What is research evidence?

Research evidence is defined in the **Evidence-Based Practice Standard of Practice** as: "a body of relevant and high-quality data obtained from peer-reviewed sources including clinical practice guidelines, systemic reviews, randomized controlled trials, and observational studies."

The following information takes a closer look at what research evidence is, highlighting key concepts and competencies for RMTs. This resource is designed to help an RMT increase both their knowledge and comfort level using research evidence in their practice.

Locating research

There are many ways in which an RMT can locate quality research. The most common way is by searching through research databases. Some research databases are restricted to academic institution members or require a subscription, but there are many available for free. Other ways an RMT may locate quality research articles is by looking at the reference section of other publications, or by **visiting a local College or University Library.**

The following is a list of resources to assist in locating research:

Note: This is not an exhaustive list of resources.

- **BC Guidelines**
  - BC Guidelines are clinical practice guidelines and protocols that provide recommendations to BC practitioners on delivering high quality, appropriate care to patients with specific clinical conditions or diseases.
- **Health Evidence. McMaster University**
  - A database that provides access to systematic reviews evaluating the efficacy and cost-effectiveness of public health interventions.
- **National Library of Medicine. PubMed**
  - A database with 36 million citations for biomedical literature from MEDLINE, life science journal, and online books.
- **Cochrane Library**
  - Cochrane Reviews are systemic reviews of research in health care and health policy.
- **PEDro**
  - A database for research evaluating physiotherapy interventions.
- **Google Scholar**

    - A web search engine for scholarly literature.
- **Canadian Medical Association. Alternate providers for clinical tools and services**
    - A resource aimed at helping physicians and medical learners locate alternate sources of clinical information.

When locating research, it is best practice to search multiple databases and sources to get a full picture of the condition or treatment approach being researched. By taking the time to search multiple databases and sources, an RMT can limit confirmation bias, which is the tendency to search for, interpret, favour, and recall information in a way that supports one's existing beliefs. Considering quality research from multiple databases and sources will provide a learning opportunity for an RMT to evaluate research evidence that both supports or challenges their current views.

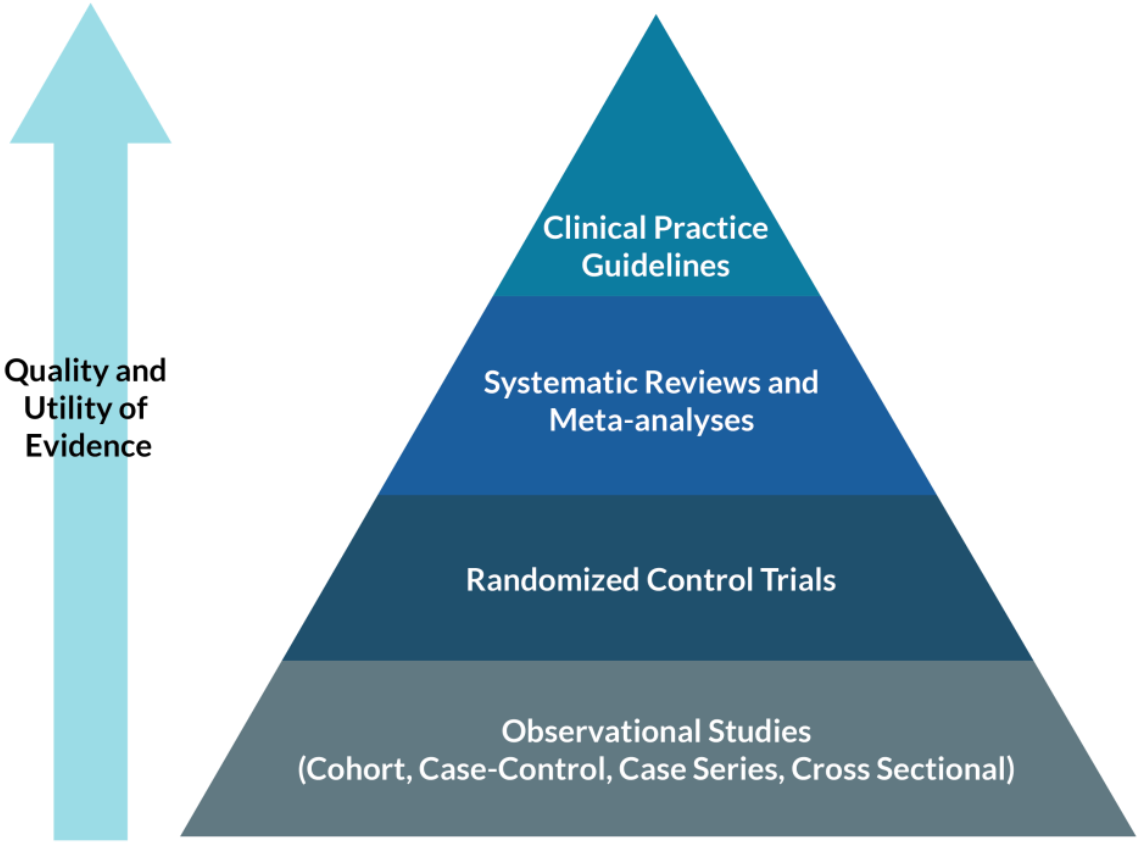
Seeing one's own biases can be challenging. To better understand and reflect upon your own professional biases, consider the following questions:

- Where does your knowledge come from?
- How do you evaluate that your knowledge is valid and reliable?
- What would you do if new information became available which challenged your current knowledge?

