

Health Behaviour Outcomes of Co-Active Coaching Interventions: A Scoping Review

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Abstract

The purpose of this paper was to conduct a scoping review on Co-Active (Life) Coaching (CALC) literature related to health behaviour change. The scoping methodological framework developed by Arksey and O'Malley (2005) informed the retrieval of appropriate articles. Six questions provided an in-depth exploration of CALC in the health coaching literature. This paper provides a broad overview of the current status of CALC literature in the area and underscores its utility to help facilitate health behaviour-related outcomes. The CALC approach offers a promising intervention for a variety of health conditions. Future larger-scale studies with increased experimental rigor are recommended.

Keywords: Co-Active Coaching, Health Coaching, Health Behaviour Intervention, Health Promotion.

Introduction

To date, several reviews have focused, in part, on the impact of health-focused coaching (hereafter referred to as *health coaching*) for modifying health behaviours. Newnham-Kanas, Gorczynski, Morrow, and Irwin (2009) provided an extensive annotated bibliography on coaching and health-related research; this work describes the value and benefits of coaching on a variety of health conditions such as stress, asthma, cancer, cardiovascular health, and diabetes. However, the authors concluded that one of the main limitations in this area of research was the lack of operational definitions of the specific health-related coaching technique used in many of the studies. As a result, this limited the ability to distinguish among different models and practices of health coaching. Similarly, in an integrative review conducted by Olsen and Nesbitt (2010), it was also mentioned that while a plethora of health coaching interventions exist, very few of those studies reported specific theoretical designs, tools, or skill sets to conduct the interventions. As noted by Olsen (2014), many of the health coaching studies extracted revealed considerable variation in duration, frequency and method of delivery, and wide-ranging differences in coaching foundation and training were observed. Moreover, in Ammentorp et al.'s (2013) systematic review of life coaching intervention studies, it was noted that while an abundance of health coaching interventions have been published, very few of those studies reported the specific coaching approaches and techniques used. Additionally, other studies noted by Ammentorp et al. (2013) resembled health

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education practices rather than professional health coaching. Due to this lack of clarity about and standardization of the coaching method utilized, it is recommended that overt objectives, methods, rationale, and evaluation for health coaching be clearly delineated in future studies (Eddy & Robinson, 2009). There is also a demonstrable need for standardized training, credentialing, competency testing, and licensing in health coaching so that a common level of expertise and protocol can be expected from a trained and certified health coach (Wolever & Elsenberg, 2011). Harmonizing evidence-based approaches that have theoretical backing, well-documented methodologies, and ones that utilize certified coaching professionals would go a long way toward homogenizing coaching as an intervention in the research and further validate health coaching as a treatment for a variety of acute and chronic conditions. Therefore, in order for research to advance in this field, it is essential to evaluate independently the impact of specific health-oriented coaching methods on health behaviour outcomes within existing bodies of work. As a result, reviews of specific health-related coaching approaches will help to clarify the most valuable and sustainable ones currently in practice.

One coaching approach that has been evaluated as theoretically grounded and has established a growing body of evidence, as an effective intervention used for health behaviour modification is Co-Active Coaching (referred to in this body of literature as Co-Active Life Coaching or CALC) (e.g., Irwin & Morrow, 2005; Mantler, Irwin, & Morrow, 2010; Newnham-Kanas, Irwin, & Morrow, 2008, 2011; Pearson, Irwin, Morrow & Hall, 2012). Developed by Whitworth, Kimsey-House, Kimsey-House, and Sandahl (1998; *see also* Kimsey-House, Kimsey-House, & Sandahl, 2007; Kimsey-House, Kimsey-House, Sandahl & Whitworth, 2011). At the outset of this article, we want to discuss briefly the notion of *health coaching*. There does not appear to be a standard definition and the scope of practice and levels of certification seem to vary. What we infer in this paper by the term, health coaching is the use of one style of coaching – CALC – that is used as a behavioural treatment or process with patients or clients who present themselves with some health concern or issue. In this particular style of coaching, the coach may or more likely may not have any training regarding the particular health issue. The point is CALC, as assessed in this scoping review, is not a method of treatment wherein the coach has health-issue training. Instead, CALC is a behavioural intervention that involves a collaborative relationship between a coach and a client. This partnership is created to meet the needs and learning style of the client which, in turn, strengthens the client's ability to self-manage his or her behaviours and attitudes based on his or her own values. The role of the coach is to act in a supportive and thought-provoking manner such that the client, regardless of his/her state of health is viewed behaviourally or in the gestalt, regardless of her or his health issue, as "naturally creative, resourceful, and whole" (H. Kimsey-House et al., 2007, p.3) and ultimately, the 'expert' in his or her own life. Together, client and coach work, using the coaching process toward whatever clients present as their goal. If duty of care regarding the health issue becomes the issue, the standard of practice by certified CALC coaches would be to refer the client to a health professional and either continue the coaching coincident with that referral or stop the coaching process in deference to the client dealing directly with the health professional. CALC is not about giving advice. It is a partnered, communicative process and dynamic designed to help clients reach their goals from a behavioural perspective. In our view, CALC is very similar to the tenets of Motivational Interviewing and other client-centered counseling styles; in fact, CALC's parallels to and derivations from both Motivational Interviewing and Egan's Skilled Helping model have been well documented elsewhere (Newnham-Kanas, Irwin, & Morrow, 2010).

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It should be noted that CALC is also an accredited coach training program recognized by the International Coaching Federation (The Coaches Training Institute, 2014). The Certified Professional Co-active Coach (CPCC) training program encompasses five, 3-day experiential workshops, followed by a six-month Certification Program. Upon successful completion of those two components, a written and oral examination is required, with completion taking place over approximately a twelve-month period of time (The Coaches Training Institute, 2014). CALC-researchers have demonstrated co-active coaching's applicability to some health-related behaviour changes through an emergent body of evidenced-based works (e.g., Mantler, et al., 2010; Newnham-Kanas, et al., 2008, 2011; van Zandvoort, Irwin, & Morrow, 2008, 2009). Therefore, to understand more fully this body of CALC research, a compilation of studies published to date on the influence of CALC in managing acute and chronic health behaviour conditions would be a timely and important contribution to health-related coaching literature. As such, our aim for this paper was to conduct a scoping review of the published literature on CALC and to describe the study design(s), functionality, application(s), and the associated health-related behaviour outcomes. This will highlight, in turn, the impact and sustainability of this particular type of health coaching approach.

Methodology

Study Review Design

Although not without their limitations (as detailed in the discussion section of this paper), scoping reviews have been undertaken increasingly in the health-related research field (Davis, Drey, & Gould, 2009). This upsurge is attributed to the emerging diversity of evidence within the field such that this evidence might be overlooked or by-passed through a formal systematic review (Davis et al., 2009). A six-stage methodological framework for conducting scoping reviews was developed by Arksey and O'Malley (2005), inclusive of additional considerations to the scoping framework provided by Levac, Colquhoun, and O'Brien (2010). A schematic of the stages and recommendations of the scoping review methodological framework, adapted from Arksey and O'Malley (2005), and Levac et al., (2010) is provided in Figure 1. The purpose of a scoping review study is to summarize what is known about a specific topic to date and to address broad topics where many different study designs might have been utilized (Arksey & O'Malley, 2005; Levac et al., 2010). Although sometimes confused with one another, the above-noted goal of a scoping review is in contrast to that of a systematic review; the latter aims to answer a particular research question through the critical appraisal of studies with specific methodological characteristics. As Rumrill et al. (2010) have noted, scoping reviews tend to include a mix of qualitative and quantitative studies as well as a wide range of non-research materials since the quality of the studies under review are not evaluated. Thus, a scoping study is conducted to examine the extent, range, and nature of research articles pertaining to a particular topic. This type of review permits researchers to determine the value of undertaking a full systematic review, to summarize and disseminate research findings, and/or to identify gaps in the existing literature with regard to the concept examined. Therefore, in this study, scoping review methods were adopted to identify all relevant literature regardless of perceived strength, quality, and/or study design.

