such as decreasing pain and increasing qualify of life in patients who have cancer [4, 5].

The purpose of this pilot study was to investigate and compare the effects of reflexology and Swedish massage therapy on physiologic stress, pain, and mood in older cancer survivors residing in nursing homes.

Results. Both Reflexology and Swedish Massage resulted in significant declines in salivary cortisol and pain and improvements in mood. Conclusions. Preliminary data suggest that studies of Swedish Massage Therapy and Reflexology are feasible in this population of cancer survivors typically excluded from trials. Both interventions were well tolerated and produced measurable improvements in outcomes.
The study has several important limitations.

8. Integrating massage, chiropractic, and acupuncture in university clinics: a guided student observation.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3390215/

Several studies have reported on the health benefits of applying an integrated complementary health care model.

This paper presents the results of pilot research focusing on the observations massage therapy students made about complementary health care education and integration during massage, chiropractic, and acupuncture treatments at two university clinics.

Qualitative observations showed that clinicians and interns educated patients to some degree, but the clinicians were less apt to integrate other modalities than the interns.

Observations support that professional integrity may limit clinicians in their ability to integrate multiple modalities of health care while treating patients. Since it is well established that integration of multiple health care modalities is beneficial to patient health, it is recommended that clinics assist their clinical staff in applying an integrative approach to their practice.

9. Massage therapy for osteoarthritis of the knee: a randomized dose-finding trial.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275589/

We performed a RCT to identify the optimal dose of massage within an 8-week treatment regimen and to further examine durability of response. Participants were 125 adults with OA of the knee, randomized to one of four 8-week regimens of a standardized Swedish massage regimen (30 or 60 min weekly or biweekly) or to a Usual Care control.
Sample protocol:

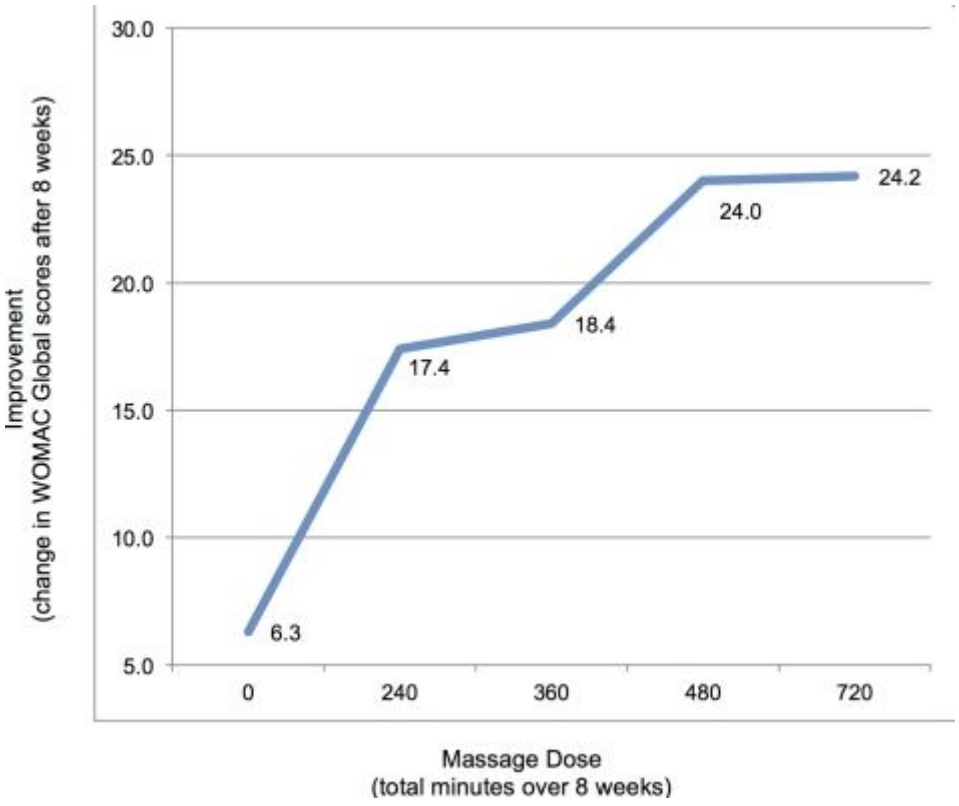
Table 1

30- and 60-Minute Massage Protocols.

30 minute protocol (25 minutes of table time)		
Region	Time Allotted	Distribution
Lower Limbs	12–15 min (45–50% of session)	From knee down including lower leg, ankle, and foot. From knee up including hips, pelvis, buttocks & thigh.
Upper Body	8–12 min (36–44% of session)	Lower and upper back. Head/Neck/Chest
Discretionary	2–5 min (6–19% of session)	Therapist to expand treatment to other affected areas; i.e. rib cage, flank, upper limbs, etc.

60 minute protocol (55 minutes of table time*)		
Lower Limbs	20–27.5 min (45–50% of session)	From knee down including lower leg, ankle, and foot. From knee up including hips, pelvis, buttocks and thigh.
Upper Body	15–24 min (36–44% of session)	Lower and upper back. Head, neck, and chest.
Discretionary	3.5–20 min (6–19% of session)	Therapist to expand treatment to other affected areas; i.e. rib cage, flank, upper limbs, etc.

*Accounting for time spent in transition including the welcome, transition to the massage room, taking off jewelry, and other preparatory activities.



CONCLUSION:
Given the superior convenience of a once-weekly protocol, cost savings, and consistency with a typical real-world massage protocol, the 60-minute once weekly dose was determined to be optimal, establishing a standard for future trials.

10. Tactile stimulation lowers stress in fish.

http://www.ncbi.nlm.nih.gov/pubmed/22086335

In humans, physical stimulation, such as massage therapy, reduces stress and has demonstrable health benefits. Grooming in primates may have similar effects but it remains unclear whether the positive effects are due to physical contact or to its social value. Here we show that physical stimulation reduces stress in a coral reef fish, the surgeonfish Ctenochaetus striatus. These fish regularly visit cleaner wrasses Labroides dimidiatus to have ectoparasites removed. The cleanerfish influences client decisions by physically touching the surgeonfish with its pectoral and pelvic fins, a behaviour known as tactile stimulation. We simulated this behaviour by exposing surgeonfish to mechanically moving cleanerfish models. Surgeonfish had significantly lower levels of cortisol when stimulated by moving models compared with controls with access to stationary models. Our results show that physical contact alone, without a social aspect, is enough to produce fitness-enhancing benefits, a situation so far only demonstrated in humans.

11. Effects of massage on pain, mood status, relaxation, and sleep in Taiwanese patients with metastatic bone pain: a randomized clinical trial.

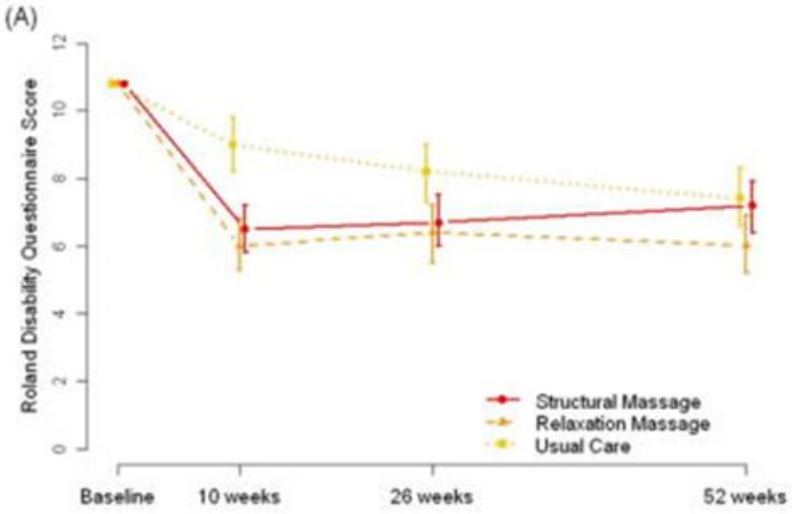
http://www.ncbi.nlm.nih.gov/pubmed/21802850

To date, patients with bony metastases were only a small fraction of the samples studied, or they were entirely excluded. Patients with metastatic cancers, such as bone metastases, are more likely to report pain, compared to patients without metastatic cancer (50-74% and 15%, respectively). Their cancer pain results in substantial morbidity and disrupted quality of life in 34-45% of cancer patients. Massage therapy (MT) appears to have positive effects in patients with cancer; however, the benefits of MT, specifically in patients with metastatic bone pain, remains unknown. The purpose of this randomized clinical trial was to compare the efficacy of MT to a social attention control condition on pain intensity, mood status, muscle relaxation, and sleep quality in a sample (n=72) of Taiwanese cancer patients with bone metastases. In this investigation, MT was shown to have beneficial within- or between-subjects effects on pain, mood, muscle relaxation, and sleep quality. Results from repeated-measures analysis of covariance demonstrated that massage resulted in a linear trend of improvements in mood and relaxation over time. More importantly, the reduction in pain with massage was both statistically and clinically significant, and the massage-related effects on relaxation were sustained for at least 16-18 hours postintervention. Furthermore, massage-related effects on sleep were associated with within-subjects effects. Future studies are suggested with increased sample sizes, a longer interventional period duration, and an objective and sensitive measure of sleep. Overall, results from this study support employing MT as an adjuvant to other therapies in improving bone pain management.