Level of Evidence

When locating research, it is important to consider the level of evidence you are looking for. RMTs should aim to find information from the highest level of evidence possible on a given condition or treatment approach

The following is a diagram depicting four levels of evidence:



- Clinical Practice Guidelines
  - Documents that include recommendations intended to optimize patient care, developed from review of research literature.
- Systematic Reviews and Meta-analyses
  - Summaries of randomized controlled trials on specific topics of literature created through explicit, systematic, and reproducible methods. A meta-analysis provides an estimate for the effect of a treatment or intervention.
- Randomized Control Trials
  - A scientific experiment in which researchers carefully manipulate certain variables while keeping others constant to accurately assess the effects of the specific variable they are interested in. Randomized control trials test to see if a treatment intervention has a measurable effect.
- Observational Studies
  - Research designs in which the investigators collect data and observe outcomes without altering or controlling participants' behaviour or activities.

- Cohort – A longitudinal research study that compares a particular outcome (such as lung cancer) in groups of individuals who are alike in many ways but differ by a certain characteristic (for example, female nurses who smoke compared with those who do not smoke).
- Case-Control – A study that compares two groups of people: those with the disease or condition under study (cases) and a very similar group of people who do not have the disease or condition (controls).
- Case Series – A group or series of case reports involving patients who were given similar treatment.
- Cross Sectional – Studies that analyze data from a population at a single point in time by collecting information on variables from each participant.

Evaluating Research

There are many aspects of a research article to consider when evaluating the validity and reliability of the information presented, and its applicability to practice.

Evaluating the Source

RMTs must be aware that not all research is equally reliable or authoritative. It is an RMT's responsibility to evaluate the resources they will use for research, whether these are online or print journal articles, websites, books, newspaper articles, or other courses.

There are a number of different frameworks and checklists that can be used to evaluate a potential resource for application to practice. These frameworks use questions to guide the reader in analysis of the resource. It is important to note that in some instances, not every question within a given framework will be able to be answered. Rather, an RMT should focus on using the questions posed within frameworks as a tool to help look critically at the resources found.

Different Frameworks:

- **5 W Questions (5Ws)**
  - Who is the author? (Authority)
  - What is the purpose of the content? (Accuracy)
  - When was the item written or published? (Currency)
  - Where is the content from? (Publisher)
  - Why was the research written? (Purpose and Objectivity)

- **SIFT**
  - **Stop**: Pause to think about the information critically.
  - **Investigate the source**: Investigate who the information was created by and why it was created.
  - **Find better coverage**: Identify alternative resources that cover the same area to see if there is a consensus.
  - **Trace claims, quotes, and media to the original context**: If claims are cited, look into the original source and repeat the SIFT process. If attribution is missing, investigate more deeply to see if a claim has any bias.
- **RADAR**
  - **Relevance**: How is the information relevant to your project?
  - **Authority**: Who created the resource and how credible are they?
  - **Date**: When was the information published, and is it still accurate/relevant today?
  - **Appearance**: Does the resource look clean and professional? Is the language formal and academic?
  - **Reason for writing**: Why was the resource created? Was it to sell or promote something?

Additional Resources

- University of British Columbia: **Evaluating Information Sources.**
- University of Washington: **Evaluating Sources: How do I tell if this is a useful source?**
- University of Washington: **Evaluating Sources: Help with Reading & Understanding your Sources**

Evaluating the Content

When reviewing research, RMTs must determine if the research evidence they have located is relevant to their clinical question. This is a key step in determining whether the information from the research can and/or should be incorporated into the RMT's clinical practice.

Incorporating research into practice might mean adding new approaches or patient education, stopping the use of some approaches in clinical practice, or not changing anything within clinical practice. To inform these decisions, which will impact the safe delivery of massage therapy to patients, RMTs need to carefully appraise the research they have located.

When appraising research evidence, consider the following:

- Does the research study examine the topic you are interested in? Does it seek to answer your research question/clinical question?
- What were the demographics of the study participants? Is this comparable to your patient population?
- Was the sample size large enough to show an effect?
- What was the intervention that was studied?
- What was the primary outcome of the research?
- What biases are present within the research?
- If the outcome was significant and not due to bias, is it significant enough to change your practice when also considering the patients' preferences and your clinical expertise?