The current scoping review was conducted to examine the broad scope of CALC interventions that were designed to improve health behaviour-related outcomes, and to summarize and disseminate the current status of CALC literature in this area. As previously noted, it is valuable to evaluate, independently, the impact of specific health-oriented coaching approaches that have already been described in the literature. In this way, each health-oriented coaching approach can be distinguished

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among a wide variety of health coaching techniques and schools of thought. Given the mounting number of health-related coaching studies and the lack of a comprehensive review on specific health coaching methods (Mays, Roberts, & Popay, 2001), a scoping methodological framework was deemed suitable for reviewing existing CALC-related studies, in accordance with scoping study methods outlined by Arksey and O'Malley (2005), and Levac et al. (2010).

The primary research question guiding this review was '*What is known from the literature about the impact of CALC on health behaviour-related outcomes?*' As well, the following supporting questions were devised to address specific areas within the primary research question. These questions were adapted from a peer-coaching scoping review conducted by Schwellnus and Carnahan (2014). They were designed to provide an in-depth exploration of CALC and health-related research, and to examine its current influence in the health coaching literature:

1. Where was the literature published?
2. Who conducted the research (i.e. their profession, their background)?
3. What theoretical intersections exist with CALC?
4. What research designs and methodology have been used?
 - a. What is the rigor of the published CALC studies?
5. What findings have been developed to date? Specifically:
 - a. What was the target population?
 - b. What health outcomes were explored?
6. What are the gaps in the CALC literature?

As a result of addressing these questions, this scoping review allowed us to summarize what is known about CALC as a health behaviour intervention to date.

Data Sources and Search Strategy

The literature search aimed to identify CALC health behaviour-related evidence. The following electronic libraries were utilized to cover a broad range of health-related articles: Medline, Cumulative Index to Nursing and Allied Health (CINAHL), EMBASE, SCOPUS, and PsychINFO up to January 24, 2014 (the search was not limited to a start date therefore all literature was cataloged). The following keyword search terms were used for MEDLINE and adapted for all of the other databases: (coactive OR co-active OR co active) AND (life coaching OR coaching). In addition, the following three coaching journals were manually searched for relevant articles, because they are known by those in the field to be key journals in this area of research: *The International Journal of Evidence Based Coaching and Mentoring*, *Coaching: An International Journal of Theory, Research and Practice*, and *Coaching Psychology Review*. Citation tracking was also employed to review reference lists of electronic and non-electronic articles and other relevant review articles that database and manual searches might have missed. To minimize the risk of overlooking relevant articles, the article entitled, "Bibliography of Coaching Research Abstracts. January 2011 - June 2012" was also reviewed for potentially relevant

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articles (Stern & Stout-Rostron, 2013). Articles for inclusion were uploaded into a Mendeley Library, a web-based software package developed for recording and managing research papers.

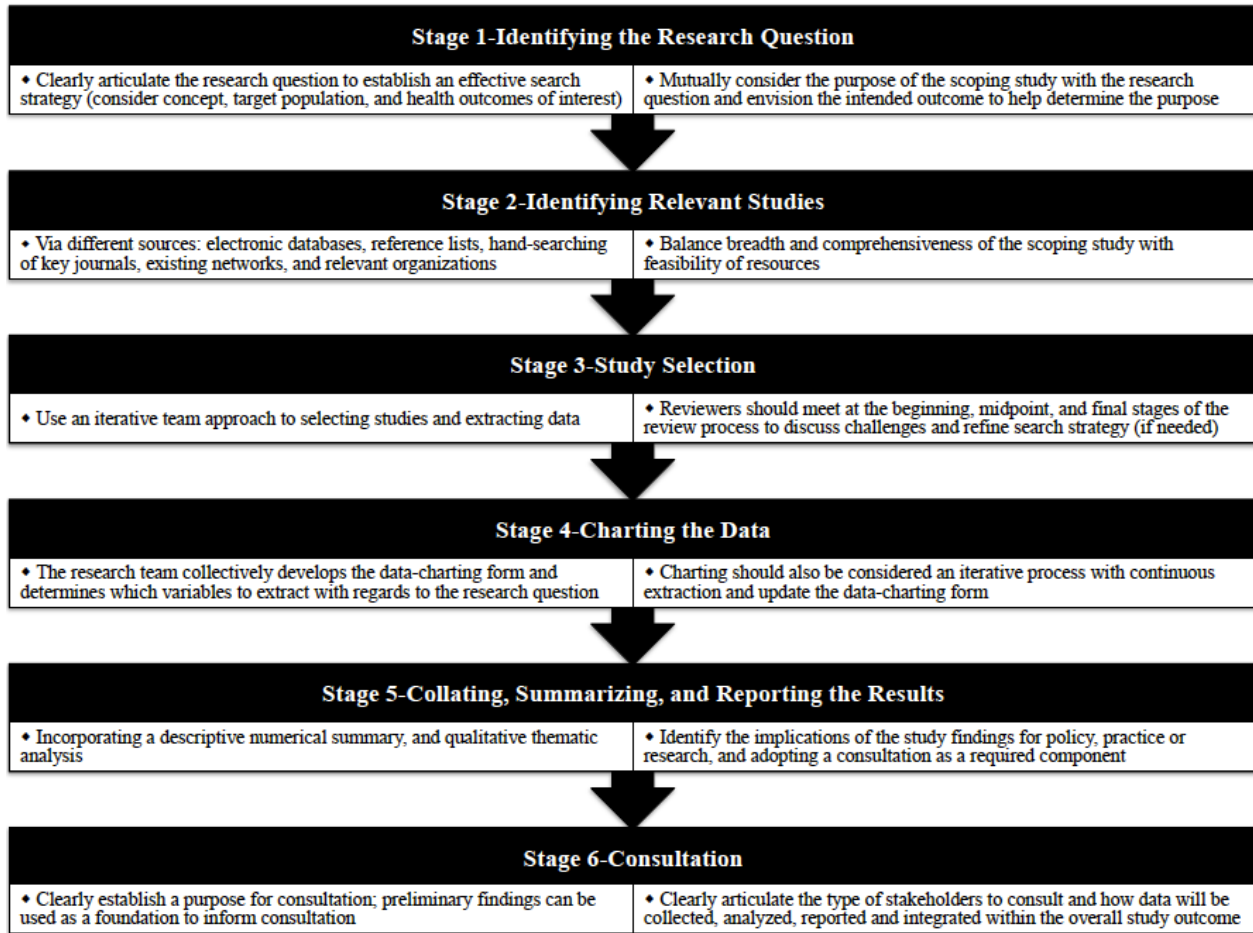


Figure 1. Six-Stage Methodological Framework for Scoping Review, adapted from Arksey & O'Malley (2005) and Levac, Colquhoun & O'Brien (2010).

Study Selection (Inclusion and Exclusion Criteria)

Data Collection

The lead author (RHL) scanned titles and abstracts of articles identified by the above-described searches and obtained full-text copies of all that potentially met the inclusion criteria. The other research team members (JDI and DM) also reviewed the articles to be included to confirm the final selection. Thus, each article received three reviews and confirmation for data abstraction completeness and accuracy. Thereafter, due to the straightforward nature of the data being extracted, the lead author (RHL)

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completed data mapping charts of study characteristics, study participants, interventions, and outcome measures based on the finalized list of articles to be included in the review.