12. A comparison of the effects of 2 types of massage and usual care on chronic low back pain: a randomized, controlled trial.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3570565/

OBJECTIVE: To compare the effectiveness of 2 types of massage and usual care for chronic back pain.



CONCLUSION:

Massage therapy may be effective for treatment of chronic back pain, with benefits lasting at least 6 months. No clinically meaningful difference between relaxation and structural massage was observed in terms of relieving disability or symptoms.

13. Effects of patterns of pressure application on resting electromyography during massage.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088531/

BACKGROUND:
Over the past few decades, a substantial body of research has accumulated showing that massage therapy is effective in improving health. Chronic back pain, migraines, anxiety, hypertension, depression, and numerous other physical and psychological conditions have been shown to respond positively to massage[1–3]. This type of clinical research is critical if we are to understand the potential of massage therapy as a treatment modality, and for massage to become more recognized and utilized by the mainstream medical establishment.

The purpose here is to increase the understanding of the physiological mechanisms by which massage therapy produces health benefits such as pain relief and anxiety reduction, the relationship between specific elements of massage and physiological outcomes must be addressed.

These results suggest that the physiological response of the muscle depends on the pattern of applied pressure during massage. That finding is consistent with a mechanism by which light- or moderate-pressure massage (or a combination) may reduce the gain of spinal nociceptive reflexes. As those reflexes are elevated in chronic pain syndromes, pressure variation provides a possible mechanism for the relief of chronic pain by massage therapy.

14. Massage therapy after cardiac surgery.

http://www.ncbi.nlm.nih.gov/pubmed/21167456

Cardiac surgery presents a life-saving and life-enhancing opportunity to hundreds of thousands of patients each year in the United States. However, many patients face significant challenges during the postoperative period, including pain, anxiety, and tension. Mounting evidence demonstrates that such challenges can impair immune function and slow wound healing, in addition to causing suffering for the patient. Finding new approaches to mitigate these challenges is necessary if patients are to experience the full benefits of surgery. Massage therapy is a therapy that has significant evidence to support its role in meeting these needs.

15. Does massage therapy reduce cortisol? A comprehensive quantitative review.

http://www.ncbi.nlm.nih.gov/pubmed/21147413

It is frequently asserted that massage therapy (MT) reduces cortisol levels, and that this mechanism is the cause of MT benefits including relief from anxiety, depression, and pain, but reviews of MT research are not in agreement on the existence or magnitude of such a cortisol reduction effect, or the likelihood that it plays such a causative role. A definitive quantitative review of MT's effect on cortisol would be of value to MT research and practice.

CONCLUSIONS:
MT's effect on cortisol is generally very small and, in most cases, not statistically distinguishable from zero. As such, it cannot be the cause of MT's well-established and statistically larger beneficial effects on anxiety, depression, and pain. We conclude that other causal mechanisms, which are still to be identified, must be responsible for MT's clinical benefits.

16. Massage and touch therapy in neonates: the current evidence.

http://www.ncbi.nlm.nih.gov/pubmed/21048258

Infant massage was first introduced in China in 2nd century BC. Massaging the newborn has been a tradition in India and other Asian countries since time immemorial.
Evidence exists supporting the benefits of touch and massage therapy.

The review suggests that massage has several positive effects in terms of weight gain, better sleep-wake pattern, enhanced neuromotor development, better emotional bonding, reduced rates of nosocomial infection and thereby, reduced mortality in the hospitalized patients.

Many studies have described the technique and frequency of this procedure. Massage was found to be more useful when some kind of lubricant oil was used. Harmful effects like physical injury and increased risk of infection were encountered when performed inappropriately.

17. Massage therapy for stress management: implications for nursing practice.

http://www.ncbi.nlm.nih.gov/pubmed/20664464

Unresolved stress has been shown to have numerous adverse effects on the body. A review of the literature has revealed 2 major themes: (1) research that argues that massage has a direct relationship with positive health outcomes and (2) research that stresses that although there are little or no measurable physiological changes that occur from massage, patients' perceptions of stress and anxiety were significantly reduced. The simple act of touch-focused care, even a simple 5-min hand or foot massage, can be useful in lowering a patient's perceived level of stress. Further research is necessary on the benefits and risks of implementing massage therapy in the hospital setting.

18. Moderate pressure is essential for massage therapy effects.

http://www.ncbi.nlm.nih.gov/pubmed/20402578

Moderate pressure appears to be necessary for massage therapy effects. Studies comparing moderate and light pressure massage are reviewed and they suggest that growth and development are enhanced in infants and stress is reduced in adults, but only by moderate pressure massage. The stimulation of pressure receptors leads to increased vagal activity which, in turn, seems to mediate the diverse benefits noted for massage therapy.

19. Massage therapy for fibromyalgia symptoms.

http://www.ncbi.nlm.nih.gov/pubmed/20306046

The existing literature provides modest support for use of massage therapy in treating fibromyalgia. Additional rigorous research is needed in order to establish massage therapy as a safe and effective intervention for fibromyalgia.

20. Preterm infant massage therapy research: a review.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2844909/

Approximately 14% of infants in the United States are born prematurely (National Center for Health Statistics, 2007).

Massage therapy has led to weight gain in preterm infants when moderate pressure massage was provided.

At least one study has documented equivalent effects of professionals and mothers performing the preterm infant massages (Goldstein-Ferber et al, 2002). The Goldstein-Ferber et al (2002) study replicated the results of increased weight gain following massage therapy by both mothers and professionals. In this study, preterm infants were assigned to three groups including one treatment group in which the mothers performed the massage and another in which professionals unrelated to the infant administered the treatment. These two groups were then compared to a control group. Over the 10-day study period, the two treatment groups gained significantly more weight compared to the control group suggesting that mothers were able to achieve the same effect as that of trained professionals. In addition, the mothers who massaged their infants in this study experienced a decrease in depression symptoms, which are often seen in mothers of preterm infants. In our study using mothers as the massage therapists, even one session was effective in lowering both the mothers' depression and anxiety symptoms (Feijo, Hernandez-Reif, Field, Burns, Valley-Gray & Simco, 2006).

The greater weight gain documented by several investigators is associated with 3-6 days shorter hospital stays. A recent cost-benefit analysis suggested a hospital cost savings of approximately $10,000 per infant (or 4.7 billion dollars across the 470,000 preterm infants born each year) (Field, Hernandez-Reif & Freedman, 2004). Despite these benefits, a recent survey revealed that only 38% of NICUs offer infant massage or instruction to parents in infant massage (Field et al., 2004). The same 84 neonatologists polled in this survey suggested that preterm infant massage would not be widely adopted until underlying mechanisms are known.

The use of oils including coconut oil and safflower oil enhanced the average weight gain, and the transcutaneous absorption of oil also increased triglycerides. In addition, the use of synthetic oil increased vagal activity, which may indirectly contribute to weight gain. The weight gain was associated with shorter hospital stays and, thereby, significant hospital cost savings. Despite these benefits, preterm infant massage is only practiced in 38% of neonatal intensive care units. This may relate to the underlying mechanisms not being well understood. The increases noted in vagal activity, gastric motility, insulin and IGF-1 levels following moderate pressure massage are potential underlying mechanisms. However, those variables combined do not explain all of the variance in weight gain, highlighting the need for additional mechanism studies.

21. Massage therapy techniques as pain management for erythromelalgia: a case report.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088525/

Case study

Erythromelalgia is characterized by temperature-dependent redness, pain, and warmth in one or more extremities. It may be a primary disease, or it may occur secondarily because of underlying illness. It is a chronic, debilitating condition often resistant to medical treatment.

Chronic stress can exacerbate the pathological consequences of erythromelalgia, resulting in physiological or psychological dysfunction. Therapeutic techniques that reduce the consequences of stress—for example, massage therapy (MT)—are therefore beneficial tools for improving overall health[7]. Sleep disturbances are a major factor in many chronic pain syndromes, such as that with erythromelalgia. Therapeutic massage may support restorative sleep so that an optimal environment for healing and restoration may occur in the body. We believe this is the first case report about the use of MT as a treatment method for erythromelalgia.

In this patient with erythromelalgia, effleurage and petrissage as massage therapy techniques provided temporary pain relief in the lower extremities and long-term benefits that relieved anxiety, which improved restorative sleep and increased the patient's participation in activities of daily living.
CONCLUSIONS:

For this treatment protocol, therapist observation and patient feedback suggest that massage therapy may lead to a state of increased relaxation, decreased stress, decreased muscle tension, and improved sleep. These positive effects may have an indirect role in the ability of the patient to cope with erythromelalgia day to day.

