DANCE AS A THERAPEUTIC INTERVENTION: PHYSICAL THERAPISTS' BELIEFS AND PRACTICES

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in

THE FACULTY OF GRADUATE STUDIES
(Rehabilitation Sciences)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)
August 2008

ABSTRACT

Background: Activity and exercise that are sustainable are essential for maximizing their long-term health and therapeutic benefits. Physical therapists (PTs), as clinical exercise specialists, are committed to the exploitation of these benefits. Dance is often perceived as social and enjoyable, both potentially motivating factors that could contribute to its being such a sustained activity.

Purpose: To describe the beliefs and practices of PTs regarding the use of dance as a therapeutic intervention for individuals at risk of or experiencing one or more chronic lifestyle conditions. A secondary aim was to establish an appropriate estimate of statistical power and effect size for subsequent survey or intervention studies.

Design: Descriptive study based on a self-administered questionnaire.

Subjects and Methods: A 5-page survey questionnaire, comprised of 67 items was developed and pre-tested prior to distribution to 231 PTs (with an anticipated response rate of 40%). Public and private practitioners were randomly sampled from the 2008 list of registered PTs in British Columbia. The randomized population was contacted up to five times according to Dillman's method.

Results: The survey resulted in 136 returned questionnaires (124 returned by respondents, 12 returned undeliverable) resulting in a response rate of 57%. Respondents expressed moderate to high agreement that dance could positively impact clients' physiological and psychological states. Although most respondents did not prescribe dance, they expressed interest in doing so. Finally, the majority of respondents were amenable to the inclusion of dance in physical therapy practice, professional development education, and research. Rather than inclusion in

entry-level education however, most respondents believed dance should be a post-graduate education topic.

Discussion and Conclusion: We believe that this is the first study designed to examine the beliefs and practices of PTs with respect to use of dance as a therapeutic intervention. PTs appear responsive to recommending dance as an activity alternative, and are interested in learning more about its use as a therapeutic intervention and/or health promotion activity. Notably, dancing's perceived social and enjoyable features were cited by PTs as potential facilitating factors that could sustain long-term participation and corresponding health benefits.

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LIST OF ABBREVIATIONS

ADTA ..... American Dance Therapy Association
CLC ..... Chronic lifestyle condition
KTDM..... Korean traditonal dance movement
MU..... Meaning unit

ACKNOWLEDGEMENTS

I would like to acknowledge the guidance of my committee Dr. E. Dean, Dr. W. D. Reid, and Dr. L. Jongbloed, as well as Dr. P. Crocker. My graduate work would not have been possible without the tremendous assistance of Dr. E. Dean and my husband, Graeme Danko. In addition, I would like to thank Dr. B. Miller and the students in the Rehabilitation Sciences Research Graduate Program, who have challenged and advanced my critical thinking during my graduate studies. Finally, I would like to thank the physical therapists who took time from their professional work to respond to our study's questionnaire.

CHAPTER 1

INTRODUCTION

Background

Physical inactivity is a major preventable contributor to chronic lifestyle conditions (CLCs) and associated death. The World Health Organization estimates that CLCs account for 60% of all deaths and 47% of the global burden of disease. These figures are expected to rise to 73% and 60%, respectively, by 2020 (World Health Organization, 2004). In Canada, physical inactivity is estimated to cause 20% to 40% of the cases of major CLCs (coronary artery disease, stroke, hypertension, type II diabetes and certain cancers) and one-third of the deaths that result from these conditions (Katzmarzyk, Gledhill, & Shephard, 2000).

Although physical inactivity is implicated in disease-related mortality, advances in health care have made major strides in postponing mortality. As more individuals live longer with their diseases, the health care costs of caring for these individuals also increase. It is estimated that Canada spends $2.1 billion annually in direct health care costs (e.g., hospital care, physician care, drugs, and research) for physical inactivity related illnesses. This figure does not include substantial indirect costs (e.g., lost productivity due to premature death and disability due to illness) (Katzmarzyk et al., 2000). Despite having the lowest rate of physical inactivity in Canada, British Columbia still incurs an estimated $211 million each year in direct health care costs, and an additional $362 million in indirect costs (Colman & Walker, 2004). Thus, physical inactivity, as a major contributor to the prevalence of morbidity and mortality with marked social and economic burdens, is a pressing public health issue requiring immediate attention by health professionals.

Physical activity is important not only for primary prevention, but also secondary prevention a CLC (Nelson et al., 2007; Warburton, Nicol, & Bredin, 2006b). Physical activity facilitates primary prevention by reducing the risk of developing a CLC (cardiovascular disease, some types of cancer, diabetes, osteoporosis), but also their risk factors (obesity, high blood pressure), and psychological morbidities (depression, stress and anxiety) (Warburton, Nicol, & Bredin, 2006a). Physical activity is pivotal in secondary prevention as it enables individuals with CLCs to maximize their functional capacity, health and wellness, and social participation in life despite functional limitations (Nelson et al., 2007). Based on an extensive body of evidence, increasing the levels of physical activity and exercise in healthy as well as in individuals who are not healthy or with a disability has become a health priority nationally (Kirby & LeBreton, 2002; Romanow, 2002) and worldwide (U.S. Department of Health and Human Services, Nov 2000; World Health Organization, 2004). To offer an objective measure of what amount and type of physical activity is required, the American College of Sports Medicine published guidelines for the appropriate type, intensity, duration, and frequency of exercise needed to achieve and sustain health benefits in younger (Haskell et al., 2007) and older adults (Nelson et al., 2007) These guidelines also have been advocated by health services in Canada (http://www.phac-aspc.gc.ca/pau-uap/paguide/).