Eligible Studies

There were three eligibility requirements for inclusion in the review. The study needed to: (i) be written in English, (ii) be published in full-text form, and (iii) describe or report CALC as a specific potential treatment/intervention method or as one of the treatment/intervention methods in accordance with the description of CALC by Whitworth et al. (1998; *see also* H. Kimsey-House, et al., 2007; H. Kimsey-House, et al., 2011). Once the inclusion criteria were applied to all citations, copies of full articles were obtained for those studies that appeared to represent a 'best fit' with the research question. If there were any uncertainties with any of the studies or if there was some relevance of CALC to the research question, these articles were also included for further analysis.

Study Rigor Assignment

Studies in which the researchers reported the use of CALC as part of an intervention to help address health behaviour(s) and included a quantitative and/or qualitative health-related outcome measure were classified as level I studies. Level I studies included randomized interventions, non-randomized trials, or controlled pre-post- studies. Articles in which the authors described CALC in some way without reporting results or lacked follow-up findings from the intervention were classified as level II. Level II studies were of any design type and lacked outcome data. This categorization of study rigor was adapted from Chambers, Wilson, Thompson, and Harden (2012)'s systematic scoping review on social network analysis.

For the purpose of this particular study it is important to note that categorization was implemented in order to demonstrate the variety of study rigor in the realm of CALC and health behaviour-related change research. Level assignments were not meant to represent thoroughly graded assessments of the articles' quality; such assessments are typically reserved for systematic reviews through a Grading of Recommendations Assessment, Development and Evaluation (GRADE) system approach (Guyatt et al., 2008). As previously stated, the purpose of this scoping review was to summarize the extent, the range, and nature of research articles pertaining to a CALC and health behaviour-related change; the research team believed that this classification method would permit this review to display the range and breadth of study rigor for this particular topic. As such, the quality of evidence was not graded thoroughly nor was the strength of its recommendations; only brief assessments were conducted once study rigor levels were assigned. All studies were discussed as a whole to address specific areas and supporting questions within the current review's primary research question. A brief overview of level I and II studies assignments were only assessed separately in question 4a, otherwise all studies were considered as a whole gestalt. For the purpose of ease of presentation of the results, the findings of the scoping review are provided as findings and interpretations.

Findings and Interpretations

The process of selecting relevant studies eligible for review is summarized in Figure 2. No additional relevant articles (duplicates only) were retrieved from the key three coaching journals, citation tracking, and the bibliography provided by Stern and Stout-Rostron (2013). As a result, 28 articles were selected that fit the inclusion criteria. Of the 28 articles, 13 were classified as level I studies and 15 were classified

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as level II. Below are the descriptive findings for each question that guided this scoping review, with interpretations contextualized using other relevant literature when deemed appropriate.

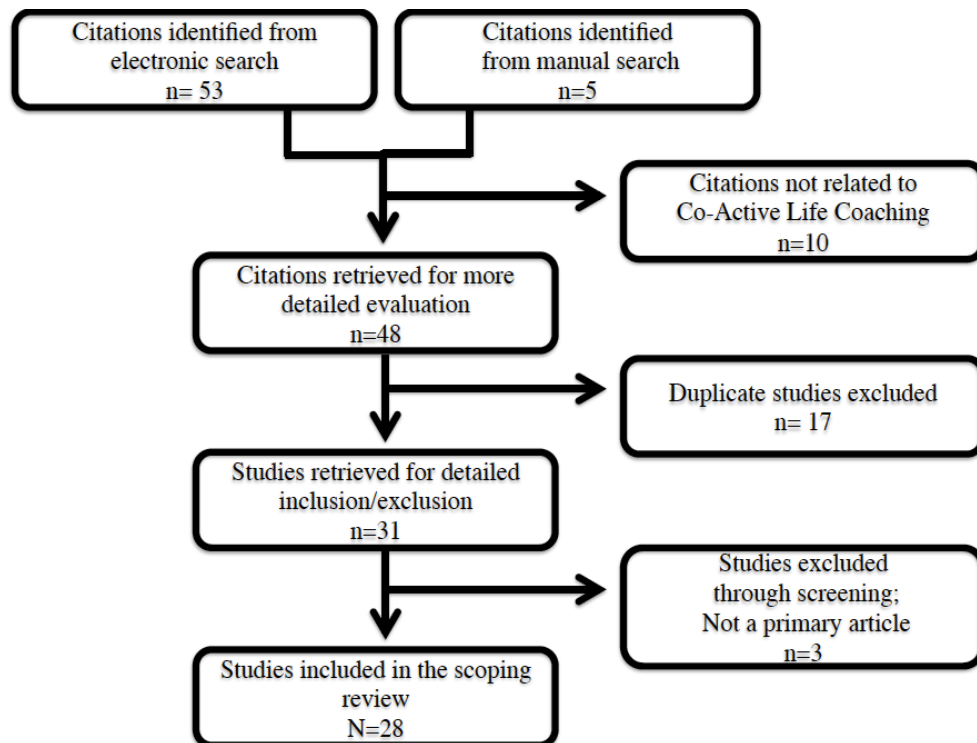


Figure 2. Flow chart of the process of selecting studies for review, according to stipulated inclusion/exclusion criteria.

Location and Background of Publication Sources

1. *Where was the literature published?*
2. *Who conducted the research (i.e. their profession, their background)?*

The majority of research related to CALC and health behaviour-related outcomes has been conducted in Canada; other studies have been conducted in the United States and one was done in the United Kingdom (see Table 1). As well, all 28 studies were published between 2000-2014; the first three were published in 2000 and 2001 and the remaining 25 are from 2005-2014, indicative of the early state of and potentially growing interest in evidence-based CALC works in the literature. Those who conducted CALC-related research came from a variety of professions such as psychotherapists, midwives, nurses, pharmacists, executive consultants, academic professors, and students. The variety of health-related professionals conducting CALC-related research demonstrates the broad representation of views and applications of CALC in health-related practices.

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According to findings from an international CPCC survey lead by Newnham-Kanas, Irwin, and Morrow (2011) and Newnham-Kanas, Morrow, and Irwin (2012), demographic data indicated that the majority of CPCCs (the certified coaches utilized in the research interventions) reside (in order of popularity) in the United States, Canada, and the United Kingdom, with the rest of the CPCC respondents coming from over 20 different countries. Interestingly, the locations of where most CPCCs reside is relatively consistent with the location of where the majority of published CALC-related research has been produced to date. This trend may be due to the increased popularity of and advancements in coaching as a health behaviour intervention in those three countries (United States, Canada, and United Kingdom) while interest and recognition of CALC as a health behaviour intervention for acute and chronic health conditions might be developing steadily in the other 20 countries.

Theoretical Foundations

3. *What theoretical intersections exist with CALC?*

Although not originally created from a theoretical foundation, research regarding the theoretical underpinnings of the CALC method have been conducted to explore and to explain the important links and distinctions among existing behavioural theories (Irwin & Morrow, 2005; Longhurst, 2006; Newnham-Kanas, Morrow, & Irwin, 2010; Pearson, 2011). In particular, the CALC method has been grounded implicitly in several well-established behavioural theory frameworks: Social Cognitive Theory, the Theory of Reasoned Action, and the Theory of Planned Behaviour (Irwin & Morrow, 2005; *see also* Ajzen, 1988; Bandura, 1986, 1977; Fishbein & Ajzen, 1975). Key behavioural elements such as, but not limited to, self-efficacy, acknowledgement, goal-setting, personal values, and empowerment, emerge from the aforementioned theories and are intrinsic within the foundations of the CALC model.