Biases

A bias is a distortion or deviation in the data collection, analysis, interpretation or publication that can lead to false conclusions. Biases can occur intentionally or unintentionally.

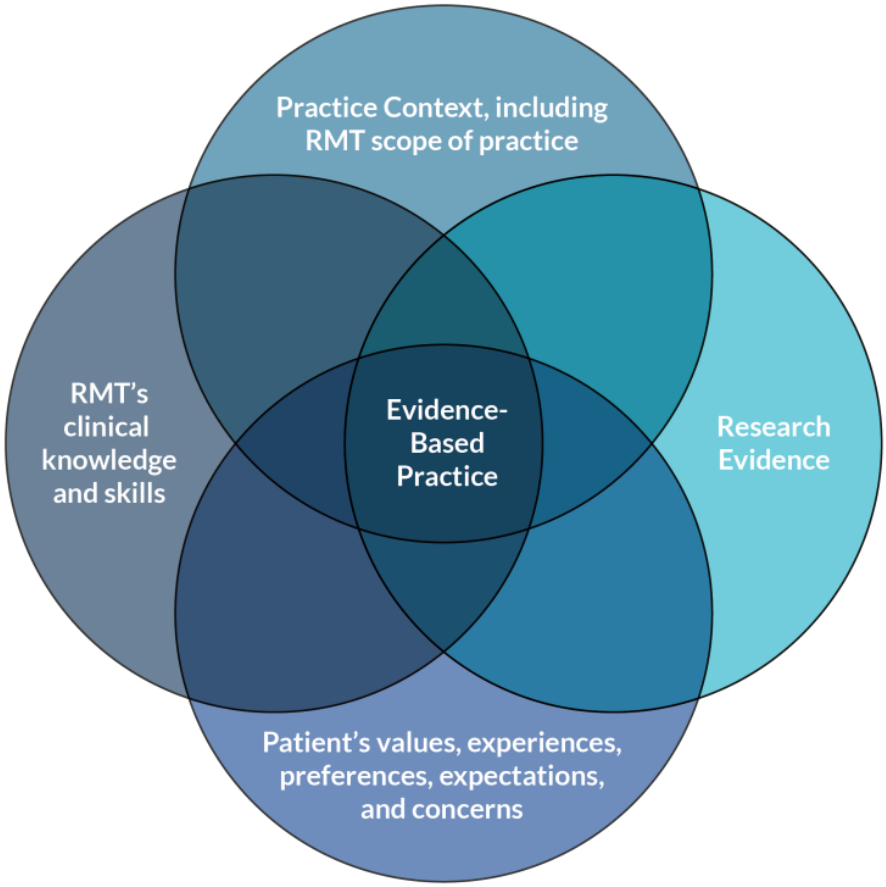
Many different types of biases can exist in research. Below is a partial list of common biases.

- Selection Bias
  - Occurs when those recruiting participants are aware of the next steps of the research study.
- Randomization Bias
  - Occurs when randomization methods of a research study are less than ideal.
- Performance Bias
  - Occurs when there is a systematic difference in the care provided to the participants in different groups.
- Detection Bias
  - Occurs when there are systematic differences in outcome assessments between groups.
- Attrition Bias
  - Occurs when there are systematic differences between groups due to withdrawals.
- Reporting Bias
  - Occurs when there are systematic differences between reported and unreported findings.

Integrate research into practice

Integrating research evidence into practice requires an RMT to use an evidence-based practice approach.

An evidence-based practice approach is an approach to professional practice that integrates information from research evidence along with three other areas (patient values and preferences, the RMT's clinical knowledge and skills, and the practice context) to support an RMT in providing safe, ethical, and competent care to patients.



A critical assessment of, and information from, all four areas better inform an RMT's treatment planning and clinical communication, and supports an RMT's own evaluation and self-reflection on their patient outcomes and continued knowledge growth.

When integrating information from research evidence with the other three areas, RMTs may wish to reflect on the following questions:

- Is this approach within the massage therapy scope of practice?
- How can this approach be incorporated into my practice?
- How will this approach change my communication, treatment, or homecare when I incorporate it?

- Do I have adequate training to implement the approach into my practice, ensuring patient safety?
- Will a change in approach align with patients' values and preferences?
- Can the approach be modified to meet patient needs?
- Could using this approach have any negative outcomes or cause harm to patients?
- How can I communicate this approach to patients in an evidence-based way?
- Can I communicate the research evidence, what is known and unknown, and options to the patient so we can agree on a treatment plan together?
- How will I follow-up with the patient on the effectiveness and satisfaction with the approach used?