Various forms of dance can be generally categorized as a moderate to intense form of exercise that challenges both the aerobic and anaerobic metabolic systems (Dahlstrom, Inasio, Jansson, & Kaijser, 1996). Historically, dance has been a distinguishing characteristic of many cultures (Connor, 2000). Potential reasons as to why people participate in dance include aesthetics, competition, culture, health and wellbeing,

performance, personal expression, physical fitness, religion and/or spirituality, recreation, and social interaction (Graham, 2002). Affecting both physiological and psychological components (Connor, 2000), dance may motivate people to be active compared with traditional exercise programs. Indeed, when compared to sports activities, participation in dance has been reported to elicit greater positive changes in self-reported psychological well being, including motivation (Gurley, Neuringer, & Massee, 1984).

Physical therapists have a primary role in prescribing physical activity and exercise therapeutically, and maximizing clients' exercise sustainability for life-long health, reduction of illness, and increased longevity and quality of life (CIHI, 2005; Dean, 2006; Warburton, Nicol, & Bredin, 2006a; Warburton, Nicol, & Bredin, 2006b). While the literature suggests dance may complement the therapeutic goals of physical therapy (balance, coordination, endurance, flexibility, range of motion, and strength) and offers a unique intervention modality, there has been no formal assessment, to our knowledge, of physical therapists' beliefs in the therapeutic value of dance, or their interest and/or practice in prescribing it.

Purpose

The purpose of this study was to examine the beliefs and practices of physical therapists in British Columbia about the use dance as a therapeutic intervention for individuals at risk of or diagnosed with one or more CLC.

Rationale

By surveying physical therapists' beliefs and practice with respect to the use of dance as a therapeutic intervention, we hoped to document the phenomenon of this novel exercise modality and its application within physical therapy practice. Specifically, this would allow us to identify clinicians' beliefs about the health attributes of dance that, in turn, would identify areas for future research and knowledge translation. Our findings would also identify the proportion of clinicians interested (or not interested) in including dance within their practices, and as a component of professional education and research; and their rationales.

Objectives

The objectives of the study were:

1. To design a tool to survey the beliefs and practices of physical therapists with respect to the use of dance as a therapeutic intervention for individuals at risk of, or diagnosed with, one or more CLCs.
2. To establish content validity of the survey tool using a convenience sample of physical therapists, and to use pre-testing data to refine the questionnaire and methods of analyses.
3. With the refined questionnaire, to conduct a survey of a random sample of registered physical therapists in BC and examine their beliefs and practices related to dance as a therapeutic intervention.

4. To document the beliefs and practices of dance as a therapeutic intervention in physical therapy.
5. To elicit/refine belief and practice variables as they pertain to the use of dance in physical therapy.
6. To determine associations between demographic, belief and practice variables.

Definition of Terms

Chronic lifestyle conditions: A group of health conditions (heart disease, stroke, cancer, chronic respiratory diseases, and diabetes) most commonly explained by three common modifiable risk factors (unhealthy diet, physical inactivity, and tobacco use) (World Health Organization, 2005).

Dance: Human behavior composed of, from the dancers' perspective, purposeful, intentionally rhythmical, and culturally patterned sequences of non verbal body movements other than ordinary motor activities (Hanna, 1995).

Health: A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization, 1948).

Physical therapist: A primary health care professional who analyzes the impact of injury, disease and/or disorders on movement and function. Physical therapists practice in a range of settings in partnership with clients, families,

other health providers and individuals in the community. Their skills are focused on improving, restoring and maintaining functional independence and physical performance; preventing and managing pain, physical impairments, disabilities and limits to participation; and promoting fitness, health and wellness (CIHI, 2005).

CHAPTER 2

LITERATURE REVIEW

Dance as a means of physical activity and health

The idea that dance can positively affect health and wellbeing is not novel (Connor, 2000). Most cultures in history have danced, and the purpose of dancing has often been directed at improving individuals' and societies' health and wellbeing (Cohen, 1998; Connor, 2000; Sandel et al., 2005). What is novel is the inclusion of dance in contemporary perspectives of health promotion and management, that is, being justified through biomedical theory and evidence as a valid tool that can be applied to prevent and/or treat common illnesses and disabilities. This latter perspective began to emerge only over the last 50 years and was largely associated with the psychologically focused modality of dance/movement therapy that became popular in the 1970s. Sport-like aerobic dance was very popular in the 1980s and was briefly associated with a surge of evaluative studies. Most other assessments of dance during this period however, were cross-sectional and only evaluated the biomechanical and physiological attributes of various dance styles. Few studies evaluated the impact of dance (community-based or therapeutically applied) on health outcomes until the 1990s, with high quality reports mostly emerging in the past decade. The number of studies to evaluate dance in diverse populations published over the past 5 years demonstrates the increasing interest in various styles of dance as effective and enjoyable alternatives to traditional exercise.

The interest in dance as a health promotion and treatment tool has been justified by its capacity – both as a physical activity and as a form of cultural, artistic and personal expression – to dually impact the physiological and psychological dimensions of an

individual's wellbeing (Connor, 2000; Hecox, Levine, & Scott, 1976; Van Zandt & Lorenzen, 1985). Addressing the psychological components of an individual is considered ideal in terms of holistic client treatment, but also considered important in terms of facilitating adherence to an activity in order to sustain physiological benefits (Connor, 2000). Activity adherence is a major issue limiting the long-term effectiveness of traditional exercise regimens, thus demonstrating that any form of physical activity may only be as useful as its capacity to promote long-term engagement in that activity (Dishman, 1988; Hackney, 2007; Sluijs, Kok, & Zee, 1993). Social and culturally relevant activities, such as dance, may provide a form of exercise that offers both a conditioning stimulus and an engaging activity that clients would like to continue; a 'disguised' form of exercise (Connor, 2000).