The theoretical intersection that exists between CALC and the established health behaviour constructs supports the validation of CALC as a health behavioural tool in health promotion practices. In addition, a phenomenological account of co-active sessions between clients and CPCCs conducted by Longhurst (2006) demonstrated the psychological 'Aha' or euphoric realization moment and transformational change, subsequent to the application of CALC. Longhurst explored the levels of consciousness due to experiencing 'Aha' moments; such consciousness-awakening suggests somatic, emotional, and cognitive behavioural intersections from body, to mind, to soul, to spirit (Wilber, 1989) occurring when applying CALC techniques. As a result, Wilber's theoretical 'Spectrum of Consciousness' (1989) model imparts a valuable range and depth of 'Aha' moments, which coincide with the application of the CALC method. This theoretical intersection between the level of consciousness and the effect of CALC provides further indication of CALC's holistic approach in facilitating behavioural change.

As noted above, although the CALC method was originally founded in practical application (Whitworth et al., 1998), Newnham-Kanas et al. (2010) have also substantiated key overlapping components of the CALC model with two other well-recognized theoretically grounded models, specifically Motivational Interviewing (Miller & Rollnick, 2002) and Egan's Skilled Helper Model (Egan, 2006). All three models demonstrate similar important core coaching principles, yet differ in their range of delivery, such that the CALC technique is suggested to be more readily applied than the other two models (Newnham-Kanas et al., 2010). This is expected because CALC's original conception was that of an applicative tool and was not constructed from a theoretical base (Irwin & Morrow, 2005).

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Table 1. Description of Articles Included in Review

#	Author	Date	Title	Publication Source	Country where Research Conducted	Methodology, Health Focus
1	Garfinkel, M.	2000	Co-active coaching: an alternative to HIV-related psychotherapy.	Focus	San Francisco, USA	Descriptive, Psychotherapy
2	Garfinkel, M., & Blumenthal, E.	2001	'Co-active coaching' could help HIV patients. New type of counseling involves goal-setting.	AIDS Alert	Georgia, USA	Descriptive, Psychotherapy
3	Hadikin, R.	2001	Co-active coaching. An introduction.	The Practising Midwife	Lancashire, UK	Descriptive, Psychology
4	Irwin, J.D., & Morrow, D.	2005	Health Promotion Theory in Practice: An Analysis of Co-Active Coaching	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Theory, Coaching
5	Longhurst, L.	2006	The 'Aha' Moment in Co-Active Coaching and its Effects on Belief and Behavioural Changes	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Qualitative, Psychology
6	Gorczyński, P., Morrow, D., & Irwin, J.D.	2008	The Impact of Co-Active Coaching on Physically Inactive 12 to 14 year olds in Ontario	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Mixed, Physical Activity
7	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2008	Co-Active Life Coaching as a Treatment for Adults with Obesity	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Mixed, Obesity

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8	Tyra, S.	2008	The Value of Co-Active Coaching	Creative Nursing	Minnesota, USA	Descriptive, Nursing
9	Tyra, S.	2008	Coaching Nurses: A Real Example of a Real Difference	Creative Nursing	Minnesota, USA	Descriptive, Nursing
10	van Zandvoort, M., Irwin, J.D., & Morrow, D.	2008	Co-Active Coaching as an Intervention for Obesity among Female University Students	International Coaching Psychology Review	Ontario, Canada	Quantitative, Obesity
11	van Zandvoort, M., Irwin, J.D., & Morrow, D.	2009	The Impact of Co-active Life Coaching on Female University Students with Obesity	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Qualitative, Obesity
12	Newnham-Kanas, C., Gorczynski, P., Morrow, D., & Irwin, J.D.	2009	Annotated bibliography of life coaching and health research	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Narrative, Coaching
13	Newnham-Kanas, C., Morrow, D., & Irwin, J.D.	2010	Motivational Coaching: A Functional Juxtaposition of Three Methods for Health Behaviour Change: Motivational Interviewing, Coaching, and Skilled Helping	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Theory, Coaching
14	Tofade, T.	2010	Coaching Younger Practitioners and Students Using Components of the Co-Active Coaching Model	American Journal of Pharmaceutical Education	North Carolina, USA	Descriptive, Allied Health
15	Mantler, T., Irwin, J.D., & Morrow, D.	2010	Assessing Motivational Interviewing through Co-Active Life Coaching Tools as a Smoking Cessation Intervention: A Demonstration Study	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Mixed, Smoking
16	Brock, J.M.	2011	The Relationship Between Co-Active Coaching Techniques and Client Resistance in Mandatory Contexts at a Christian Healthcare Organization	Capella University	Minneapolis, USA	Qualitative, Allied Health

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17	Newnham-Kanas, C., Irwin, J.D., Morrow, D., & Battram, D.	2011	The Quantitative Assessment of Motivational Interviewing Using Co-Active Life Coaching Skills as a Treatment for Adults Struggling with Obesity	International Coaching Psychology Review	Ontario, Canada	Quantitative, Obesity
18	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2011	Participants' Perceived Utility of Motivational Interviewing Using Co-Active Life Coaching Skills on Their Struggle with Obesity	Coaching: An International Journal of Theory, Research and Practice	Ontario, Canada	Qualitative, Obesity
19	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2011	Findings from a Global Survey of Certified Professional Co-active Coaches	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Quantitative, Coaching
20	Wiley, E.J., Morrow, D., & Irwin, J.D.	2011	The Impact of a One-Day Applied Training in Motivational Interviewing on Health Practitioners' Perceived Competence, Autonomy, Efficacy, and Attitudes to Facilitate Behavior Change: A Pilot Study	Journal of Community Medicine and Health Education	Ontario, Canada	Quantitative, Allied Health
21	Pearson, E.S.	2011	The 'how-to' of Health Behaviour Change Brought to Life: A Theoretical Analysis of the Co-Active Coaching Model and its underpinnings in Self-Determination Theory	Coaching: An International Journal of Theory, Research and Practice	Ontario, Canada	Theory, Coaching
22	Pearson, E.S., Irwin, J.D., Morrow, D., & Hall, C.R.	2012	The CHANGE Program: Comparing an Interactive Versus Prescriptive Obesity Intervention on University Students Self-Esteem and Quality of Life	Applied Psychology: Health and Well-Being	Ontario, Canada	Qualitative, Obesity
23	Wiley, E.J., Irwin, J.D., & Morrow, D.	2012	Health Care Practitioners' Perceptions of Motivational Interviewing Training for Facilitating Behavior Change among Patients	Journal of Allied Health	Ontario, Canada	Qualitative, Allied Health
24	Newnham-Kanas, C., Morrow, D., & Irwin, J.D.	2012	Certified Professional Co-Active Coaches: Why They Enjoy Coaching	International Journal of Evidence Based Coaching and	Ontario, Canada	Qualitative, Coaching