22. Benefits of combining massage therapy with group interpersonal psychotherapy in prenatally depressed women.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2785018/

Prenatal depression affects 10% to 50% of women in different samples, with the incidence being higher in low socioeconomic status samples (De Tychey, Splitz, Briancon, Lighezzolo, Girvan, Rosati, Thockler, Vicent, 2005; Stowe, Hostetter, & Newport, 2005).

Neonates of depressed mothers are also at greater risk for being low birthweight (<2500 grams) and small for gestational age (< 10th percentile) (Field et al., 2004a; Hoffman & Hatch, 2000), with low birthweight being one of the leading causes of fetal morbidity and mortality (National Center for Health Statistics, 2006).

Massage therapy had positive effects on prenatally depressed women including decreasing their depression and cortisol levels and decreasing the incidence of prematurity and low birthweight (Field, Diego, Hernandez-Reif, Schanberg, & Kuhn, 2004b). In this study, depressed pregnant women received a 20-minute massage from their significant other twice per week from 20 weeks to 32 weeks gestation. Over the course of the study, the massage group experienced fewer symptoms of depression, and they had lower urinary norepinephrine and cortisol levels and elevated dopamine and serotonin levels compared to the relaxation and standard care control groups. The massage group also had fewer obstetric and postnatal complications including a lower rate of prematurity. (all Ps<.05)
Massage therapy also contributed to the women's compliance in this study.

The group therapy process, nonetheless, was effective for increasing the display of positive and negative affect and for increasing relatedness in both groups. At least for these changes, the group Interpersonal Psychotherapy was effective.

One hundred twelve pregnant women who were diagnosed depressed were randomly assigned to a group who received group Interpersonal Psychotherapy or to a group who received both group Interpersonal Psychotherapy and massage therapy. The group Interpersonal Psychotherapy (one hour sessions) and massage therapy (30 minute sessions) were held once per week for six weeks.

23. Potential influences of complementary therapy on motor and non-motor complications in Parkinson's disease.

http://www.ncbi.nlm.nih.gov/pubmed/19739693

Nearly two-thirds of patients with Parkinson's disease (PD) use vitamins or nutritional supplements, and many more may use other complementary therapies, yet <50% of patients have discussed the use of these complementary therapies with a healthcare professional. Physicians should be aware of the complementary therapies their patients with PD are using, and the possible effects of these therapies on motor and non-motor symptoms. Complementary therapies, such as altered diet, dietary supplements, vitamin therapy, herbal supplements, caffeine, nicotine, exercise, physical therapy, massage therapy, melatonin, bright-light therapy and acupuncture, may all influence the symptoms of PD and/or the effectiveness of dopaminergic therapy.

24. A survey of complementary and alternative medicine (CAM) awareness among neurosurgeons in Washington State.

http://www.ncbi.nlm.nih.gov/pubmed/19450166

Acupuncture, herbs, massage therapy, prayer, and yoga were the most common CAM treatments patients used or discussed with their neurosurgeon. Fifty percent (50%) of neurosurgeons discussed the use of acupuncture among their colleagues. Concerning prayer and spirituality, 38% of the surveyed neurosurgeons stated that > or =25% of their patients have disclosed that they pray for their health; 42% stated that spirituality and prayer may affect neurosurgery outcome; and 38% stated that they pray for their patients.

25. Effects of therapeutic massage on the quality of life among patients with breast cancer during treatment.

http://www.ncbi.nlm.nih.gov/pubmed/19388859

Using a pre/post intervention assessment design, this prospective, convenience sample pilot study measured anxiety, pain, nausea, sleep quality, and quality of life. Treatment consisted of one 30-minute treatment per week for 3 consecutive weeks.

Participants experienced a reduction in several quality of life symptom concerns after only 3 weeks of massage therapy. Respondents' cumulative pre- and post-massage mean for state anxiety, sleep quality, and quality of life/functioning showed significant improvement. Among study participants, there was variability in reported episodes of nausea, vomiting, and retching; although participants reported decreased pain and distress, changes were non-significant.

Therapeutic massage shows potential benefits for ameliorating the effects of breast cancer treatment by reducing side affects of chemotherapy and radiation and improving perceived quality of life and overall functioning.

26. IN-CAM Outcomes Database: Its Relevance and Application in Massage Therapy Research and Practice.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3091455/

One of the most commonly used complementary and alternative medicine (CAM) modalities in North America is massage therapy (MT). Research to date indicates many potential health benefits of MT, suggesting that ongoing research efforts to further elucidate and substantiate preliminary findings within the massage profession should be given high priority.

For example, specific to the MT field, Moyer and Rounds developed the Attitudes Towards Massage (ATOM) scale[14]. The ATOM scale aims to assess the overall attitude of individuals toward massage based on two key attitudes: massage as “helpful,” and massage as “pleasant.”

27. The effects of employer-provided massage therapy on job satisfaction, workplace stress, and pain and discomfort.

http://www.ncbi.nlm.nih.gov/pubmed/19104272

Long-term care staff have high levels of musculoskeletal concerns. This research provided a pilot program to evaluate the efficacy of employer-funded on-site massage therapy on job satisfaction,

workplace stress, pain, and discomfort. Twenty-minute massage therapy sessions were provided. Evaluation demonstrated possible improvements in job satisfaction, with initial benefits in pain severity, and the greatest benefit for individuals with preexisting symptoms. A long-term effect was not demonstrated.

28. Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain.

http://www.ncbi.nlm.nih.gov/pubmed/19096019

To determine the effectiveness of lessons in the Alexander technique, massage therapy, and advice from a doctor to take exercise (exercise prescription) along with nurse delivered behavioural counselling for patients with chronic or recurrent back pain, with 579 patients.

Exercise and lessons in the Alexander technique, but not massage, remained effective at one year.
One to one lessons in the Alexander technique from registered teachers have long term benefits for patients with chronic back pain. Six lessons followed by exercise prescription were nearly as effective as 24 lessons.

Extra link: http://www.alexandertechnique.com/at.htm

29. Effects of a full-body massage on pain intensity, anxiety, and physiological relaxation in Taiwanese patients with metastatic bone pain: a pilot study.

http://www.ncbi.nlm.nih.gov/pubmed/19070458

(2009) - Randomized clinical trials are needed to validate the effectiveness of MT in this cancer population.

30. Massage therapy versus simple touch to improve pain and mood in patients with advanced cancer: a randomized trial.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2631433/

OBJECTIVE:

To evaluate the efficacy of massage for decreasing pain and symptom distress and improving quality of life among persons with advanced cancer.

Intervention: Six 30-minute massage or simple touch sessions over two weeks.

Conclusion:
Massage may have immediately beneficial effects on pain and mood among patients with advanced cancer. Given the lack of sustained effects and the observed improvements in both study groups, the potential benefits of attention and simple touch should also be considered in this patient population.

31. Fibromyalgia benefits from massage therapy and transcutaneous electrical stimulation.

http://www.ncbi.nlm.nih.gov/pubmed/19078022

Thirty adult fibromyalgia syndrome subjects were randomly assigned to a massage therapy, a transcutaneous electrical stimulation (TENS), or a transcutaneous electrical stimulation no-current group (Sham TENS) for 30-minute treatment sessions two times per week for 5 weeks. The massage therapy subjects reported lower anxiety and depression, and their cortisol levels were lower immediately after the therapy sessions on the first and last days of the study. The TENS group showed similar changes, but only after therapy on the last day of the study. The massage therapy group improved on the dolorimeter measure of pain. They also reported less pain the last week, less stiffness and fatigue, and fewer nights of difficult sleeping. Thus, massage therapy was the most effective therapy with these fibromyalgia patients.

32. Complementary and alternative medicine in the treatment of bipolar disorder--a review of the evidence.

http://www.ncbi.nlm.nih.gov/pubmed/18456339

vidence regarding the benefits of omega-3 fatty acids or acupuncture is inconsistent. Data regarding other CAM interventions (e.g., aromatherapy massage, massage therapy, yoga) are almost entirely lacking. In conclusion, better studies are needed before CAM interventions can be recommended to patients with bipolar disorder. In the meantime, patients need to be informed about the possible risks associated with the use of these interventions.

33. Self-management strategies to reduce pain and improve function among older adults in community settings: a review of the evidence.

http://www.ncbi.nlm.nih.gov/pubmed/18346056

RESULTS:
Retained articles (N = 27) included those that evaluated programs sponsored by the Arthritis Foundation and other programs/strategies including yoga, massage therapy, Tai Chi, and music therapy. Positive outcomes were found in 96% of the studies.

CONCLUSIONS:
Our results suggest that a broad range of self-management programs may provide benefits for older adults with chronic pain. Research is needed to establish the efficacy of the programs in diverse age and ethnic groups of older adults and identify strategies that maximize program reach, retention, and methods to ensure continued use of the strategies over time.