Dance/movement therapy

Dance/movement therapy (DMT) emerged some 60 years ago as a profession (Cohen, 1998). It was first developed by Marion Chace, a former dancer, who worked with psychiatric patients during the 1940s in the United States and emerged as a professional organization, the American Dance Therapy Association (ADTA) in 1956 (Cotter, 1999). The modality is officially defined by the ADTA "as the psychotherapeutic use of movement to further the emotional, cognitive, physical, and social integration of the individual" (American Dance Therapy Association, 2008). Based on the assumption of a mind/body connection, dance/movement therapists use dance (predominantly of the 'modern'/'interpretive' form) both as a means of diagnosis and treatment (American Dance Therapy Association, 2008). Because DMT tends to focus on improving psychological outcomes over traditional physiological outcomes, it tends to predominantly target people with congenital

abnormalities, or psychological and psychiatric deficits (Ritter & Graff, 1996). In her review of complimentary Western movement therapies and their applicability to rehabilitation, Cotter (1999) proposes the utility of DMT as a continuing therapy post-treatment to fine tune and sustain the gains made during rehabilitation. Suggested populations and uses (for whom and what) that she believed DMT would be particularly beneficial included: 1) facilitating non-verbal expression among clients with physical or emotional barriers to spoken communication; 2) facilitating group interaction (via group dance classes) with emotionally isolated clients; and 3) assisting elderly clients or clients with brain injury regain balance confidence (Cotter, 1999). However, an alternative perspective to Cotter, is that the psychotherapy focus DMT, in addition to its requirement of 'trained therapists' may make this therapeutic form of dance less applicable to the goals of physical therapists in need of an accessible training modality.

Physiological characteristics of dance

Cross-sectional studies assessing ballet (Cohen, 1982; Seliger, Glücksmann, Pachlopník, & Pachlopníková, 1970), ballroom (Blanksby, 1988; Passmore & Durnin, 1955; Passmore et al., 1952), disco (Léger, 1982), folk (Wigaeus & Kilbom, 1980), modern (Dahlstrom et al., 1996), square dancing (Jetté & Inglis, 1975), and tap dancing (Noble & Howley, 1979), report that these styles of dance are associated with an average heart rate ranging from 117 bpm (J. L. Cohen, 1982) to 179 bpm (Wigaeus & Kilbom, 1980) and an average maximal oxygen consumption (VO_{2max}) ranging from 13.1 mL/kg·min^{-1}(Passmore et al., 1952), to 54 mL/kg·min^{-1}(Dahlstrom et al., 1996). In addition to the cardiorespiratory effects, findings from cross-sectional studies have suggested that social dancing may be associated with improved cognitive (reduced risk of dementia) (Verghese et al., 2003) and mobility outcomes

(balance and gait) (Verghese, 2006) in older adults. Cumulatively, evidence from cross-sectional data suggests that may be a sufficient stimulus for both fitness and health across a range of ages (Kirkendall & Calabrese, 1983; Pepper, 1984) and importantly, an enjoyable training modality for achieving such aims (De Guzman, 1979).

Dance intervention studies – Non-rehabilitation settings

The impact of dance on health has been assessed in several disciplines both quantitatively (Belardinelli, Lacalaprice, Ventrella, Volpe, & Faccenda, 2008; Federici, Bellagamba, & Rocchi, 2005; Kim, June, & Song, 2003; Sandel et al., 2005; Song, June, Kim, & Jeon, 2004) and qualitatively (Palo-Bengtsson & Ekman, 1997; Palo-Bengtsson, 1998; Palo-Bengtsson, 2002). Most research has focused on the effects of social dancing in elderly people (e.g. residential care), or those with conditions or impairments common to elderly people (e.g. dementia, falling and poor balance, and Parkinson's disease).

Several studies from the field of nursing have either quantitatively evaluated Korean traditional dance movements (KTDM) (Kim et al., 2003; Song et al., 2004) or qualitatively assessed social dancing (Palo-Bengtsson & Ekman, 1997; Palo-Bengtsson, 1998; Palo-Bengtsson, 2002) – both within residential care environments. A pre-post Korean study by Kim and colleagues (n=25) included low-intensity KTDM as part of a health promotion exercise program (coupled with group education sessions and one-on-one mentoring) (Kim et al., 2003) for elderly women (age range 67-89) in a nursing home. Dance classes were 45 minutes and performed 4 times a week for 3 months. Classes were well attended with an 84% and 78% attendance rate at program completion and 3-month follow-up, respectively. The main outcomes of the study, including cardiovascular risk, health behaviors, and life satisfaction, were all improved at program completion. Although these effects were

somewhat mitigated at 3-month follow-up, investigators concluded the KTDM program was safe and effective in the promotion of cardiovascular health in elderly women in residential care.

In another pre-post study by Song and colleagues (n=73), the same group of investigators evaluated the effectiveness of KTDM as part of a motivation enhancement exercise program, also among elderly women (age range 54-90), in a nursing home (Song et al., 2004). Dance classes were 50 minutes and performed 4 times a week for 6 months. To assess individuals' motivation, classes were supervised only in the first portion of the program (10 weeks) with the remaining portion unsupervised (14 weeks). Using a cut-off attendance rate of 80%, the study compared 'participants' (n=46) to 'drop-outs' (n=27) with respect to changes in health behaviors, motivation and functional status after 6 months. 'Participants', compared with 'drop outs' reported increased motivation to engage in health behaviors, particularly with respect to their perceived benefits. 'Participants' also reported improved functional status, and increased performance of health behaviors, including exercise related behaviors. The investigators concluded that a program employing KTDM was effective in improving motivation, functional status, and performance of health behaviors in elderly women living in residential care.