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				Mentoring		
25	Mantler, T., Irwin, J.D., & Morrow, D.	2012	The Experience and Impact of Motivational Interviewing-Via-Coaching Tools on National Smokers Telephone Hotline Employees	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Mixed, Smoking
26	Pearson, E.S., Irwin, J.D., & Morrow, D.	2013	The CHANGE Program: Methodology for Comparing Interactive Co-Active Coaching with a Prescriptive Lifestyle Treatment for Obesity	International Journal of Evidence Based Coaching and Mentoring	Ontario, Canada	Descriptive, Methodology
27	Pearson, E.S., Irwin, J.D., Morrow, D., Battram, D.S., & Melling, C.W.J.	2013	The CHANGE Program: Comparing an Interactive Vs. Prescriptive Approach to Self-Management among University Students with Obesity.	Canadian Journal of Diabetes	Ontario, Canada	Qualitative, Coaching
28	Mantler, T., Irwin, J.D., Morrow, D, Hall C., & Mandich, A.	2014	Assessing Motivational Interviewing via Co-Active Life Coaching on Selected Smoking Cessation Outcomes	Addiction Research & Theory	Ontario, Canada	Mixed, Smoking

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Additionally, Pearson (2011) has contributed theoretically based evidence from a motivational perspective of the CALC method by relating it to principles of Self-Determination Theory (SDT). As determined by Pearson (2011), both CALC and SDT serve one another with CALC providing the necessary tools to bring about desired health behaviour changes and SDT providing the psychological context for examining the health behaviour change process. As a result, the complementary theoretical intersection between CALC and SDT offers further validation of and reinforcement for CALC as an effective and viable health behaviour change method (Pearson, 2011). Generally, theoretical intersections exist between CALC and well-established behavioural theories. These theoretical underpinnings provide ample justification of CALC as a method of bringing about health behaviour improvement. As a result, these theoretical findings provide a strong foundation for the already growing amount of health behaviour-related research applying CALC as a health promotion intervention.

Methodology of the Research Journals

4. *What research designs and methodology have been used?*

a. *What is the rigor of the published CALC studies?*

Research Designs and Methodology

Literature within the CALC and health behaviour-related change area has varied in research design, from quantitative, qualitative, mixed, theoretical, to descriptive or narrative (see Table 1). Four studies were purely quantitative, eight articles were qualitatively focused, and five of the articles described mixed methodology findings; meaning both quantitative and qualitative outcomes were measured. All of the pure quantitative, qualitative-focused, and mixed studies were experimental in design; that is, all involved a program or intervention that was tested to observe differential effects on program participants. Additionally, three studies were theoretically based and eight publications were descriptive or narrative in nature. Thus, the most common research designs used in CALC and health behaviour-related change research were qualitatively focused, and descriptive or narrative. The large proportion of qualitatively focused and descriptive or narrative articles could be attributed to the nature of the CALC coaching construct. As described by Irwin and Morrow (2005), clients are motivated to provide or find answers to their own life questions while coaches are trained to reflect back to their clients and to use skills of intuition, listening, and curiosity in every coaching session. This is not to say that clients derive their own answers to the technical issues connected to their health problems; rather, the CALC coaching process focuses on learning and/or getting into a chosen behavioural action that may or may not be directly related to the presenting health issue. For example, for a client struggling with obesity, the CALC process might well focus on the client's relationship to food or eating rather than some clinical or direct remedy, such as, diet regulation. Researchers investigating the effectiveness of CALC are afforded with a large amount of narrative data to synthesize and report. The large proportion of descriptive and qualitative data might indicate a need to encourage the collection of quantitative measures, by using more quantitative experimental research designs as a means to diversify methodology and as a way to contribute further to the strength of the evidence regarding CALC. Overall, research designs and methodology within the CALC literature were wide-ranging. All articles selected were peer-reviewed and came from the fields of nursing, medicine, coaching, psychology, and allied health.

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Each study was categorized according to study criteria in either level I or level II (see Table 2).

Level I Study Assignment.

Studies designated as level I research included CALC as a health behaviour intervention and contained quantitative and/or qualitative health outcomes/ themes. These studies were also randomized, non-randomized controlled trials, or controlled pre-post studies. Thirteen of the twenty-eight CALC-related articles were assigned a level I study rigor classification. Furthermore, within the thirteen level I studies, 5 included mixed methods, 4 were purely quantitative, and 4 were entirely qualitative. All of these articles' researchers expressed positive outcomes and further emphasized the effectiveness and the practicality of CALC in health behaviour change. Among the thirteen level I studies, one of the studies (or two of the studies with identical procedures, but different research design) contained the largest known motivational interviewing-via-CALC (hereafter referred to as MI-via-CALC) obesity trial. It was also the first to utilize a comparison group to assess differential effects, in which one group was provided the MI-via-CALC program intervention, while the other group was provided an equally well-established and robust lifestyle weight management program designed by Brownell (2004). Given its comparative intervention design, this article delivers the highest quality of evidence among all the CALC health-related research and as a result, it provides considerable verification of CALC as a viable health behaviour change tool (Pearson, Irwin, Morrow, Battram, & Melling, 2013; Pearson et al., 2012). The fully detailed (level II) methodological account of the CHANGE study's level I articles provided by Pearson, Irwin, and Morrow (2013) can be utilized to inform and model future CALC-related intervention practices. Overall, many of the level I studies provide explicit health behaviour outcome measures. A shift towards more randomized trials with pre-and post- measurements would increase greatly the quality and validation of the CALC method in evidence-based health behaviour research and therefore, randomization study designs should be considered for future research.

Level II Study Assignment.

Studies in which researchers described CALC in some way without reporting results or in the absence of follow-up findings from the intervention were classified as level II studies. Level II studies were of any descriptive or narrative design type and they lacked definite results. The majority of level II articles highlighted the relationship between client and coach, and described the characteristics of a typical CALC appointment/session (Brock, 2011; Hadikin, 2001; Longhurst, 2006; Tofade, 2010; Tyra 2008a, 2008b). Not all authors revealed if a certified coach (CPCC) or non-certified coach with co-active training were employed in their studies. Therefore, conclusive findings could not be drawn from these articles, as insufficient outcome data was provided and the competency level of coaches using CALC tools was unspecified. However, taken together, these studies underscored the utility of CALC as a health behaviour intervention.

Table 2. Study Characteristics and Key Findings from the Selected Articles

#	Author	Date	Title	a) Level I or II (Type) b) Study Population c) Findings/Recommendations
1	Garfinkel, M.	2000	Co-active coaching: an alternative to HIV-related psychotherapy.	a) Level II (Case-Study) b) HIV patient, 50-year-old man. (1M) c) "Coaching can be a helpful tool for those with an orientation towards movement and action and little interest in the process and premise of psychodynamic psychotherapy." p.4
2	Garfinkel, M., & Blumenthal, E.	2001	'Co-active coaching' could help HIV patients. New type of counseling involves goal-setting.	a) Level II (Case-Study) b) *HIV patient, man with a high-powered job. (1M) c) "Co-Active coaching could be another service offered by an AIDS service organization or a health clinic that treats HIV patients." p.107
3	Hadikin, R.	2001	Co-active coaching. An introduction.	a) Level II (Descriptive) b) *Midwives. c) "There is no blame or criticism. It is safe, non-judgmental space based on trust." p.2
4	Irwin, J.D., & Morrow, D.	2005	Health Promotion Theory in Practice: An Analysis of Co-Active Coaching	a) Level II (Theoretical Analysis) b) Not Applicable. c) "Co-Active model of coaching can clearly be linked to existing behavioural theories (Social Cognitive Theory, Theories of Reasoned Action, Theories of Planned Behaviour) thereby validating the utility of the Co-Active coaching model as a useful intervention in behavioural change theory and practice." p.9
5	Longhurst, L.	2006	The 'Aha' Moment in Co-Active Coaching and its Effects on Belief and Behavioural Changes	a) Level II (Qualitative Phenomenological Analysis) b) *12 Co-active coaches (including researcher), 20 clients, and 30 past clients. c) "Aha moments can be experienced along the levels of consciousness in the body, the mind, the soul, the spirit, or a combination of all of these... These results will help to devise concepts that can shape a holistic model of life coaching" p.12
6	Gorzynski, P., Morrow, D., & Irwin, J.D.	2008	The Impact of Co-Active Coaching on Physically Inactive 12 to 14 year olds in Ontario	a) Level I (Single-Subject, Multiple-Baseline Design) b) 5 physically inactive youth aged of 12-14 years old. (3 F, 2M) c) "Coaching <i>may</i> not be an appropriate intervention for increasing physical activity for youth of this age; however, further rigorous research is warranted." p.12