34. Breastfeeding and antidepressants.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2556848/

It is also possible that the positive effects of breastfeeding may outweigh the positive effects of the antidepressants for both the mother and the infant. In addition, some alternative therapies may substitute or attenuate the effects of antidepressants such as vagal stimulation (Chambers & Allen 2002) or massage therapy (Field et al, In press), both therapies being noted to reduce depression. Further studies are needed on the negative side effects of psychotropic medications during breastfeeding and on the side effects of abruptly removing this therapy (Gentile, 2005b).

Although a large literature supports the benefits of breastfeeding, this review suggests that breastfeeding is less common among postpartum depressed women, even though their infants benefit from the breastfeeding. Depressed mothers, in part, do not breastfeed because of their concern about potentially negative effects of antidepressants on their infants. Although sertraline (Zoloft) and paroxetine (Paxol) concentrations are not detectable in infants' sera, fluoxetine (Prozac) and citalopram (Celexa) do have detectable levels. Unfortunately these findings are not definitive because they are based on very small sample, uncontrolled studies. As in the literature on prenatal antidepressant effects, the question still remains whether the antidepressants or the untreated depression itself has more negative effects on the infant. It is possible that the positive effects of breastfeeding may outweigh the positive effects of the antidepressants for both the mother and the infant. In addition, some alternative therapies may substitute or attenuate the effects of antidepressants, such as vagal stimulation or massage therapy, both therapies being noted to reduce depression. Further studies of this kind are needed to determine the optimal course of therapy for the benefit of the depressed, breastfeeding mother and the breastfed infant.

35. Reported effects of non-traditional treatments and complementary and alternative medicine by retinitis pigmentosa patients.

http://www.ncbi.nlm.nih.gov/pubmed/18271780

We assessed CAM use by retinitis pigmentosa (RP) patients and its perceived effectiveness.

We enquired about nine CAM areas: meditation, mind-body therapies, yoga, movement therapies, energy therapies, acupuncture, massage therapy, spirituality/religion and herbal therapies/aromatherapy.

RP patients are self-reportedly using CAM and are experiencing some impact on vision and physical/emotional well-being. Clinicians and researchers should be aware of its use. Clinical trials with CAM interventions are necessary to attempt to validate these findings.

36. Pediatric massage therapy: an overview for clinicians.

http://www.ncbi.nlm.nih.gov/pubmed/18061789

Current findings provide varying levels of evidence for the benefits of pediatric MT in children who have diverse medical conditions; however, anxiety reduction has shown the strongest effect. Future studies should use rigorous study design and methodology, with long-term follow-up, for examining the longitudinal effects of pediatric MT.

37. Side-effects of massage therapy: a cross-sectional study of 100 clients.

http://www.ncbi.nlm.nih.gov/pubmed/17983334

OBJECTIVE:
The purpose of this study was to determine the amount and type of negative side-effects and positive (unexpected) effects experienced after a massage session.

RESULTS:
Overall, 10% of the massage clients experienced some minor discomfort after the massage session; however, 23% experienced unexpected, nonmusculoskeletal positive side-effects. The majority of negative symptoms started less than 12 hours after the massage and lasted for 36 hours or less. The majority of positive benefits began immediately after massage and lasted more than 48 hours. No major side-effects occurred during this study.

CONCLUSIONS:
This the first known study to define the rate of side-effects after massage therapy treatment. These data are important for risk-benefit analyses of massage care. Larger studies are needed to verify these data and to assess effects of different massage types and durations.

38. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society.

http://www.ncbi.nlm.nih.gov/pubmed/17909209

RECOMMENDATION 7 (the last recommendation in the list): 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; for chronic or subacute low back pain, intensive interdisciplinary rehabilitation, exercise therapy, acupuncture, massage therapy, spinal manipulation, yoga, cognitive-behavioral therapy, or progressive relaxation (weak recommendation, moderate-quality evidence).

39. Brief report: use of complementary and alternative medicine and psychological functioning in Latino children with juvenile idiopathic arthritis or arthralgia.

http://www.ncbi.nlm.nih.gov/pubmed/17626068

OBJECTIVE:
To describe the use of complementary and alternative medicine (CAM) and its relationship to symptoms of anxiety, depression, and dysthymia in Latino children with juvenile idiopathic arthritis (JIA) or arthralgia.

RESULTS:
CAM was used by the majority of children primarily to treat pain episodes. The most common modalities were prayer and massage therapy. CAM use was associated with decreased symptoms of anxiety and dysthymia in children with arthralgia, but not in children with JIA.

CONCLUSION:
Preliminary findings suggest that CAM use is associated with improved psychological functioning in children with arthralgia. Healthcare providers are encouraged to routinely screen for CAM usage and to educate families about the potential benefits and limitations of CAM.

40. Massage therapy for cancer patients: a reciprocal relationship between body and mind.

http://www.ncbi.nlm.nih.gov/pubmed/17576465

Some cancer patients use therapeutic massage to reduce symptoms, improve coping, and enhance quality of life. Although a meta-analysis concludes that massage can confer short-term benefits in terms of psychological wellbeing and reduction of some symptoms, additional validated randomized controlled studies are necessary to determine specific indications for various types of therapeutic massage. In

addition, mechanistic studies need to be conducted to discriminate the relative contributions of the therapist and of the reciprocal relationship between body and mind in the subject. Nuclear magnetic resonance techniques can be used to capture dynamic in vivo responses to biomechanical signals induced by massage of myofascial tissue. The relationship of myofascial communication systems (called "meridians") to activity in the subcortical central nervous system can be evaluated. Understanding this relationship has important implications for symptom control in cancer patients, because it opens up new research avenues that link self-reported pain with the subjective quality of suffering. The reciprocal body-mind relationship is an important target for manipulation therapies that can reduce suffering.

That study evaluated changes in symptom scores for pain, fatigue, stress and anxiety, nausea, and depression. Participants included 1290 cancer patients and 12 licensed massage therapists. Three variations of massage (selected mainly by the patients) were used: Swedish, light touch, and foot massage. The main outcome measures were data from symptom cards collected by independent observers that were recorded before and after the first session of massage. Symptom scores declined in severity by approximately 50%. Swedish and light touch massage were found to be superior to foot massage. However, the effects of massage were short-term.

41. Effectiveness of massage therapy for chronic, non-malignant pain: a review.

http://www.ncbi.nlm.nih.gov/pubmed/17549233

2.2 Massage Techniques
2.2.1 Western Tradition
Swedish massage consists of continuous systematic strokes and deep kneading and stretching to loosen tight muscles and to reduce stress. The manual techniques specifically include *effleurage* (smooth gliding movements intended to evoke the relaxation response), *petrissage* (lifting, squeezing, wringing, or kneading of soft tissues to stimulate deep muscle and to increase circulation), *friction* (penetrating pressure with fingertips to reduce muscle spasm), and *tapotement* (rapid striking to stimulate tissues). Myofascial release techniques are employed to stretch and relax muscles that are tense or in spasm. Chronically tense muscles restrict blood flow and may be associated with fatigue. By applying specific pressure to connective tissues or fascia, normal alignment and function can be restored and chronic pain eliminated. The technique stretches and releases the fascia to release constriction and spasm, which causes pain.

Soft-tissue release is a technique that uses specific compression and precise extension, administered in a systematic manner, to release muscle spasm and scar tissue.

Trigger-point therapy (**myotherapy**) consists of stretching the myofascial tissue through sustained specific contact with pressure points, which helps to release tension and pain. Myotherapy is the diffusion of trigger points in muscles and the retraining of muscles to relieve pain. Trigger points are usually found in tight bands of muscle, which may radiate pain to other areas of the body. For instance,

relieving a tense trigger point in the back could help to ease pain in the shoulder or to reduce headaches.

Neuromuscular therapy uses static pressure on specific myofascial points to relieve pain. This technique manipulates the soft tissue of the body (muscles, tendons, and connective tissue) and is thought to balance the central nervous system.

Lymphatic drainage is a very slow, light-touch, rhythmic massage that helps the body move lymph throughout the lymphatic vessels. It reduces edema and is described as removing toxins and boosting immunity.

Craniosacral therapy is a treatment approach that focuses on a gentle, hands-on technique used to evaluate and enhance the function of the cranial–sacral system. This hypothetical physiologic body system comprises the membranes and cerebrospinal fluid that surround and protect the brain and spinal cord. Craniosacral treatment is said to enhance the body's natural healing processes, improving the operation of the central nervous system, dissipating the negative effects of stress, enhancing health, and strengthening resistance to disease.

Movement re-education uses slow, rhythmic movements and sustained stretches to help restore and increase the normal range of motion in a joint and surrounding structures, while assisting with muscle relaxation.

2.2.2 Eastern Tradition

Shiatsu, meaning "finger pressure," is a Japanese massage, a form of physical manipulation of acupuncture points and meridians. The latter are thought to channel vital energy. Working on the same principle as acupuncture, practitioners apply pressure to key points known as *tsubos* (Chinese acupuncture points) on the surface of the body to stimulate the flow of energy, called *ki* (*qi* or *chi* in Chinese).