In a series of qualitative studies, Palo-Bengtsson and colleagues assessed the value of social dancing in elderly clients with dementia living in a Swedish residential care facility (Palo-Bengtsson & Ekman, 1997; Palo-Bengtsson, 1998; Palo-Bengtsson, 2002). The studies did not introduce dance, but rather studied the reasons why social dance (practiced once a month in the participating facility) was employed as a nursing intervention. In a phenomenological study (Palo-Bengtsson & Ekman, 1997), where the investigators simply

described the phenomenon, the results suggested dance promoted communication and social interactions, both among clients and between clients and caregivers. To better understand the benefits of social dance, a subsequent study aimed to determine how people with dementia functioned in social dance sessions (Palo-Bengtsson, 1998). Content analysis of videotaped dance sessions revealed clients' "intellectual, emotional, and motor functions to be preserved and supported in dancing". Clients demonstrated abilities in remembering old social patterns as well as old songs and melodies and showed positive emotions of happiness and satisfaction. They also appeared motivated to dance and seemed to find cultural and existential meaning in dancing. Lastly, the investigators executed a phenomenological study (Palo-Bengtsson, 2002) comparing clients with dementia's emotional responses to social dancing and walking. Compared with walking, social dancing elicited more emotional reactions from clients. The most prominent and meaningful theme to emerge was 'the engaged body' which although present in all subjects, was particularly present in subjects who danced. Notably dance, more so than walking, allowed elderly residents to move more readily and forget their "frail physical condition and minimal fitness level" (Palo-Bengtsson, 2002).

Outside nursing, a randomized controlled trial by Federici and colleagues conducted in Italy (n=40) assessed the impact of Latin dance on balance in community-based inactive seniors (Federici et al., 2005). Study subjects (age range 56-68; 14 men, 26 women) were randomized to either a dance or control group for 3 months. While the dance group participated in 60-minute Caribbean dance (e.g. Salsa, Merengue, and Bachata) classes twice a week, the control group did not engage in any physical activity. Balance was assessed at intervention completion and 3 months follow-up. The dance group compared with the

control group, showed improved balance capability, with no differences being observed between women and men. Outcomes from a short 4-item psychosocial survey developed by study investigators also demonstrated improved subjective assessments of sleep quality and sexual activity among subjects in the dance group. Seventeen of the 20 dance group subjects reported moderate to great satisfaction with the dance activity, supporting the investigators decision for selecting Caribbean dance based on its perceived "appealing and joyful qualities". Investigators concluded that their findings, consistent with those of Shigematsu and colleagues earlier assessment of aerobic dance for balance (Shigematsu, 2002), provided further evidence of the efficacy of dance in improving balance in middle aged adults – an outcome they argued, may play an important role in preventing falls in the elderly.

A randomized crossover study by Sandel and colleagues conducted in the United States (n=35) evaluated the impact of a 12-week dance-based movement program on shoulder range of motion, quality of life, and body image in survivors of breast cancer (age range 38-82) (Sandel et al., 2005). Subjects participated in a 18 dance classes (performed twice a week for the first 6 weeks and once a week for the second 6 weeks) consisting of dance components designed to address "the existential challenges that most women report following the diagnosis and treatment of breast cancer: body image, sexuality, sense of control, meaning in life, grief, and loss". The repertoire of movement was simple (although the specifics were not defined) and designed for women with no dance experience. Quality of life was the only outcome to show improvement in both groups of the crossover design. Measures of body image and shoulder range of motion improved but were unrelated to group allocation (and thus more likely an effect of time and not the intervention).

Most recently, Belardinellii and colleagues performed a three-group randomized controlled trial (n=130) in Italy comparing waltz dancing (n=44; alternating slow and fast waltz dancing), to aerobic exercise training (n=44; 70% VO_{2max}), to control (n=42), in patients with chronic heart failure (Belardinelli et al., 2008). Dance classes were presumed to be of similar intensity to the traditional exercise classes, and both forms of activity were performed 3 times a week for 8 weeks. Investigators found waltz dancing to be as effective aerobic exercise with respect to outcomes of cardiovascular health. Subjects allocated to waltzing showed better improvements in the emotional dimensions of the quality of life and adherence to their classes.

Dance intervention studies – Rehabilitation settings

Until recently, few studies had evaluated the use of dance in a rehabilitation setting or with rehabilitation clients. While interest in dance as an therapeutic modality had inspired several editorial comments (Boshoff, 1978; Evans, 1978; Harding, 1978), and case studies on the use of dance in rehabilitation settings (Connor, 2000; Hecox, Levine, & Scott, 1975; Hecox et al., 1976; Hunter, Piner, & Rosenberg, 2004; Molinaro, Kleinfeld, & Lebed, 1986), there have been very few evaluations of dance based on experimental studies (Kudlacek, Pietschmann, Bernecker, Resch, & Wilvonseder, 1997; Valentine-Garzon, 1992; Van Deusen, 1987). In recent years however, more literature has emerged including a series of Canadian studies assessing the safety and efficacy of a dance-based program for individuals with rheumatoid arthritis (Moffet, Noreau, Parent, & Drolet, 2000; Noreau, Martineau, Roy, & Belzile, 1995; Noreau, Moffet, Drolet, & Parent, 1997) as well as studies that evaluated the impact of Argentine tango on mobility and balance in clients with Parkinson's disease (Hackney, 2007) and elderly clients (McKinley et al., In press), respectively.

In a series of studies by Noreau and colleagues, the effectiveness (assessed by improved physical fitness and psychological state) and safety of a modified dance-based exercise program was evaluated in clients with rheumatoid arthritis (composite n=49) (Moffet et al., 2000; Noreau et al., 1995; Noreau et al., 1997). Although the length of the intervention (12 weeks and 8 weeks) and design (quasi-experimental and pre-post) varied somewhat across the studies, there was modest evidence supporting dance-based exercise to promote aerobic fitness (Noreau et al., 1995), mobility (Moffet et al., 2000), and positive affect (Noreau et al., 1995; Noreau et al., 1997) in clients with moderate to severe rheumatoid arthritis.