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7	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2008	Co-Active Life Coaching as a Treatment for Adults with Obesity	<ul style="list-style-type: none"> a) Level I (One-Group, Within-Subject, Pre-and Post-Test Design) b) 20 English-speaking men and women aged 35-55; ended with 18 participants in total. (16F, 2M) c) "We recommend that coaching be considered as one of the cognitive behavioural interventions recommended for adults with obesity... Future research should also explore, thoroughly, how the coaching approach used in the current study is similar to other supportive behaviour change approaches (with an aim of identifying differently-labeled but similar approaches)." p.10
8	Tyra, S.	2008	The Value of Co-Active Coaching	<ul style="list-style-type: none"> a) Level II (Descriptive) b) *Nurses c) "The benefits of coaching go beyond any one element. Like learning to play the piano, the sum of the chords, notes, and rhythms you play is what creates a beautiful composition. The sum of your assessment, goal-setting, your work, and the support of your coach can lead to a beautifully composed life." p.101
9	Tyra, S.	2008	Coaching Nurses: A Real Example of a Real Difference	<ul style="list-style-type: none"> a) Level II (Case-Study) b) Nurse, 56-year-old female nurse manager. (1F) c) "Coaching Christine was exciting and profound-she is a mover and a shaker raising the bar for all nurse leaders." p.5
10	van Zandvoort, M., Irwin, J.D., & Morrow, D.	2008	Co-Active Coaching as an Intervention for Obesity among Female University Students	<ul style="list-style-type: none"> a) Level I (Single-Subject, Multiple-Baseline, Design) b) 5 university students with obesity aged 19-22. (5F) c) "It is recommended that future studies aimed at examining coaching's efficacy as an intervention for obesity, include a control group to allow for the experimental evaluation of whether it is the coaching or some other factor (e.g., Hawthorne effect) that is responsible for improvements in participants' anthropometrics and psychosocial measurements." p. 24
11	van Zandvoort, M., Irwin, J.D., & Morrow, D.	2009	The Impact of Co-active Life Coaching on Female University Students with Obesity	<ul style="list-style-type: none"> a) Level I (Pre-and Post-Interview Design) b) 5 university students with obesity aged 19-22. (5F) c) "It is important to note that participants, at the conclusion of the study, reported having enhanced self-acceptance were making strides towards living a healthier lifestyle with regards to physical activity participation and nutritional choices, and were making themselves a priority in their lives. In future, more research with larger numbers of participants (and, if feasible the use of a control group) is needed." p. 12

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12	Newnham-Kanas, C., Gorczynski, P., Morrow, D., & Irwin, J.D.	2009	Annotated bibliography of life coaching and health research	<ul style="list-style-type: none"> a) Level II (Descriptive Literature Review) b) Not Applicable. c) “Future research is still needed to examine the relationship of life coaching and obesity that includes a sample with an equal number of males and females, a control group and increased coaching sessions.” p.95
13	Newnham-Kanas, C., Morrow, D, & Irwin, J.D.	2010	Motivational Coaching: A Functional Juxtaposition of Three Methods for Health Behaviour Change: Motivational Interviewing, Coaching, and Skilled Helping	<ul style="list-style-type: none"> a) Level II (Theoretical Analysis) b) Not Applicable. c) “In juxtaposing MI, coaching, and Skilled Helper models, what is clear is the overlap among these three important methods of behaviour change; most similar are the Co-Active coaching model and Egan’s SHM...Co-Active coaching has developed an applied or experiential framework that may be more readily applied than the more principle-oriented MI or the stage-encapsulated SHM.” p.43
14	Tofade, T.	2010	Coaching Younger Practitioners and Students Using Components of the Co-Active Coaching Model	<ul style="list-style-type: none"> a) Level II (Descriptive Study) b) *Pharmacy and other health professional educators. c) “Many young practitioners, faculty members, and students would like to have some form of support to help accomplish their career goals through professional and leadership development. Pharmacy educators are ideal candidates to perform this role and coaching is one way to accomplish this in any individual or organization.” p.1
15	Mantler, T., Irwin, J.D., & Morrow, D.	2010	Assessing Motivational Interviewing through Co-Active Life Coaching Tools as a Smoking Cessation Intervention: A Demonstration Study	<ul style="list-style-type: none"> a) Level I (Mixed Methodology Design, Pre-and Post-Intervention) b) 9 English speaking participants aged 19-29 years old with an above average nicotine dependence. (4F, 5M) c) “Participants indicated that they experienced a shift in control regarding their relationship with cigarettes. This shift may be indicative of a shift in their locus of control, which has been deemed important for long-term smoking cessation.” p.59
16	Brock, J.M.	2011	The Relationship Between Co-Active Coaching Techniques and Client Resistance in Mandatory Contexts at a Christian Healthcare Organization	<ul style="list-style-type: none"> a) Level II (Exploratory Case-Studies) b) *6 coaches, 4 managers or executives, and 7 clients. c) “When individuals resign themselves to lives of poor health, they believe having adequate health care to cover their medical problems is the only solution available...Coaching for healthy lifestyles combats this temptation by reversing medical problems and reducing reliance on physicians and insurance companies.” p.331

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17	Newnham-Kanas, C., Irwin, J.D., Morrow, D., & Battram, D.	2011	The Quantitative Assessment of Motivational Interviewing Using Co-Active Life Coaching Skills as a Treatment for Adults Struggling with Obesity	<ul style="list-style-type: none"> a) Level I (Single-Subject Multiple-Baseline Design) b) 8 English-speaking participants aged 35-55. (8F) c) “Treatments that empower individuals to find solutions to their own problems, make healthier choices, and learn to cope with life stressors are deemed effective strategies in losing and maintaining weight. MI using CALC skills is one such intervention and it is an effective tool in aiding individuals conquer their battle with weight.” p.225
18	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2011	Participants' Perceived Utility of Motivational Interviewing Using Co-Active Life Coaching Skills on Their Struggle with Obesity	<ul style="list-style-type: none"> a) Level I (Pre-and Post-Interview Design) b) 8 English-speaking participants aged 35-55. (8F) c) “Participant feedback at the end of the intervention suggests that MI using CALC skills is an effective intervention that supports clients, who are struggling with obesity, in making changes that align with their goal of living a healthy life. “ p.115
19	Newnham-Kanas, C., Irwin, J.D., & Morrow, D.	2011	Findings from a Global Survey of Certified Professional Co-active Coaches	<ul style="list-style-type: none"> a) Level II (Survey Analysis) b) 390 CALC coaches or CPCCs aged 25-64. (~77%F) c) “Through this survey we have learned about the previous training and education of CPCCs, their coaching career to date, how they attract clients, the type of clients they coach, and how they structure their practice. This information contributes to the growing body of knowledge needed to support and characterize the nature of the profession.” p.34
20	Wiley, E.J., Morrow, D., & Irwin, J.D.	2011	The Impact of a One-Day Applied Training in Motivational Interviewing on Health Practitioners' Perceived Competence, Autonomy, Efficacy, and Attitudes to Facilitate Behavior Change: A Pilot Study	<ul style="list-style-type: none"> a) Level I (Single Subject, Multiple Baseline Design) b) 10 health care professionals aged 26-65. (10F) c) “Co-Active Life Coaching tools can provide tangible methods to bring the tenets of MI to practical use and training health care practitioners in such tools may help increase the amount and effectiveness of behavior change counseling.” p.4
21	Pearson, E.S.	2011	The 'how-to' of Health Behaviour Change Brought to Life: A Theoretical Analysis of the Co-Active Coaching Model and its underpinnings in Self-Determination Theory	<ul style="list-style-type: none"> a) Level II (Theoretical Analysis) b) Not Applicable. c) “Self-determination theory and Co-Active coaching serve in a complementary capacity whereby both are concerned with investigating the natural growth tendencies of individuals with respect to self-motivation, personal resources and behavioural regulation.” p.100