The *ki* flows in meridians beneath the skin. The practitioner works with fingers, thumbs, elbows, knees, and feet along the meridians to remove *ki* blockages or overactivity (called *jitsu*), to restore areas of *ki* depletion (called *kyo*), and to stretch and mobilize limbs to facilitate the flow of *ki*. ***Tui na*** is a similar system derived from Traditional Chinese Medicine.

Acupressure is an ancient Asian healing art that uses the fingers on the surface of the skin to press key points that modulate energy flow through meridians and chakras. Manipulation of energy flow is speculated to stimulate the body's immune system and enhance self-healing.

Reflexology consists of firm pressure to specific points on the feet, hands, or ears. Reflexology is based on the principle that these regions contain links that correspond to every other part of the body.

Jin-shin do is a form of acupressure that was developed in Japan by Jiro Muraim, who mapped out a healing system based on his own body's acupressure points and their responses to energy flow. A combination of acupressure points called "safety energy locks" is held with the fingers for a minute or more.

Thai massage (*nuad borarn*), is an ancient bodywork system designed to unblock trapped energy and to improve vitality by applying pressure along the meridian channels.

Polarity therapy is a complete system developed by Randolf Stone, a chiropractor and osteopath who believed that illness or pain in the body was cured more readily in concert with awareness and relaxation. The treatments combine therapeutic bodywork, healing intent, dietary adjustments, counselling aimed at awareness, and yoga-style exercises. The term "polarity" describes the basic nature of the hypothesized "electromagnetic force field" of the body.

2.3 Safety of Massage Therapy

Massage administered by a registered (or licensed) massage therapist is very safe; complications are rare [16]. Healthy patients may occasionally experience bruising, swelling of massaged muscles, a temporary increase in muscular pain, or an allergic reaction to skin lubricants. Case reports have documented serious adverse events that include fractures and dislocations, internal hemorrhage and hepatic hematoma [17], dislodging of deep venous thromboses and resultant embolism of the renal artery [18], and displacement of a ureteral stent [19]. Adverse effects were associated mainly with massage delivered by laypeople and with techniques other than Swedish massage.

Practitioners need to be aware of the following special situations with cancer patients:

Coagulation disorders, complicated by bruising and internal hemorrhage
Low platelet count

Medications: coumadin, acetylsalicylic acid, heparin

Metastases to bone, complicated by fracture

Open wounds or radiation dermatitis, complicated by pain and infection

In these situations, avoiding massage or lightening the touch over regions of risk may prevent complications. No evidence suggests that massage therapy can spread cancer, although avoiding direct pressure over a tumour is a sensible precaution.

2.4 Qualifications of the Massage Therapist

Requirements and laws for training and licensing vary from one U.S. state to another and from one Canadian province to another. Education, experience, certification, and licensing are all important credentials. Variation in philosophy and education is typical, and some massage therapists hold the mistaken belief that cancer is a contraindication to massage.

The Commission on Massage Therapy Accreditation in the United States considers 500 hours of training to be a minimum basic requirement. If a therapist is licensed in the United States, the initials lmt (licensed massage therapist) or lmp (licensed massage practitioner) are used after the therapist's name.

In non-licensing states, a therapist should have a cmt (certified massage therapist) as the minimum qualification. The letters nctmb indicate that the therapist has voluntarily taken and passed an examination given by the National Certification Board of Therapeutic Massage and Bodywork.

In Canada, the "gold standard" for massage therapy education, as set out by the Canadian Massage Therapists Alliance, demands a minimum of 2200 hours. However, considerable diversity exists in the number of hours of education and in the curricula and the types of educational institutions across the country. Some educational institutions have articulation agreements with universities for degree completion in science at the baccalaureate level.

Increasingly, massage therapy education in Canada is embracing an evidence-informed, outcomes-based model for curricula. Massage therapy is currently a regulated health profession in Ontario, British Columbia, and Newfoundland and Labrador. In the regulated provinces, students must successfully complete written and practical entry-to-practice examinations based on standards of practice set by the regulatory body. Successful applicants are eligible to use the designation MT (massage therapist) or RMT (registered massage therapist) and to qualify for third-party insurance coverage for services. In unregulated provinces and territories, well-organized professional associations impose educational standards similar to those in the regulated provinces. Membership in provincial associations may also include title designation and access to third-party insurance coverage for services.

For massage therapists working with cancer patients, specialized education and experience is essential. Programs for advanced training in massage care of patients with cancer are integrated into undergraduate curricula in the regulated provinces in Canada, and they are also available in continuing education programs in Canada and the United States—for example, at Memorial Sloan–Kettering Cancer Center [20]. Important elements include safety, communication with oncologists, and recordkeeping. Massage therapists are also urged to participate in clinical trials, and courses on research methodology are encouraged.

2.5 Clinical Evidence for the Effectiveness of Therapeutic Massage

The main indications for massage in general practice are back symptoms (20%), relaxation (19%), neck symptoms (17%), mood disorders (7%), and leg symptoms (4%). Therapeutic massage can be effective in treatment programs for pain. The mechanisms for reducing pain may consist of local effects on muscle and effects on the subconscious parts of the brain that control the experience of pain and emotions.

The most common current use of therapeutic massage is in back pain and sports-related injuries. In North America, back pain is reported to occur at least once in 85% of adults under the age of 50. Nearly all of these patients will experience at least one recurrence. Back pain is the second most common illness-related reason given for a missed workday and the most common cause of disability.

Back pain is non-specific in 70%–90% of cases and is associated with overuse or underuse of the back [21]. It manifests as tightening or spasm of the paraspinal muscles. Inflammation and swelling often occur in the joints and ligaments. Injured muscles often meet the diagnostic criteria for the so-called myofascial pain syndrome. Myofascial pain is characterized by muscles in a shortened or contracted state, with

increased tone and stiffness. They often contain trigger points (tender, firm, 3-mm to 6-mm nodules that are identified on palpation of the muscles).

The Cochrane Collaboration has reviewed therapeutic massage for non-specific low back pain [22]. The authors concluded that massage therapy may be beneficial for patients with subacute and chronic non-specific low back pain, especially when combined with exercise and education.

The Cochrane Collaboration has also reviewed the role of therapeutic massage and aromatherapy for cancer-related symptoms [6]. They concluded that massage or aromatherapy plus massage confer short-term benefits on psychological wellbeing, with the effect on anxiety supported by limited evidence. Effects on physical symptoms may also occur.

Available evidence is sufficient to indicate that therapeutic massage is a useful discipline for the relief of a variety of symptoms that affect both the body and the mind. Clinical trials of better design are required to determine precise indications for massage and to ascertain whether specific techniques are more beneficial than others for particular symptoms. Mechanistic studies are required to understand the psychophysiologic effects of massage and the influence of those effects on clinical practice.

2.6 The Neuro-myofascial Biology of Touch and Massage
2.6.1 Potential Mechanisms
Therapeutic massage improves local musculoskeletal symptoms and function and can also positively affect mood state and pain threshold. The mechanisms by which massage exerts these multiple therapeutic effects are not yet known.

Manipulation of affected muscles and fascia (as in Swedish massage) induces local biochemical changes that modulate local blood flow and oxygenation in muscle. These local effects may influence neural activity at the spinal cord segmental level and could modulate the activities of subcortical nuclei that influence mood and pain perception. In addition, massage of acupuncture points away from the painful muscles, fascia, and facet joints (as in Japanese shiatsu massage) can also modulate the activities of the limbic system and subthalamic nuclei through poorly understood somatic pathways called meridians. Beneficial late effects are possible through neural plasticity and remodelling.

A meta-analysis of massage therapy research has discussed the limitations of using a medical model and suggests the use of a psychotherapy perspective [8]. The authors concluded that multiple applications of massage therapy reduced delayed assessment of pain and that reductions of trait anxiety and depression are massage therapy's largest effects, with a course of treatment providing benefits similar in magnitude to those of psychotherapy.

It is unclear whether the therapeutic benefits of massage occur primarily as a result of manipulation of muscle and ligaments, or through the brain as a result of interaction with subcortical components of the nervous system. Those components modulate autonomic functions that influence mood and the perception of pain via the limbic system and brainstem nuclei.

The multiplicity of symptoms relieved suggests that subconscious mechanisms are involved in the therapeutic effects of massage [23–25]. The subconscious or subcortical effects are to be distinguished from

the placebo response, which stems from conscious awareness of the procedure. The relative contributions of the body–brain reciprocal relationship have not yet been delineated.

Like acupuncture, some types of massage may influence pain when applied to acupuncture points that are distant from the perceived site of the pain. Unlike therapy applied to pain at the level of the corresponding segment of the spine or dermatome, stimulation of acupuncture points influences central nervous system activity through pathways called meridians, which seem to follow musculoskeletal fascia planes [26,27]. Functional magnetic resonance scanning (fmri), positron emission tomography, and single-photon emission tomography have all demonstrated the effects of acupuncture on subcortical nuclei and the limbic system [28–33]. However, the influence of massage on those locations has not yet been evaluated in the published literature.