In a small randomized control trial by Hackney and colleagues of the United States, (n=19), clients with Parkinson's disease were randomized to either tango dance or standard exercise classes, both 60 minutes in duration, twice a week for 13 weeks (or until 20 sessions were completed) (Hackney, 2007). While both interventions resulted in improvements in Parkinson-specific symptoms, only the tango group demonstrated improvements in measures of balance and mobility. Based on their preliminary findings, the investigators concluded that tango dancing offered a viable alternative to traditional exercise to improve functional balance and gait deficits specific to individuals with Parkinson's disease. Future studies with larger sample sizes were indicated to confirm and extend their observations. In addition, investigators hypothesized that the tango may be more likely to promote adherence than traditional strength and flexibility exercises. This supposition was based on informal observations at the completion of the study, where nearly half of the dance group versus none of the exercise group attended extra sessions following their post-intervention assessments. Although the investigators did not attempt to explain this post-hoc finding, their reasons for

evaluating dance were informed by their understanding of it being a "pleasurable therapeutic activity" (Hackney, 2007).

Finally, a randomized controlled trial by McKinley and colleagues of Canada (n=30) compared the impact of a tango program to an equivalent intensity walking program on outcomes of balance (increased strength, balance confidence and other balance skills) in elderly individuals at risk of falling (experienced a minimum of one fall in the year preceding study enrolment) (McKinley et al., In press). Both dance and walking sessions lasted 120 minutes and were performed twice a week for 10 weeks. Post-intervention and 1-month follow-up assessments demonstrated improved strength and walk speed for both the tango and walking interventions, shifting subjects from 'high' to 'no' or 'moderate' fall risk categories. Although the tango resulted in more marked improvements compared with the walking group, the randomization process failed to make the groups comparable on baseline values. Because the tango group had relatively poorer baseline values, it had a greater opportunity for improvement compared to the walking group, thus making it impossible to conclude the superiority of the tango program over the walking program. Despite this, the study findings suggest that the tango might serve as an effective intervention for improving balance in elderly individuals at risk of falling. Of the 5 subjects lost from the study, 4 were from the walking group and chose to leave the study because they had preferred to be allocated to the dance group.

Measuring physical therapists beliefs and practices

To our knowledge there are no data, save for a few anecdotal editorials (Boshoff, 1978; Harding, 1978), describing physical therapists' beliefs about, or practice of promoting

dance as an activity or exercise. Because no survey of beliefs and practices has been conducted, no survey tool has been designed for this purpose.

Purpose of the study

Given the continued growth of literature pertaining to the therapeutic utility of dance, both as a general health promoter and a physical therapy intervention, we were interested in examining the beliefs and practices of physical therapists with respect to this exercise modality. The primary purpose of this study was first to develop a questionnaire tool to assess physical therapists' beliefs and practices, and second, to survey physical therapists with this tool. The secondary purpose of this study was to establish an appropriate estimate of statistical power and effect size for subsequent survey or intervention studies.

CHAPTER 3

METHODS

Design

A cross-sectional, descriptive study based on self-administered mail survey questionnaire data.

Sample

The survey population, is the population to which a survey aims to generalize its survey results (Dillman, 2007), while the sample frame is the list from which the sample is drawn in order to represent the survey population. For the purposes of this study, our survey population was physical therapists in BC, and was derived from the College of Physical Therapists of BC (CPTBC), the provincial regulating body with which all physical therapists must be registered in order to practice in BC served as the sample frame (CIHI, 2005). Additional inclusion and exclusion criteria restricting the sample frame were:

To be included subjects had to be:

1. Registrants with CPTBC as of February 1st, 2008.

Subjects were excluded if they:

2. Were not full registrants: Registrants with student, courtesy, interim, limited, memberships, or memberships in which the registrant 'may not practice' or 'required supervision' were withdrawn from the sample.

3. Had inadequate contact information: Registrants without complete BC mailing addresses were withdrawn from the sample.
4. Study involvement: Registrants who were also co-investigators of the study, or participated in pre-testing of the questionnaire (described below) were withdrawn from the sample.

A flow chart depicting the total number of registrants in the CPTBC sample frame, the number of registrants excluded, and the remaining number on which sample calculations and randomization was done, is shown in **Figure 1**.

To our knowledge, there were no previous data on which we could base our sample size calculation. Accordingly, a secondary objective of this study was to provide preliminary data, such as the distribution and variance of beliefs regarding the use of dance in physical therapy for the prevention of CLCs, to support future sample calculations in belief-based studies. In the present study, we used a survey-specific formula provided by survey expert, Don A. Dillman (Dillman, 2007). The formula (shown in **Figure 2**) allows one to compute the number of completed questionnaires required (Ns) (i.e. the number that are returned from respondents) in order to satisfy the study's chosen level of confidence (C) and degree of precision (B). Also included in the calculation is the estimated proportion of the population expected to choose one of two response categories (p) (Dillman, 2007).

The calculated number of completed questionnaires required for the present study (Ns=92) is shown in **Figure 2**, and was confirmed by the values computed in sample tables by Dillman (Dillman, 2007). The values selected for this calculation and their justification are:

1. Size of population (Ns)=2410 (Based on the available sample frame derived from CPTBC registrants depicted in **Figure 1**).
2. Proportion of population expected to chose one of the two response categories (p)=.50. A conservative estimate of maximum heterogeneity was selected based on the preliminary and exploratory nature of this study.
3. Acceptable sampling error (B)=0.10 which corresponds to ±10% of the true population value. A liberal margin was selected in order to promote study feasibility, and was justified by the preliminary and exploratory nature of this study.
4. Confidence level (C) =1.96 which corresponds to a 95% confidence level.

Finally, the sample (S) required to attain the appropriate number of completed questionnaires (Ns) was calculated based on an anticipated response rate of 40% (**Figure 3**); the sample determined was S=231. The 231 survey subjects were randomly selected from the adjusted CPTBC sample frame (n=2,410), using an online random number generator (www.random.org). A random sample of physical therapists was drawn to ensure a representative sample and minimize sampling error (Dillman, 2007; Portney & Watkins, 2000).

