

Comparison of the effectiveness of tai Chi and Western exercise in enhancing the health condition of elderly people: a critical literature review

1. Introduction and Background

The research is a critical literature review that compares the effectiveness of Tai Chi and Western exercise such as stretching and resistance training in improving the health conditions of elderly people.

The research question is “which types of exercises, namely, the eastern Tai Chi exercise or the western exercises such as stretching and resistance training are effective in the improvement of the health conditions including physical functioning and mental functioning of elderly people?”

Tai Chi, an eastern exercise, has been proven by many researches, literature review and meta-analysis showing its effectiveness on improving balance preventing falls and improving aerobic activity (Taylor-Piliae et al, 2004; Wu, 2002; Fuzhong et al, 2005; Sherrington et al, 2008). Tai Chi is also found in some research in improving psychological well-being including reduction of stress, anxiety, depression and mood disturbance and reducing pain arising from knee osteoarthritis (Wang et al, 2010; Wang et al, 2009).

Tai Chi prevents falls since it targets all the physical components needed to stay upright—leg strength, flexibility, range of motion, and reflexes. All of these decline with age (Harvard Medical School, 2012). Besides, its routine is similar to resistance training, studies have found that as a resistance training, Tai Chi is equivalent to more

vigorous forms of weight training. It helps to improve an elderly muscle strength to prevent fall. Furthermore, it reduces a fear of falling by improving the psychological well-being of elderly. It is important since fear of falling is one of the largest predictor of falls (Harvard Medical School, 2012).

As mentioned above, Tai Chi is proven to be effective to prevent falls by many researches. However, there is a lack of researches in comparing the effectiveness of Tai Chi and other Western type of exercise such as stretching, balance and resistance training in the prevention of falls and other health outcomes such as physical health and mental health.

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2. Methodology

2.1. Explanation of the Methodology---Critical Literature Review

The methodology of this research is critical literature review. Literature review is an “analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies” (Hart, 1998).

Critical literature review is a step forward from brief literature review which is commonly found in research articles and systematic literature review which does not mandatorily rely on a critical appraisal framework in choosing research articles. Critical literature review, different from brief literature review and systematic literature review,

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At both end of a continuum, literature review is stratified into narrative literature review and critical literature review. Narrative literature review does not have any search strategy and method of analyzing literature. Critical literature review, however, involves search strategy and method of analyzing literature (Aveyard, 2007).

Critical literature review is important to the current trend of evidence-based practice. Evidence-based practice is a diligent, explicit and careful use of current best evidence

in decision-making about patients' care (Sackett et al, 1999). Before any evidence-based practice in nursing, nurse practice was based on past experience of individual nurse.

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The reason for applying critical literature review in this research is because of the need to determine which practice in fall prevention is the most effective. Since critical literature review of randomized controlled trial generally offers the best evidence because of its position at the top place of hierarchy of evidence, critical literature review is therefore a desirable methodology for this research.

2.2. The Process of Critical Literature Review

There are three major stages in critical literature review, namely, searching stage, screening stage and analysis stage.

In the searching stage, appropriate and relevant academic articles are searched in academic databases based on the keywords organized in Boolean table. Apart from searching from the academic databases, researchers may search in the reference list of academic articles.

In searching academic articles in academic databases, researchers need to ensure that the academic articles are relevant to the discipline of the research to be conducted. In the medical discipline, CINAHL, DynaMed, PsycInfo, PsycArticles, British nursing index and Medline are the relevant databases. The use of Boolean table is important in organizing the keywords for conducting a detailed search in academic databases (Aveyard, 2007).

Although the most important one is a search on electronic database, a search on reference list is also important since some research articles may be left out regardless of the quality of Boolean table (Aveyard, 2007).

In the screening stage, three processes are involved. They are screening through the use of inclusion and exclusion criteria, screening of abstract and screening through the use of critical appraisal framework.

The purpose of applying inclusion and exclusion criteria is to exclude articles that are not within the time frame as specified in the inclusion and exclusion criteria, does

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In the screening of abstracts, it involves reading the abstract to decide whether the research article is relevant to the topic on hand.

The most important stage in screening is the use of critical appraisal framework. Critical appraisal frameworks are systematic frameworks that guide the selection of academic articles to ensure that they are methodologically sound and the research design is appropriate. Researcher has to select a critical appraisal framework that is comprehensive and appropriate to the intellectual level of the researcher. Examples of appraisal frameworks include Coughlan et al (2007) framework, Polit et al (2001) framework and the critical appraisal skills programme (CASP) (Critical appraisal skills programme, 2006).

Since the researcher is a novice researcher with no prior experience in academic research, it is important to choose a critical appraisal framework that is easy to apply and also comprehensive. Critical appraisal skills programme (CASP) is a research framework that fits the purpose since it involves eight different research designs including randomized controlled trial. Most importantly, it makes use of a small

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Analysis stage is about summarizing the findings of literature review into manageable amount (Aveyard, 2007). It concerns with the combination, analysis and synthesis of

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3. Ethical Consideration

The first ethical consideration is that researcher should not engage in plagiarism i.e. directly copying other's work without changing their wording and acknowledging the source. Plagiarism is an offence in the academic community and it should always be avoided (Polit and Beck, 2001).