We hypothesize that massage alleviates pain through at least two pathways. The first pathway is direct manipulation of soft tissue and its innervations at the level of the involved dermatome. Manipulation of the muscle and fascia may induce local biochemical changes (lactic acid, adenosine triphosphate and phosphocreatinine) and can modulate blood flow and oxygenation of muscle [34–36]. Local changes may influence neural plasticity at the associated segmental level of the spinal cord and the release of neuropeptides (such as calcitonin gene–related peptide) that increase perfusion [37,38]. Myofascial stretching may transduce into electrophysiologic activity that can reduce pain and other symptoms through both a myofascial communication system and afferent neural pathways that modulate the subcortical nuclei and limbic system in the brain [39].

When a peripheral source of pain persists, intrinsic mechanisms that reinforce nociception influence the pain. Chronic pain may be seen as part of a central disturbance accompanied by disinhibition or sensitization of central pain modulation. For example, patients with chronic whiplash syndrome may have a generalized central hyperexcitability from a loss of tonic inhibitory input, contributing to dorsal horn hyperexcitability [40].

Transduction is the process whereby noxious afferent stimuli are converted from chemical to electrical neural messages in the spinal cord that communicate cephalad to the brainstem, thalamus, and cerebral cortex. Noxious mechanical, thermal, and chemical stimuli activate peripheral nociceptors that transmit the pain message through lightly myelinated A-delta fibres and unmyelinated C-fibres. Nociceptors are present in the outer annular fibrosis, facet capsule, posterior longitudinal ligament, associated muscles, and other structures of the spinal motion segment. Nociceptive modulation first occurs in the dorsal horn, where nociceptive afferents converge to synapse on a single dorsal root neuron. Hyperalgesia and allodynia initially develop at the injury site. However, when central sensitization occurs, the area of pain expands beyond the initial region of tissue pathology. Attachment to emotion may increase the perception of pain and could conceivably translate into exacerbation of somatic symptoms [23–25,41,42]. Pain is motivational and is not only a conscious somatosensory perception but also a motivational feeling attached to the limbic system [43].

Swedish massage may have a direct effect primarily on muscle physiology and metabolism that, in turn, may communicate with the central nervous system through the dorsal horn afferents at the particular dermatome level. In turn, spinothalamic fibres may later activate subcortical nuclei. On the other hand, by manipulating acupuncture points that lie on meridians, shiatsu massage may initially activate sub-

thalamic nuclei that can reduce pain and combat other symptoms through both subcortical gating and modulation of the limbic system. Needling of acupuncture points *away* from a painful muscle may have a similar effect on reducing muscle pain through undefined mechanisms [44]. Studying time-dependent changes in the pain behaviour of low back tissues following massage therapy would provide valuable information to compare with time changes associated with mechanisms within the subcortical brain and the spinal segmental level [45].

2.6.2 Noninvasive Techniques to Evaluate the Neuro-myofascial Biology of Touch and Massage

Magnetic resonance spectroscopy (mrs) and fmri are powerful, noninvasive, non-radioactive techniques that may be used to evaluate the biology of manual therapies [46]. These techniques are based on the mechanics and theory of nuclear magnetic resonance (nmr). Signals can be detected only from atomic nuclear species having the quantum mechanical property of spin. The ^{1}H hydrogen atom is the most abundant of these. It provides the signal for routine mri scanning, which produces images using the contrast of water and fat. The mrs technique measures levels of particular chemical species within an acquired tissue volume. It is especially useful for evaluating the physiology of myofascial tissue.
Currently the nuclei of greatest interest are ^{1}H, ^{13}C, and ^{31}P. Techniques that can be used to evaluate muscle physiology include

^{1}H mrs of myoglobin to assess the intracellular partial pressure of oxygen (pO_2),^{31}P mrs to assess metabolic capacity, and the combination of ^{31}P chemical shift imaging to assess local metabolic demand (oxygen uptake:VO_2). Blood oxygenation level–dependent (BOLD) fmri can be used to image the neural correlates of touch and pain within the subcortical nuclei of the brain. This technique allows for indirect estimation of neural activity by detecting local hemodynamic changes, which are closely related to the integrated synaptic activity of nerve cells under physiologic circumstances [46–48].

The pathways and neural centres involved in processing information from low-threshold mechanoreceptors of the skin, carried by fast-conducting myelinated afferent fibres, have been extensively investigated in nonhuman primates. Various cortical regions, including the anterior parietal cortex (primary somatosensory cortex), the lateral and posterior parietal cortices, and motor-related areas responding to mechanical stimuli have been identified [49]. Humans appear to have an expanded somatosensory cortical network. Brain regions showing increased activity during vibrotactile input and tactile recognition extend beyond the parietal lobe to include portions of the frontal, cingulate, temporal, and insular cortices [50]. Available evidence suggests that the central correlates of tactile stimuli vary according to their hedonic qualities. Pleasant touch induces greater activation in the medial orbitofrontal cortex than does more intense, but affectively neutral tactile stimuli [51]. Additional areas activated by pleasant but not by neutral stimuli include a rostral portion of the midcingulate cortex and an area in or near the amygdala. These findings begin to identify parts of the limbic system that may underlie emotional, hormonal, and affiliative responses to skin contact.

The forebrain pain system partly overlaps structures involved in processing non-noxious input, but painful stimuli induce higher fmri signal increases than non-noxious stimuli do. A direct comparison between the cortical correlates of touch and pain using event-related fmri showed that, besides common activations in the contralateral postcentral gyrus and parietal operculum, pain is associated

with stronger involvement of the contralateral midanterior insula, anterior portion of the midcingulate cortex, and dorsolateral prefrontal cortex [52,53].

The autonomic responses to acute pain exposure usually habituate rapidly; the subjective ratings of pain remain high for more extended periods of time. Thus, systems involved in the autonomic response to painful stimulation—for example the hypothalamus and the brainstem—would be expected to attenuate the response to pain during prolonged stimulation. Areas in the brainstem are involved in the initial response to noxious stimulation, which is also characterized by an increased sympathetic response.[54] The perigenual anterior cingulate gyrus is a crucial location for integrating cognitive, emotional, and subconscious activities in the affective dimension of pain [55,56]. Pain-related modulation of fmri signals in other regions involved in reward and emotion circuitry, such as the nucleus accumbens–ventral striatum and the orbitofrontal cortex, has also been demonstrated [51]. Evidence for amplified processing of mechanical stimuli in parietal, insular, and cingulate cortices has been obtained in patients with fibromyalgia, who show characteristically lowered pain thresholds. These studies have begun to shed light on the neural systems involved in central sensitization of nociceptive circuits in pathophysiologic conditions [57,58].

The relative role of cognitive awareness versus subcortical modulation may be deciphered by using distraction and attention methodologies during an fmri examination [58–63]. Attentional effects may be exerted at various levels of the somatosensory system and involve activation of brainstem modulatory centres [62,64].

In a study that employed covariation analysis, a functional interaction was found between the orbitofrontal cortex and perigenual anterior cingulate gyrus, the periaqueductal gray matter and posterior thalamus during pain stimulation and distraction, but not during pain stimulation *per se* [61]. Placebo-induced anticipation of pain relief treatment decreases brain activity in pain-related brain regions [65].

When evaluating the physical effect of massage, psychophysiologic techniques to discriminate between conscious attention and subconscious neurologic interaction are important. The brain networks underlying somatosensory perception are complex and highly distributed. A deeper understanding of perceptual-related and subconscious brain mechanisms therefore requires new approaches suited to investigate the spatial and temporal dynamics of activation in various brain regions and the functional interaction of those regions.

The development and application of refined tools for evaluating functional connectivity between neural populations will provide new insights into bottom-up and top-down mechanisms in somatosensory perception [53]. Current evidence from fmri suggests that positive and negative tactile stimuli are both represented in the orbitofrontal cortex. The brain region in or near the amygdala is activated by pleasant touch. Most studies of the amygdala have tended to concentrate on its role in negative emotions, such as fear, but other imaging studies have found amygdala activation in response to affectively positive stimuli [51].

Therapeutic massage may transduce mechanical signals through skin sensation, proprioception, and non-noxious muscle perception [60]. How this process translates into local electrophysiologic and chemical

changes within muscle and fascia is not clear. Similarly, how therapeutic massage interacts with the central nervous system is not known, although some leads are emerging from research on touch. Preliminary physiologic investigations of muscle and the brain using nmr techniques suggest that therapeutic massage may have distributed effects that can reduce various unpleasant symptoms.

3. CONCLUSION: CHALLENGES FOR THERAPEUTIC MASSAGE RESEARCH

The mechanistic links between manipulation of body tissues and corresponding relief from a broad range of symptoms are not fully understood. The effects are distributed, and reciprocal interplay between the body and mind is evident. We have literally just "touched" the surface of meridian research, but the meridian system appears to be an important communication link between myofascial tissue and the nervous system. This traditional communication system appears to link biochemical, electrical, and physiologic changes in the myofascial tissue with subcortical neurologic activity and changes in cognitive experience. The implications for symptom control in cancer patients are important, opening up new research avenues that link self-reported pain with the subjective quality of suffering. The reciprocal body–mind relationship and its manipulation is an important target for therapies that can reduce suffering.