Recruitment

The questionnaires were mailed to the selected BC physical therapists using the Canadian postal services. To obtain a successful response rate, Dillman's tailored-design method of surveying was employed (Dillman, 2007). This method is based on social exchange theory and is characterized by 5-week, 5-step contact process comprised of a 1)

pre-notice letter, 2) cover letter (including informed consent) and questionnaire, 3) thank-you postcard, 4) reminder letter and replacement questionnaire, and 5) final contact by phone (Dillman, 2007). The composition of the questionnaire package is described in **Appendix I**.

The pre-notice letter (**Appendix II**) served to inform the survey subject that a questionnaire regarding the use of dance in physical therapy would arrive in the mail. It was followed a couple days later by the cover letter (**Appendix III**) and questionnaire itself (**Appendix IV**). A thank-you postcard (**Appendix V**) was sent one week later, and served a dual purpose as a note of appreciation to respondents and reminder to non-respondents. The replacement questionnaire and formal reminder letter (**Appendix VI**), mailed to non-respondents only, arrived approximately 3 weeks after the survey subjects would have received the initial questionnaire. Phone calls were made to the remaining non-respondents a week later. A self-addressed pre-stamped envelope was enclosed with both initial and replacement questionnaires to facilitate the return of completed surveys. All correspondence included phone and email contact information of the principal investigator (E. Dean), and correspondence from respondents was addressed by either E. Dean or the MSc student (K. Konnyu). The execution of the survey took 5 weeks (April 7th to May 13th, 2008), and is depicted in **Figure 4**.

Prior to mailing, each questionnaire and return envelope was labeled with a unique identifier code that was used for data entry upon return of the completed questionnaire. The use of unique codes ensured the anonymity of each respondent's data. The anonymity and security of respondent's data and other ethical disclosures were indicated in the cover letter (**Appendices III** and **VI**). Informed consent was implied by the return of the completed questionnaire.

Questionnaire

Development

Our comprehensive literature search identified no previous survey used to garner the beliefs and practices of physical therapists (or other health professionals) with respect to dance. Thus, an additional aspect of this study was to design and refine the survey tool itself. Questionnaire format and style were informed both by general survey literature (Dillman, 2007; Gray & Guppy, 1999) and surveys employed in the physical therapist population (mostly with respect to the use of a particular therapy) (Jette et al., 2003; Mathur, Stanton, & Reid, 2005; Wong, Schumann, Townsend, & Phelps, 2007). Questions pertaining to the specific use of dance in physical therapy practice were designed to reflect the categories of the World Health Organization's International Classification of Functioning (Dahl & Tora, 2002) that has been adopted by the World Confederation of Physical Therapy (http://www.wcpt.org/) of which Canada is a member.

The 5-page questionnaire consisted of four sections (67 items) requiring 15 minutes or less to complete (**Appendix IV**). The questionnaire was predominately composed of close-ended questions (n=56), however several open-ended questions (n=11) were included, predominantly as a means to fully capture and explore the diversity of opinions pertaining the role of dance in physical therapy.

Ethics

Ethics approval was granted by the Ethical Review Board of the University of British Columbia on March 31st, 2008 (**Appendix VII**).

Pre-test

A preliminary version of the questionnaire packaged was pre-tested on a convenience sample of physical therapists in BC (n=8) to establish content validity. Content validity is established concurrently with survey development. It reflects the degree to which a tool adequately assesses the content universe of which it aims to represent, and is determined subjectively by content experts (Portney & Watkins, 2000). During these testing sessions, clarity and comprehensibility of the questionnaire and its accompanying correspondence were also examined so as to maximize the internal validity of the data. The MSc student was present at all pre-testing sessions, either in person, face-to-face 'online chat', or by phone (with the exception was a full-time clinician who, given the workload of her single therapist practice, preferred to have the MSc student pick up the questionnaire on a subsequent day). This approach allowed the MSc student to clarify questions and receive feedback using a cognitive retrospective interview format (Dillman, 2007). Based on these interviews, content validity of the questionnaire appeared good and modifications required were minimal – most having to do with refining clarity of instructions, rather than concepts. Pre-testing data were used only for refinement purposes of the questionnaire and questionnaire correspondence and were not included in any analyses or results.

Analyses

Statistical analyses

Raw data attained from respondent questionnaires were coded for data entry into a Statistical Package for the Social Sciences (SPSS version 15) worksheet for subsequent analysis.

Data from each question were analyzed independently and no composite scores were used. No response was treated as missing data in order to distinguish between 'Not applicable' and 'Don't Know' response options. To address Objective 4 (document the bliefs and practices) descriptive summary statistics were used. Data from belief and practice responses and demographic information were expressed as frequencies, proportions, means (or medians) and standard deviations (or ranges) where appropriate. Data from Likert scale were treated as continuous. The phrase 'average strength of agreement' was used in describing the mean of belief-based questions. To address Objective 6 (determine associations between demographic, belief and practice variables), the bivariate Pearson's product (r) correlation statistic was used (beliefs vs. age, clinical experience; practices vs. age, clinical experience) as well as the Student's T-test (beliefs vs. sex), and Pearson's Chi-square (practices vs. sex). In interpreting the Pearson's product correlation, the sign of the coefficient is understood to indicate the direction of the relationship and its absolute value indicates the strength (with larger absolute values indicating stronger relationships). The alpha level for significance was set at 0.05 (two-tailed).

Content analyses

To address Objective 5 (elicit/refine belief and practice variables), qualitative content analysis was executed. Open-ended statements were coded manually by the MSc student in a Word document, categorized according to content themes, and counted for the frequency with which themes emerged. We chose to do manual coding, instead of using a software program, as this method is considered trustworthy (i.e. valid) and allowed the MSc student to become more intimate with the data (Elo & Kyngas, 2008; Graneheim & Lundman, 2004). Questions were analyzed independently, except for specific cases where respondents referred to the answer of a previous question (e.g. 'See above'), or one exceptional case in which a respondent answered all questions in one successive statement across all defined answer areas. In these cases, the MSc student copied all relevant information from the previous applicable answer and added it to the response for the respective question.