Second, in doing literature review, researchers should not only find research articles that support his/her own view. Without doing so and simply finding articles that

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Third, research articles chosen should meet three principles. They are beneficence, respect for human dignity (the right to self-determinism and the right to full disclosure) and justice. Beneficence means the research participants has the right to refrain from any harms and should be protected from exploitation by the researcher.

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4. Method

4.1. Searching for Articles

As mentioned above, the first stage of the critical literature review methodology is about searching. In the search stage, four databases will be chosen. All of them are all-in-one databases, namely, EBSCOhost, ProQuest, PubMed and Cochrane Library. All-in-one databases encompass many nursing and medical-related databases, for example MEDLINE, CINAHL, PsycInfo, PsycArticles and British Nursing Index.

PubMed is also a database that includes the latest research articles. Cochrane Library is a database that encompasses many systematic literature reviews related to research articles on randomized controlled trails and economic evaluation.

4.2. Keywords and the Construction of Boolean Table

To search for research articles, Boolean table is constructed in order to use the

advanced search function of the academic databases. The use of Boolean table is to search for relevant research articles in title and abstract. The Boolean table is constructed as below:

Tai Chi	And	Western exercise or stretching or balance or exercise	And	Effectiveness or Impact or effect or potential	And	Elderly or old adults or older adults
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4.3. Search on the reference list

Search on the reference list is a search on the reference list in the relevant research articles that are found. The aim is to capture all research articles possible relating to a research topic. The rationale behind that is no matter how well constructed the Boolean table is, not all articles are able to be identified (Aveyard, 2007).

4.4. Screening stage

Screening stage involves three procedures. They are the use of inclusion and exclusion criteria, reading of abstract and the use of critical appraisal framework.

4.5. The use of inclusion and exclusion criteria

Inclusion and exclusion criteria are criteria to include and exclude research articles. As for inclusion criteria, this research will include research articles that are in

relation to the research objectives. Second, the research will include research articles that are at or after the time of 2008. Third, the research articles should be of English language.

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4.6. Screening through abstract

The screening through inclusion and exclusion criteria only relates to the title of research articles. Nevertheless, in order to ensure that the research title is related to the topic, the researcher will read through the abstract.

4.7. Critical Appraisal Framework

The application of critical appraisal framework is to assess the methodological soundness and the appropriateness of research methodology.

Different critical appraisal frameworks have its strength and weaknesses. The three critical appraisal frameworks for comparison are Coughlan et al (2007), Polit et al (2001) and Critical appraisal skills programmess (CASP) (CASP, 2006). The framework of Coughlan et al (2007) and Polit et al (2001) are called generic critical

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CASP as mentioned below. However, the limitation is that it requires researchers to have a greater understanding on a research methodology in order to apply it correctly.

In this research proposal, CASP is applied. CASP is a appraisal framework that includes several research design including randomized controlled trial, economic

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4.8. Analysis stage

This process is related to the summarization and combination of research evidence. After that process, the research evidence that are combined is divided into themes and sub-themes. In the process of meta-summary, summarization of the key components of research articles such as research aim, research design, findings,

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5. Anticipated limitations of this research

The first anticipated limitation may be a lack of sample size. It is anticipated that all or most of research articles that will be found are randomized controlled trails (“RCTs”). In RCTs, one of the most important factors is the representativeness of sample size. The larger the sample size, the more representative the research to the population is. Therefore, it is important to find research papers with a larger sample size.

The second anticipated limitation is that the researcher may not find research paper that have a long follow-up period that keeps track of the effectiveness of an

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The third anticipated limitation is that the research papers may not cover all geographical regions and it may not be generalizable in all places. In essence, the research papers found may be focused on more developed regions in the world such as Hong Kong, USA and Europe. However, it may not include less developed regions

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The final anticipated limitation is on the methodology of this research. Since the researcher only operates on his own, there are no hand searches on research articles conducted. It may limit the number of research articles to be found on a relevant topic. In other words, not all research articles can be included in the literature review.

6. Project management plan

The research projects are divided into different stages. They are the stage of preliminary search for existing articles to make a decision on the research topic and research question, the searching stage, the screening stage, analysis stage and the compilation of the final research report.

As for the first stage--- preliminary search for existing articles to make a decision on the research topic, this is the most important stage in the entire research process, a researcher needs to make a decision on a topic that is neither too wide nor too narrow to start the research process. If the topic is too wide, the research findings will not

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In order to set a topic, a researcher needs to conduct a preliminary search for research articles in academic databases or Google Scholar to identify the current research trend and results of these researches. This step is important since researchers should not simply repeat what other researchers had done. They should

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research community.

In this stage, the researcher will complete the introduction chapter, background chapter and methodology chapter.

As for the searching stage, screening and analysis stage, the researcher needs to make use of academic database to search for relevant research articles. The process is explained in Section 2.2. In these stages, the researcher will finish the chapter of method, review and analysis.

As for the final stage, compilation of research report, the researcher needs to think in a wider perspective on the applicability of the research findings, limitations of

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7. Conclusion

This research plan is about “which types of exercises, namely, the eastern Tai Chi exercise or the western exercises such as stretching and resistance training are effective in the improvement of the health conditions including physical functioning and mental functioning of elderly people?” It is regarded as a meaningful topic since the preliminary search on research articles found that there are limited number of research on this topic or literature review about this topic. Therefore, it is worth to

identify which types of trainings, either the western style or eastern style is more applicable to the elderly people. In this article, the research methodology, method and anticipated limitation and project management plan are illustrated.

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