The U.S. National Center for Complementary and Alternative Medicine held a conference titled The Biology of Manual Therapies during June 9–10, 2005, at the National Institutes of Health (nih) in Bethesda, Maryland [66]. The goal was to define three to five of the most critical research questions involved in gaining an understanding of the biology of manual therapies. Table II outlines the research recommendations. Table III lists current clinical trials involving massage and cancer (found by searching the nih clinical trials database at clinicaltrials.gov). At June 2006, seven studies investigating the effects of massage therapy in cancer patients were registered and active.

More work is required on the methodology for conducting clinical trials of therapeutic massage.
Studied children with mild to moderate juvenile rheumatoid arthritis who were massaged by their parents 15 minutes a day for 30 days (and a control group engaged in relaxation therapy). The children's anxiety and stress hormone (cortisol) levels were immediately decreased by the massage, and over the 30-day period their pain decreased on self-reports, parent reports, and their physician's assessment of pain (both the incidence and severity) and pain-limiting activities.

42. Juvenile rheumatoid arthritis: benefits from massage therapy.

http://www.ncbi.nlm.nih.gov/pubmed/9383925

Studied children with mild to moderate juvenile rheumatoid arthritis who were massaged by their parents 15 minutes a day for 30 days (and a control group engaged in relaxation therapy). The children's anxiety and stress hormone (cortisol) levels were immediately decreased by the massage, and over the 30-day period their pain decreased on self-reports, parent reports, and their physician's assessment of pain (both the incidence and severity) and pain-limiting activities.

43. Randomized controlled trials of pediatric massage: a review.

http://www.ncbi.nlm.nih.gov/pubmed/17342238

The American Massage Therapy Association (AMTA) defines massage as 'manual soft tissue manipulation, [including] holding, causing movement, and/or applying pressure to the body' (14).

As written, this very broad definition includes numerous MT approaches commonly used in clinical practice that are relevant to the current review, but could also include rare forms of medical massage (e.g. optic nerve massage (15), light compressive massage for congenital dacryocystocele (16), cardiac massage (17)), that are outside the intended scope of this review.

Swedish massage uses five main strokes to stimulate the circulation of blood through the body; petrissage (kneading), effleurage (stroking), friction, tapotement (tapping) and vibration.

For the purposes of this review, MT is typified by the manual manipulation of soft tissue, performed by a person other than the recipient, intended to promote health and well-being. This operational definition allows a range of MT styles to be included in this review. Studies vary on many details, including the amount of clothing worn by recipients, whether a massage chair or massage table was used, whether MT took place in a clinical setting or at home, and whether MT was performed by a person with full, partial, or no training as a massage therapist. Studies also vary in which anatomical regions are massaged. Despite all these variations, it is reasonable to expect that there will be some consistent outcomes that result from MT. Eventually, as a scientific understanding of MT grows, studies that examine the importance of these variations will be advisable, but currently the questions of greatest interest are at a more fundamental level.

MT effects can be divided into *single-dose* and *multiple-dose*. Single-dose effects include MT's influence on psychological or physiological states that are transient in nature and that might reasonably be expected to be influenced by a single session of MT. Multiple-dose effects are restricted to MT's influence on variables that are considered to be more enduring, or that would likely be influenced only by a series of MT sessions performed over a period of time, as opposed to a single dose. Frequently, both single- and multiple-dose effects are examined in the same study. One example is a study of MT for autistic children that examined the single-dose effect of MT on salivary cortisol (immediately prior to, and immediately following, an individual session of MT) and the multiple-dose effect of MT on depression (at the beginning of, and at the conclusion of, a sequence of MT sessions over time) (18). A second example is a study that evaluated children's distress during burn treatment, which included the single-dose effect of MT for state anxiety and the multiple-dose effect of MT for depression (19). Typically, studies include the terms 'short-term effect' and 'long-term effect' to indicate single- and multiple-dose effects, respectively. Our decision to use the *single-dose* and *multiple-dose* terminology is motivated by the desire to prevent any confusion that may arise related to how long an effect may last following the termination of treatment. None of the studies in the current review examine whether any MT effects last beyond the final day on which a participant receives treatment, making the use of the term 'long-term effect' potentially misleading.

The potential benefits of MT can be further classified according to whether they are primarily affective, physiological or behavioral in nature. *Affective* refers to effects most closely associated with the recipients' feelings and emotions. *Physiological* effects are those concerned with recipients' vital organismic processes. *Behavioral* effects are those related to the recipients' observable responses to their environment. Study results reviewed here will first be separated by the single-dose versus multiple-dose distinction, then further categorized into affective, physiological and behavioral dimensions.

Available data reveals that MT provides benefit to pediatric recipients, though not as universally as has sometimes been reported. Benefits from both single-dose and multiple-dose sessions are evident. Most of the statistically significant effect sizes were observed for affective outcomes; findings for the behavioral and physiological dimensions were less consistent. These results parallel known MT effects in adult recipients, where multiple-dose reductions of depression and trait anxiety are the largest effects.
In reviewing MT for pediatric recipients, we encountered several weaknesses endemic to the MT research literature that should be addressed in subsequent studies. These included (i) low statistical power, (ii) frequent failure to report basic descriptive statistics, (iii) descriptions of results that do not logically follow study designs, and (iv) lack of replication. We discuss these in turn.

Conclusion

Current research indicates that MT is not a panacea for conditions studied in the pediatric population. In contrast to what has sometimes been claimed, there is little to no evidence to date to support effects such as improved immune system functioning, reduction of spasticity, or amelioration of hostility. In addition, there is currently scant evidence that MT provides benefits by first reducing cortisol, as MT's effect on this stress hormone is seen to be small when analyzed correctly (i.e. in between-groups as opposed to within-group comparisons). There is, however, a set of MT effects that have been shown to have real value to the pediatric population. MT shows a considerable impact on the state and trait anxiety levels of children. Because these effects are strong, and also because they are consistent with the findings in adults, future research on the anxiolytic effects of MT on pediatric recipients does not need to simply replicate previous studies. The greatest progress can now be made by focusing on the mediators and moderators of MT effects on anxiety, and on testing explanatory theories of these outcomes. MT effects on arthritis pain and muscle tone also appear to be strong, but these results do need to be replicated, as they are based on single studies. Other pediatric outcomes that are promising, but in need of further study, include MT's effects on depression, negative mood, certain types of behavior (likely due to reductions of anxiety) and air flow in those suffering from pulmonary disorders such as cystic fibrosis. As increased statistical power in the form of additional studies is brought to bear on these potential benefits, it is likely that some will be quantitatively validated.

Finally, it has been noted that prior MT research has not accounted for the communication that inevitably takes place between massage therapists and their recipients, nor has it examined the likelihood that therapists and recipients develop a therapeutic relationship during the course of MT (10). This is also true in pediatric MT studies. MT has important parallels (in both process and outcomes) to psychotherapy (10), a treatment that relies on communication and therapeutic relationship to provide effects. It seems likely that MT effects, especially those belonging to the affective category, are mediated or moderated by these previously unexamined factors. These should not be neglected in subsequent pediatric MT research.

As adult consumers continue to explore and utilize all of their health care options, children will increasingly be recipients of MT. With this in mind, it is essential that we continue to study the benefits of MT for children, and the explanatory models that underlie them, so children's health and wellness can be maximized. The value of MT has been examined for many specific conditions that afflict children. It is our hope that this review has consolidated those findings, indicated areas that require further study, and led to an increased scientific understanding of pediatric MT.

44. Anorexia nervosa symptoms are reduced by massage therapy.

http://www.ncbi.nlm.nih.gov/pubmed/16864390

Nineteen women (M age = 26) diagnosed with anorexia nervosa were given standard treatment alone or standard treatment plus massage therapy twice per week for five weeks. The massage group reported lower stress and anxiety levels and had lower cortisol (stress) hormone levels following massage. Over the five-week treatment period, they also reported decreases in body dissatisfaction on the Eating Disorder Inventory and showed increased dopamine and norepinephrine levels. These findings support a previous study on the benefits of massage therapy for eating disorders.

45. Critical review of how nurses research massage therapy: are they using the best methods?

http://www.ncbi.nlm.nih.gov/pubmed/10025285

Complementary therapies comprise only a fraction of nursing care, yet it is interesting that their use is being considered by an ever-increasing number of nurses. Within the Rhondda NHS Trust, holistic massage therapy is offered to patients both in hospital and in the community, nurses and occupational therapists successfully combining their massage skills with everyday patient care. During the process of devising a research protocol for implementation within the Trust, certain questions began to emerge to which there were no answers. The attempt to answer them is the origin of this paper, which explores some commonly experienced difficulties with reference to the literature and puts forward merits of adapting current methodology to investigate the benefits of massage therapy.