Each respondent's answer was separated into major categories according to the overall content of the response in relation to the specific question. For example, Questions 11-14 asked the survey subjects if they believed dance warranted special attention in various facets of physical therapy (entry level education, professional development, practice, research). Responses to these questions were grouped into major categories of 'Yes' and 'No'. In a somewhat similar fashion, the respondents' answer to Question 9b were grouped according to responses of 9a, as 9b was an open-ended follow-up question to 9a, a close-ended question, pertaining to client receptivity to dance as a therapeutic intervention. Accordingly, responses to Question 9b were grouped into three categories according to the degree of agreement stated in Question 9a ('Disagree'=1 and 2; 'Somewhat disagree, somewhat agree'=3 and 4; 'Agree'=5 and 6). Finally, Question 18c, examining respondents' definition

of ‘dancer’ was grouped into two major categories of ‘Inclusive’ and ‘Exclusive’. Across all questions were a few minor response categories of ‘No answer’, ‘Unsure/Don’t Know’, and ‘Unable to interpret’.

Following this first level of categorization, the MSc student manually coded meaning units (MUs) within each major and minor category. A meaning unit was understood to be “words, sentences or paragraphs containing aspects related to each other through their content and context” (Graneheim & Lundman, 2004). During coding, the MSc student aimed to increase the trustworthiness of the coding by prioritizing the explicit meanings of the text over any interpretations derived from implicit meanings. Meanings that were clearly not explicit (as interpreted by the MSc student) were coded as ambiguous and excluded from frequency counts.

Because of the exploratory nature of the study, categories and themes evolved through an iterative process during analysis of each question, and across questions, rather than *a priori*. Codes were refined until an acceptable balance between global themes (breadth) and specific contextualization (depth) was struck. At that time, frequency counts for each code in each question were counted. Credibility (an aspect of trustworthiness) of the category schemes and their findings was attained by agreement with experts (departmental professors), colleagues (graduate students versed in qualitative research), and co-researchers (Graneheim & Lundman, 2004).

CHAPTER 4

RESULTS

A total of 412 questionnaires were mailed to 231 physical therapists in British Columbia. Twelve questionnaires (5.2%) were returned undeliverable, leaving 219 potential questionnaires to be returned. Of the total 124 questionnaires returned, 2 were discarded because no responses were entered, resulting in a response rate of 56.6% (124/219) for this population. The rate of completed closed and open-questions of the 122 questionnaires analyzed was 99.0% and 91.1%, respectively. Only two questions, both open-ended, were missing responses from more than 15% of respondents (questions 10 and 18c).

Respondent demographic characteristics

A summary of respondents' demographic and descriptive characteristics is presented in **Table 1**. Respondents were predominantly female (77.7%) and ranged in age from 25 to 66 years old (mean=42.5$\pm$10.1 yrs). The sample was generally well distributed with respect to the year graduated from entry-level physical therapy education, primary area of specialization, and years of clinical experience. While most respondents attained their entry-level education in Canada, a proportion (21.8%) were trained internationally (most commonly United Kingdom, Australia or New Zealand). In terms of experience with dance, most respondents did not self identify as a 'dancer' (78.5%) and tended to dance at social occasions only (62.7%).

Dance-related beliefs

Specific dance categories

A summary of respondents' beliefs regarding specific dance categories and their capacity, when prescribed optimally, to elicit various physiological and psychological effects is presented in **Tables 2 and 3**. 'Don't know' responses were separated from 'Known' responses in calculating the strength of the beliefs for each effect (aerobic capacity, anaerobic capacity, balance, flexibility, mood, relaxation, strength: core/trunk, strength: extremities, and weight loss) in each dance category (Ballroom, Latin American, Formalized, Ethnic/Folk, Informal). In most cases, 'Don't know' accounted for less than 5% of a questions response total (**Table 2**). The exception were beliefs regarding the effect of various dance categories on anaerobic capacity ('Don't know' responses ranging from 14.0% to 23.1%) and the effect of ethnic/folk dancing on each all of the listed effects ('Don't know responses ranging from 10.7% to 23.1%). The remaining beliefs of respondents are presented in **Table 3**. The strength of beliefs could range from 1 (strongly disagree) to 6 (strongly agree). In all cases, the average strength of agreement was in favor of the specified dance category capacity to elicit the specified potential effect (response mean >3). Strongest agreement (response average >5) was observed in 1/3 of the cases (n=15/45), and was most prevalent in beliefs pertaining to the influence of dance on mood (n=5) and balance (n=3). Weakest agreement (response average 3-4) was found in 3 cases, and pertained to beliefs regarding the influence of ballroom and informal dancing on anaerobic capacity, as well as the effect of informal dancing on flexibility. Most cases (n=27/45) had average agreement (response average 4-5).

'Dance' as a general category

A summary of respondents' beliefs regarding dance as a general category and its' capacity, when prescribed optimally, to impact health and act as a viable therapeutic intervention are presented in **Table 4**. Again, the average strength of agreement was in favor of dance, in some form, being able to be prescribed optimally for health and wellness (5.36±0.87), prevention of a CLC (5.02±0.98), and remediation of a CLC (4.95±1.02). Respondents also agreed, albeit with weaker agreement, that their clients would be receptive to dance as therapeutic exercise (3.78±1.06). Respondents' level of agreement are reported in **Table 8** and described in 'Client receptivity' results below.