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22	Pearson, E.S., Irwin, J.D., Morrow, D., & Hall, C.R.	2012	The CHANGE Program: Comparing an Interactive Versus Prescriptive Obesity Intervention on University Students Self- Esteem and Quality of Life	<ul style="list-style-type: none"> a) Level I (Parallel Group Randomized Trial) b) 45 English-speaking university students aged 18-24 with 25 CALC vs. 20 LEARN. (34F, 11M) c) “In this study, MI-via-CALC and the LEARN Program elicited significant improvements to QOL domains in as little as 6 weeks, and these enhancements continued up to the 6-month time-point.” p.383
23	Wiley, E.J., Irwin, J.D., & Morrow, D.	2012	Health Care Practitioners' Perceptions of Motivational Interviewing Training for Facilitating Behavior Change among Patients	<ul style="list-style-type: none"> a) Level I (Pre-and Post Workshop Interviews) b) 10 health care professionals aged 26-65. (10F) c) “After the training workshop, practitioners reported a renewed motivation to address behaviour change in clinical practice, even with patients not ready to make health behaviour changes. This suggests that practitioners may engage in behaviour change conversations more often after receiving training perceived to be useful.” p.139
24	Newnham- Kanas, C., Morrow, D., & Irwin, J.D.	2012	Certified Professional Co-Active Coaches: Why They Enjoy Coaching	<ul style="list-style-type: none"> a) Level II (Survey Analysis) b) 390 CALC coaches or CPCCs aged 25-64. (~77%F) c) “...Results from this study illustrated that life coaching is a profession where its members are truly passionate and committed to the process of facilitating change in their clients’ lives. This type of research is essential because it highlights what CPCCs enjoy most about their profession, how this may be used to strengthen training, or attract individuals to the profession.” p.54
25	Mantler, T., Irwin, J.D., & Morrow, D.	2012	The Experience and Impact of Motivational Interviewing-Via- Coaching Tools on National Smokers Telephone Hotline Employees	<ul style="list-style-type: none"> a) Level I (Mixed Methodology, Repeated Measures Design) b) 10 smokers’ hotline employees aged 27-59. (10F) c) “...The marked change in participants’ perceptions of the impact of a single, one-day theoretically-based MI-via-CALC training session demonstrates the power of professional development for the participants of this particular hotline.” p.65
26	Pearson, E.S., Irwin, J.D., & Morrow, D.	2013	The CHANGE Program: Methodology for Comparing Interactive Co-Active Coaching with a Prescriptive Lifestyle Treatment for Obesity	<ul style="list-style-type: none"> a) Level II (Descriptive Methodological Account) b) 45 English-speaking university students, aged 18-24 with 25 CALC vs. 20 LEARN. (34F, 11M) c) “...An important consideration when examining MI-via-CALC as a treatment for obesity is that it is typically delivered over the telephone. Not only is this convenient, but it allows individuals to obtain one-on-one support from a certified coach while remaining in the

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				privacy of their own homes when discussing personal issues which may be at the root of their weight struggles.” p.79
27	Pearson, E.S., Irwin, J.D., Morrow, D., Battram, D.S., & Melling, C.W.J.	2013	The CHANGE Program: Comparing an Interactive Vs. Prescriptive Approach to Self- Management among University Students with Obesity.	a) Level I (Parallel group randomized trial) b) 45 English-speaking university students aged 18-24 with 25 CALC vs. 20 LEARN. (34F, 11M) c) “MI-via-CALC and the LEARN Program appear similarly effective suggesting that both interventions hold promise and are warranted as viable SM treatments for attenuating type 2 diabetes risk factors among young adults with obesity.” p.10
28	Mantler, T., Irwin, J.D., Morrow, D., Hall C., & Mandich, A.	2014	Assessing Motivational Interviewing via Co-Active Life Coaching on Selected Smoking Cessation Outcomes	a) Level I (Mixed Methodology Design) b) 35 English speaking smokers, aged 19 to 29 years c) “In comparison to the established quit rates of 15-23% in most studies, the 31.4% demonstrated in this intervention, at the very least, would point toward the potential impact of using MI-via-CALC as a primary intervention in more cessation studies, as well as to the more salient implication for the vast majority of smokers who do want to quit and the concomitant health amelioration benefits.’ p. 10

Note. F=Female; M=Male; *Age not specified.

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Findings to date

5. *What findings have been developed to date? Specifically:*

- a. *What was the target population?*
- b. *What health outcomes were explored?*

Target Population

Articles regarding the use of CALC as an intervention for health behaviour change have primarily targeted adults ranging in age from 18-55 years, with more than 80% of women participating in the studies (see Table 2), and recruitment primarily conducted in a university-based setting. These characteristics are consistent with research examining the demographics of those willing to participate in medical research studies (Burns, Magyarody, Jiang, & Wald, 2010; Trauth, Musa, Siminoff, Jewell, & Ricci, 2000). Only one study examined the impact of CALC in physically inactive children, aged 12-14 (Gorzynski, Morrow, & Irwin, 2008). However, challenges involved in participant recruitment and thereafter, participant commitment throughout the intervention were expressed as the principal limitations of the study. In addition, this 2008 study was informative in recognizing that a regimented coaching intervention, such as CALC, might not be the most suitable approach for young children in terms of facilitating improved physical activity. Future research directions indicated by Gorczynski et al. (2008) denoted the potential benefit of including a parental guardian to partake in the program in order to model study protocol support and adherence for their children. This suggestion is consistent with a review conducted by Davis et al. (2007) wherein parents, as active participants with their children, helped to facilitate positive long-term improvements in lifestyle and weight control through direct support.

Another target population that has been explored was directed at the coaches who conducted the CALC technique. Two studies investigated CPCC perceptions of their CALC practice on health behaviour-related modification (Newnham-Kanas et al., 2011, 2012). Another three studies investigated the perceptions of health practitioners (Wiley, Irwin, & Morrow, 2012; Wiley, Morrow, & Irwin, 2011) and smokers' telephone hotline employees (Mantler, Irwin, & Morrow, 2013) following a 1-day interactive workshop on CALC as a motivational interviewing tool, respectively. Research regarding CPCCs' perceptions of their work and of those following a 1-day CALC intensive session were important additions to the existing body of CALC and health behaviour-related literature because it permitted this particular population to describe the ease or difficulty of the CALC method, their level of satisfaction with the approach, and ultimately a direct account of their overall experience using this specific type of health coaching. Although an assortment of target populations within CALC and health behaviour articles have been described, the majority of experimental works were conducted on adult women in a university setting.