46. Safety and efficacy of massage therapy for patients with cancer.

http://www.ncbi.nlm.nih.gov/pubmed/16062163

Massage therapy, a CAM therapy known primarily for its use in relaxation, may also benefit patients with cancer in other ways. Massage can also be associated with risks in the oncology population. Risks can be minimized and benefits maximized when the clinician feels comfortable discussing CAM with his or her patients. This article reviews and summarizes the literature on massage and cancer to help provide the clinician with information to help facilitate discussions with patients.

CONCLUSIONS:

Conventional care for patients with cancer can safely incorporate massage therapy, although cancer patients may be at higher risk of rare adverse events. The strongest evidence for benefits of massage is for stress and anxiety reduction, although research for pain control and management of other symptoms common to patients with cancer, including pain, is promising. The oncologist should feel comfortable discussing massage therapy with patients and be able to refer patients to a qualified massage therapist as appropriate.

47. Massage therapy versus traditional therapy for low back pain relief: implications for holistic nursing practice.

http://www.ncbi.nlm.nih.gov/pubmed/15923937

This study explored whether there is a significant difference in perceived low back pain relief between patients receiving massage versus traditional therapy, using a 2-variable by 3-variable fully crossed, factorial, comparative research design. Statistical results showed slightly more efficacy for traditional therapy; however, the additional benefits of massage add to its value for holistic nursing practice.

48. Massage therapy in the treatment of lymphedema. Rationale, results, and applications.

http://www.ncbi.nlm.nih.gov/pubmed/15825847

The ongoing NCCAM-supported experimental and clinical translational approaches should shed light not only on the physiologic mechanisms underlying the benefits of massage therapy but could also, if successful in defined populations of patients, have a substantial impact by providing a simpler, more cost-effective LE treatment alternative worldwide.

49. Massage therapy for symptom control: outcome study at a major cancer center.

http://www.ncbi.nlm.nih.gov/pubmed/15336336

Massage is increasingly applied to relieve symptoms in patients with cancer. This practice is supported by evidence from small randomized trials. No study has examined massage therapy outcome in a large group of patients. At Memorial Sloan-Kettering Cancer Center, patients report symptom severity pre- and post-massage therapy using 0-10 rating scales of pain, fatigue, stress/anxiety, nausea, depression and "other." Changes in symptom scores and the modifying effects of patient status (in- or outpatient) and type of massage were analyzed. Over a three-year period, 1,290 patients were treated. Symptom scores were reduced by approximately 50%, even for patients reporting high baseline scores. Outpatients improved about 10% more than inpatients. Benefits persisted, with outpatients experiencing no return toward baseline scores throughout the duration of 48-hour follow-up. These

data indicate that massage therapy is associated with substantive improvement in cancer patients' symptom scores.

50. Postoperative arm massage: a support for women with lymph node dissection.

http://www.ncbi.nlm.nih.gov/pubmed/15108949

OBJECTIVE:
To evaluate the usefulness of arm massage from a significant other following lymph node dissection surgery.

CONCLUSION:
Arm massage decreased pain and discomfort related to surgery, and promoted a sense of closeness and support amongst subjects and their significant other. IMPLICATION FOR NURSING PRACTICE: Postoperative massage therapy for women with lymph node dissection provided therapeutic benefits for patients and their significant other. Nurses can offer effective alternative interventions along with standard procedures in promoting optimal health.

51. A meta-analysis of massage therapy research.

http://www.ncbi.nlm.nih.gov/pubmed/14717648

Massage therapy (MT) is an ancient form of treatment that is now gaining popularity as part of the complementary and alternative medical therapy movement. A meta-analysis was conducted of studies that used random assignment to test the effectiveness of MT. Mean effect sizes were calculated from 37 studies for 9 dependent variables. Single applications of MT reduced state anxiety, blood pressure, and heart rate but not negative mood, immediate assessment of pain, and cortisol level. Multiple applications reduced delayed assessment of pain. Reductions of trait anxiety and depression were MT's largest effects, with a course of treatment providing benefits similar in magnitude to those of psychotherapy. No moderators were statistically significant, though continued testing is needed. The limitations of a medical model of MT are discussed, and it is proposed that new MT theories and research use a psychotherapy perspective.

52. Premature infant massage in the NICU.

http://www.ncbi.nlm.nih.gov/pubmed/12795507

Infant massage therapy is an inexpensive tool that should be utilized as part of the developmental care of the preterm infant. Nurses have been hesitant to begin massage therapy for fear of overstimulating the infant and because there has been insufficient research to prove its safety. Recent research, however, has shown that the significant benefits of infant massage therapy far outweigh the minimal risks. When infant massage therapy is properly applied to preterm infants, they respond with increased

weight gains, improved developmental scores, and earlier discharge from the hospital. Parents of the preterm infant also benefit because infant massage enhances bonding with their child and increases confidence in their parenting skills. This article discusses the benefits and risks of massage for preterm infants and their families and explains how to implement massage therapy in the neonatal intensive care setting.

53. A review of the evidence for the effectiveness, safety, and cost of acupuncture, massage therapy, and spinal manipulation for back pain.

http://www.ncbi.nlm.nih.gov/pubmed/12779300

BACKGROUND:
Few treatments for back pain are supported by strong scientific evidence. Conventional treatments, although widely used, have had limited success. Dissatisfied patients have, therefore, turned to complementary and alternative medical therapies and providers for care for back pain.

CONCLUSIONS:
Initial studies have found massage to be effective for persistent back pain. Spinal manipulation has small clinical benefits that are equivalent to those of other commonly used therapies. The effectiveness of acupuncture remains unclear. All of these treatments seem to be relatively safe. Preliminary evidence suggests that massage, but not acupuncture or spinal manipulation, may reduce the costs of care after an initial course of therapy.

54. Outcomes of touch therapies during bone marrow transplant.

http://www.ncbi.nlm.nih.gov/pubmed/12564350

OBJECTIVE:
To investigate the effects of Therapeutic Touch and massage therapy on the outcomes of engraftment time, complications, and perceived benefits of therapy during bone marrow transplant.

CONCLUSIONS:
Massage therapy may be effective in altering the psychological and neurological complications associated with chemotherapy during bone marrow transplant. Both massage and Therapeutic Touch provide comfort to patients undergoing this challenging process.

55. A primer of complementary and alternative medicine and its relevance in the treatment of mental health problems.

http://www.ncbi.nlm.nih.gov/pubmed/12418362

The use of complementary and alternative medicine (CAM) is widespread. Those with psychiatric disorders are more likely to use CAM than those with other diseases. There are both benefits and limitations to CAM. Many controlled studies have yielded promising results in the areas of chronic pain,

insomnia, anxiety, and depression. There is sufficient evidence, for example, to support the use of a) acupuncture for addiction problems and chronic musculoskeletal pain, b) hypnosis for cancer pain and nausea, c) massage therapy for anxiety, and the use of d) mind-body techniques such as meditation, relaxation, and biofeedback for pain, insomnia, and anxiety. Large doses of vitamins, herbal supplements, and their interaction with conventional medications are areas of concern. Physicians must become informed practitioners so that they can provide appropriate and meaningful advice to patients concerning benefits and limitations of CAM.

56. A regional survey of health insurance coverage for complementary and alternative medicine: current status and future ramifications.

http://www.ncbi.nlm.nih.gov/pubmed/11439848

OBJECTIVE:
The purpose of this survey is to evaluate the extent of health insurance coverage for complementary and alternative medicine (CAM) within one region in the United States, a study prompted by the increased utilization of CAM.

CONCLUSIONS:
Current health insurance coverage of CAM is limited essentially to chiropractic medicine, acupuncture and massage therapy. Coverage of CAM is made confusing by different policies, practitioner requirements, and health plans within each carrier.

57. Benefits of massage therapy and use of a doula during labor and childbirth.

http://www.ncbi.nlm.nih.gov/pubmed/10631824

This article reviews the most recent literature on touch support and one-to-one support during labor and childbirth. The positive and negative aspects of the traditional birth attendant are presented. Research in one-to-one care and touch support during labor is examined with respect to husband/partner, nurses, nurse-midwives, and doulas (trained labor attendants). According to recent studies, women supported by doulas or midwives benefit by experiencing shorter labors and lower rates of epidural anesthesia and cesarean section deliveries. Also, a smaller percentage of their newborns experience fetal distress and/or are admitted to neonatal intensive care units. Women whose husbands or partners massage them during labor experience shorter labors. Nursing one-to-one support results in no significant obstetric outcomes. Antenatal perineal massage was found to reduce the rates of tears, cesarean section, and instrumental deliveries. Research in perineal massage during labor has shown no benefit.

59. Benefits of massage therapy for hospitalized patients: a descriptive and qualitative evaluation.

http://www.ncbi.nlm.nih.gov/pubmed/10394676

OBJECTIVE:
To uncover and elucidate a range of patient outcomes of a therapeutic massage program within an acute care setting.

CONCLUSIONS:
The study supported the value of this hospital-based massage therapy program and uncovered a range of benefits of massage therapy for hospitalized patients that should be studied further.