Additional resources

Duke University: **Evidence-Based Practice**

University of Washinton. **Evidence-Based Practice in Rehabilitation**

Practice Development Program and learning activities

Evidence-based practice requires RMTs to use critical thinking when interacting with information on social media/online, and when locating resources or learning activities.

Section 4 of the Evidence-Based Standard of Practice states that an RMT engages in learning activities that:

a. Are informed by research evidence;
b. Present information within RMT's scope of practice as defined by BC's **Massage Therapists Regulation** and CCHPBC's **Scope of Practice Standard of Practice**; and
c. Are taught by an instructor or presenter who holds appropriate knowledge and expertise to instruct RMTs in the context of a regulated health profession.

The same process used to find and evaluate research can be used to find and evaluate learning activities that an RMT may wish to engage in as part of their **Practice Development Program.**

An RMT can reflect on a potential learning activity by asking questions, as presented in the steps below. It is important to stop when answers to any of

the questions are negative or uncertain. Stopping allows an RMT to look for further information, or a better source of information.

Step 1: Identify a learning goal

- Identifying an area or topic of interest.
- Why are you interested in the area or topic?
- What changes would you like to see within your practice related to this area or topic?
- What would you like to gain from a learning activity?

Step 2: Locate learning activities

- Search for books, research evidence, courses, conferences, etc.

Step 3: Evaluate a source

- Investigate the credentials of the author or instructor, including their qualifications, education, and experience in the field related to the content.
- Has the author or instructor received a certification or degree in the area of study?
- Is the author or instructor affiliated with an educational institution, professional organization, or accrediting body?
- What makes the author or instructor a reliable and appropriate source of information?
- Is the author or instructor presenting information within their area of expertise?

Step 4: Evaluate content

- Is the course content and structure adequately described?
- Are the learning outcomes clearly stated?
- Are the number of learning outcomes reasonable for the length of the program?
- Is the author/instructor combining their expertise and experience with current research evidence?
- Does the author or instructor provide references for the sources of their content?
- Is the evidence used relevant to the content of the course?
- Does the evidence support the claims the course/instructor are making?

Step 5: Evaluate applicability

- Who is the intended audience for the course?
- Do I fit within the intended audience for the course?
- Is it within a BC RMT's scope of practice?
- Does the content meet your learning goal?

Step 6: Integrate research learning into practice

- What effect will this learning have on your practice?
- What further questions do you need answered? Will it positively affect your patients and practice?

Case Scenario 1

Identify a learning goal

From their self-assessment summary report, RMT noted that an area open to improvement was their use of research evidence and an evidence-based approach in practice. Upon reflection, Adam determines that they would like to learn about research specific on the topic of patients with back pain.

Locate learning activities

After completing an online search, Adam found an online course on patient communication and back pain.

Evaluate a source

Upon review of the course details, Adam was able to learn that the instructor is a manual therapist from Europe, holds a PhD, and currently works at the local university doing research on clinical reasoning and back pain.

Evaluate content

Reviewing the course website, Adam is able to access links to a variety of research evidence from multiple reputable sources.

Evaluate applicability

On the website, Adam confirms that the intended audience for the course is manual therapists and other health care professionals working with a patient population that experiences back pain. Adam also confirms that the learning outcomes and content to be covered are within the scope of practice for massage therapy.

Integrate research learning into practice

Adam determines that the course appears to be taught by an appropriate instructor, is informed by multiple sources of research evidence, and is within their scope of practice. Adam confirms the dates for the course work for their schedule and signs up.

Case Scenario 2

Identify a learning goal

From their self-assessment summary report, RMT Dakota noted that an area open to improvement was their treatment knowledge and practical skills. Upon reflection, Dakota determines that they would like to learn when abdominal treatment may be indicated for different conditions.

Locate learning activities

Dakota was informed by a colleague about a course called Viscerokinetics and decided to look further into this course.

Evaluate a source

Upon review of the course details, Dakota was able to learn that the instructor is an unregulated health practitioner with no noted certifications or licenses.

Evaluate content

Reviewing the course website, Dakota notes there are a number of claims about the treatment approach and reference to one specific case study. There are no references to research evidence. After conducting further online searches, Dakota concludes that the only research evidence comes from case studies or anecdotal reports on patient outcomes.

Evaluate applicability

On the course website, Dakota confirms that the intended audience for the course is manual therapists. Dakota also confirms that the description of the course content is within massage therapists' scope of practice. Dakota does note that, due to the lack of research evidence and references, the course may not effectively help them reach their learning goals.

Integrate research learning into practice

Dakota determines that the course appears to be within scope of practice; however, Dakota is not sure that the course is being taught by an instructor with appropriate knowledge, expertise or education in on the topic, and notes that the course is only supported by a low level of research evidence. Dakota decides to continue to search for other learning activity options to meet their learning goal.