Health-Related Behaviour Outcomes

All 28 articles supported the application of CALC as a health behaviour modifier, including descriptive narrative review articles that commented on the coaching process. Two of the articles recommended CALC as an alternative or adjunct process for those living with HIV (Garfinkel, 2000; Garfinkel & Blumenthal, 2001). The authors described CALC as an "action-oriented approach" for those with a recent diagnosis or those who had successfully responded to treatment and extended their lifetime (Garfinkel & Blumenthal, 2001, p.105). The "action-oriented" CALC technique was utilized to help participants manage their overall health, with respect to their HIV prognosis, whether it was long-term or short-term,

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and to empower them to set their goals, accordingly. Other practitioners who suggested CALC as a therapeutic health-related tool included nurses (Tyra, 2008a; 2008b); midwives (Hadikin, 2001); young health practitioners, namely pharmacy educators and students (Tofade, 2010); and those attending a Christian healthcare organization (Brock, 2011). These proposed clients and/or CPCCs demonstrate the wide-range of applicability of CALC as a recommended and viable approach for making personalized health decisions and eventually promoting positive health-related behaviours.

Only one article focused on physical activity and the psychosocial outcomes of physical activity participation, self-efficacy, social support, and perceived behavioural control (Gorczynski et al., 2008). The bulk of the experimental studies (7 of 17 quantitative, qualitative, and mixed methodological investigations) focused on the impact of CALC as a health behaviour intervention for those struggling with obesity (Newnham-Kanas et al., 2008, 2011; Newnham-Kanas, Irwin, Morrow, & Battram, 2011; Pearson et al., 2013; Pearson et al., 2012; van Zandvoort et al., 2008, 2009). The most common quantitative outcome measures in these studies included weight, waist circumference, and body mass index, while less frequent quantitative outcomes explored were self-efficacy, self-esteem, functional health status, and quality of life. In addition, all qualitative studies (including mixed methods studies) determined common themes through inductive content analysis at single or multiple time points such as at baseline, at assessments within intervention, immediately post-intervention, and at 3 to 6 months following the end of intervention. All of these obesity-focused studies generated positive health behaviour outcomes and suggested the use of CALC for additional evidence-based work concerning obesity and obesity comorbidities with increased program durations. Another health behaviour outcome considered in the CALC literature was smoking cessation. The two articles measured smoking cessation via cigarette dependency, average number of cigarettes per day, a cotinine saliva test, and personal competency through self-esteem and self-efficacy scales (Mantler et al., 2010; Mantler, Irwin, Morrow, Hall & Mandich, 2014). Although these two studies lacked a desired variation in characteristics among their study subjects, the findings of these studies indicated positive trends and a higher than expected smoking cessation rate than what is typically demonstrated in the literature on other behaviour-based smoking interventions. Thus far, health behaviour modification using CALC has been experimentally assessed in physical inactivity, obesity, and smoking cessation conditions. Generally, a majority of the findings expressed a consensus of positive health behaviour trends and the effectiveness of CALC as a tool for helping to ameliorate a variety of health conditions.

Missing in the Literature

6. *What are the gaps in the CALC literature?*

As previously noted, a substantial amount of CALC research is descriptive and qualitative in nature. While these study designs are considered essential for understanding the experiences of participants subject to the CALC approach, they are also more commonly regarded as low evidence quality due to their lack of estimate of effect (Guyatt et al., 2008). Thus, further research with stronger study designs and explicit outcome measures is recommended to impact significantly researcher confidence in the utility of an intervention (Guyatt et al., 2008) such as CALC. Quantitative and mixed methodological CALC studies have presented positive health behaviour results and as such, should continue to be produced to contribute to increasing the strength of evidence. It should be noted that the purpose of this scoping review was to identify a wide variety of different disciplines associated with health-related CALC research to date. While scoping methods were adopted for this particular study to identify all relevant

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literature regardless of perceived strength, quality, and/or study design, even so, it resulted in a small number of articles ($n = 28$). Both of these factors limit the ability to suggest overt recommendations regarding CALC and health-related behaviour outcomes. However, given the existing positive impact of CALC in health behaviour outcomes to date, it can be concluded that the CALC method offers a promising health intervention approach for a variety of health-related outcomes and encouraging results pointing toward future research concerning the use of its health behavioural techniques.

Discussion and Conclusions

In this scoping review, we aimed to describe the study designs, functionality, applications, and associated health-related behaviour results of CALC research to date. The nature of the CALC literature is relatively new in that most articles were published from 2000 onward, and are few in number (28 articles in total). Most of the experimental literature was conducted in Ontario, Canada, by a relatively small group of academic professionals and published in peer-reviewed journals. The theoretical underpinnings and relationships that exist with CALC include well-established behavioural theories from a number of different psychological perspectives (Irwin & Morrow, 2005; Longhurst, 2006; Newnham-Kanas et al., 2010; Pearson, 2011). These theoretical intersections provide solid justification for CALC as an effective and viable health behaviour change method.

The studies included in this scoping review most often used a descriptive or qualitative research design. As a result, when classifying study rigor levels within the CALC literature, the number of level II or non-outcome-focused studies was greater than level I or intervention-designed studies. Articles regarding CALC and health-related behaviour outcomes were primarily conducted on women in university settings; this is not surprising as researchers investigating the characteristics of those most willing to participate in medical research studies often find consistent gender participation in this environment (Burns, et al., 2010; Trauth, et al., 2000). In addition, the utility of CALC as a therapeutic health behavioural approach was found for many clients and/or CPCCs including nurses (Tyra, 2008a; 2008b); midwives (Hadikin, 2001); young health practitioners, namely pharmacy educators and students (Tofade, 2010); and those attending a Christian healthcare organization (Brock, 2011). A majority of the studies included positive findings with regard to using CALC as an intervention to bring about health behaviour improvements. These health behaviour improvements apply specifically to obesity and smoking cessation conditions; however, these areas of health concern reflect researcher/s' particular interests; the results of this scoping review, together with the research findings to date, point toward the positive potential for the use of CALC as a viable behaviour change intervention toward any area of health concern/issue.

As with any study, limitations in the current scoping review must be considered. First, because the literature was limited to only those published in English, it is possible that all CALC studies were not included as some might have been published in other languages (given that CALC is taught around the world in multiple languages). Secondly, although steps were taken throughout the process of conducting this scoping review to ensure objectivity, the fact that a majority of the studies reviewed emanated from our team's program of research might have unintentionally impacted our review of the literature. Thirdly, limitations regarding scoping review methodology have been previously noted ((Brien, Lorenzetti, & Lewis, 2010; Grant & Booth, 2009). Although literature related to a particular topic has been published,

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the existence of these materials should not be regarded as the sole basis for recommendation in policy or in practice. As previously mentioned, the purpose of a scoping review is to identify the nature and extent of a research topic and does not include a formal quality assessment. As a result, scoping reviews tend to conclude with a recommendation for future/continuous research on the topic of interest. Lastly, due to the nature of scoping reviews not thoroughly critically appraising published research, strong predictions about CALC's impact on managing acute and/or chronic conditions cannot be overtly stated.

The purpose of this paper was to conduct a scoping review on Co-Active (Life) Coaching (CALC) literature related to health behaviour change and overall, this scoping review provides a broad overview of the impact of CALC interventions designed to improve health behaviour-related outcomes. With consideration to the limitations noted above, we conclude that the CALC method offers a promising behavioural health intervention for a variety of health conditions. Further we believe there is considerable support for future research concerning the use of CALC in generating positive health behavioural outcomes and we recommend the implementation of larger studies with increased experimental rigor.

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