Dance-related practices

Figures 6, **7**, and **8** present respondents' practices pertaining to the use of dance with their clients for: 1) health and wellness (**Figure 5**), 2) prevention of a CLC (**Figure 6**), and 3) remediation of a CLC (**Figure 7**). Consistently across all questions was the response "No but would like to learn more" being selected most frequently, followed by "Yes, but would like to do this better". Very few respondents selected either extreme negative ("No, and no interest in doing so") or positive ("Yes, I believe I do this effectively") response options. An approximate 20 respondents in each question (14.4%) responded "Not applicable".

Comparison of dance-related beliefs and practices by age and sex

Respondents' beliefs regarding the use of dance for health and wellness, prevention of a CLC, and remediation of a CLC were compared with their age as well as their sex.

Additionally, respondents' practices regarding the use of dance for health and wellness, prevention of a CLC, and remediation of a CLC (collapsed into dichotomous 'Yes' and 'No' data) were compared with their age as well as their sex. A summary of these results is presented in **Table 5**. While age did not appear related to respondents' beliefs, it was associated with their practices; older respondents being more likely to use dance in practice for the purpose of health and wellness (r=.24, p=0.019), prevention (r=.27, p=0.010), and remediation of a CLC (r=.29, p=0.005). Conversely, while gender did not appear related to respondents' practices, it was associated with their beliefs; female respondents holding stronger beliefs than their male colleagues with respect to prevention (p=0.003) and remediation (p=0.007) of a CLC

Comparison of dance-related beliefs and practices by years of clinical experience and practice specialty

Respondents' beliefs regarding the use of dance for health and wellness, prevention of a CLC, and remediation of a CLC were compared with their clinical experience (in years) Additionally, respondents' practices regarding the use of dance for health and wellness, prevention of a CLC and remediation of a CLC (collapsed into dichotomous 'Yes' and 'No' data) were compared with their clinical experience. Although we intended to compare respondents' beliefs and practices with their practice specialty, the distribution of specialties appeared too disproportionate to derive valid results (e.g. 42.4% orthopedic versus 4.7% cardiovascular). A summary of the correlations is presented in **Table 6**. While clinical experience did not appear related to respondents' beliefs, it was associated with their

practices; more experienced respondents being more likely to use dance in practice for the purposes of health and wellness (r=.30, p=0.003), prevention of a CLC (r=.32, p=0.002), and remediation of a CLC (r=.34, p=0.001).

Relationship between dance-related beliefs and practices

Respondents' beliefs regarding the use of dance for health and wellness, prevention of a CLC, and remediation of a CLC were compared with their practices of prescribing for these reasons (collapsed into dichotomous 'Yes' and 'No' data). A summary of the correlations is presented in **Table 7**. While beliefs did not appear to be associated with respondents practices regarding the prevention or treatment of a CLC, they were associated with their practice for the purpose of health and wellness (r=.21, p=0.05); respondents with positive beliefs being more likely to report using dance in their practice.

Perceptions on the use of dance in physical therapy

Client receptivity

Content codes of respondents' beliefs regarding client receptivity and the frequency with which they emerged are presented in **Table 8**. Most respondents were categorized as 'Somewhat agree, somewhat disagree' (n=70), followed by those that agreed (n=19) and those that did not (n=12). Seventeen respondents believed the question was not applicable and 4 respondents did not answer.

Within the 'Somewhat agree, somewhat disagree' group (n=70), respondents cited a diverse range of factors which they believed pertained to clients' receptivity to dance as

therapeutic exercise. Most MUs fell into the 3 categories: 'Client interest' (MU=71), 'Population applicability' (MU=25), and 'Client environment' (MU=25). Within the largest category of 'Client interest' (MU=71), 'Quantity of interested clients' was the most frequent theme to emerge (MU=20) and demonstrated a diverse opinion as to the number of clients who may be interested in pursuing dance as therapeutic exercise (e.g. 'None', 'Some', 'Many' would, 'Many' would not). Interesting in this category was the perception of respondents that client interest was increasing (MU=2) due to increased cultural exposure (e.g. "Dancing with the Stars" and "So You Think You Can Dance" reality television shows). 'Age category' was the second most common theme to emerge (MU=16), with children (and their families) emerging as the only consistently agreed upon group of clients that may be interested in dance (MU=4). Beliefs regarding the interest of adolescents, adults and elderly were both positive and negative, however more respondents believed the elderly would be receptive (MU=6) compared to those who did not (MU=2). 'Gender' and 'Dance history' categories emerged as the third most common themes (MU=9 each). Categorically, respondents believed female clients would be more receptive and males would not (MU=5 vs. 4, respectively), and also that those who have danced before ('Clients are receptive if they have previous dance experience….otherwise I find they are not as receptive') would be interested (MU=4), and those who have not danced would not (MU=2). Within the category of 'Population applicability' (MU=25), 'Functional capacity' (MU=11) was the most frequent theme to emerge, and pertained to therapists' belief that most clients had insufficient physical capacity (MU=10) to be interested in dance as a therapeutic exercise. Despite this, several complex conditions such as total knee or hip replacement (MU=2), osteoarthritis (MU=1), and lower extremity amputations (MU=1) emerged within the 'Diagnostic

category' theme (MU=6) as potentially applicable conditions in which clients may be interested. In contrast, orthopedic injuries (MU=1) and chronic pain (MU=1) were believed to be conditions in which clients would not be interested in pursuing dance. Finally, under 'Client environment' (MU=25) category, 'Appropriate/modified classes' (MU=8), 'Accessibility barriers' (MU=7) and 'Community classes' (MU=5) were the three most frequent themes to emerge. In this case, respondents' either were unaware if classes were available and/or appropriately modified, or stated that such classes were not available within their community, period (e.g. rural communities). If classes were to be available, factors such as transportation (MU=1), cost (MU=4), time (MU=2) were perceived as barriers to clients' interest/capacity to dance.

Within the 'Agree' group (n=19), the three most common categories were 'Health benefits/therapeutic relevance' (MU=25), 'Client interest' (MU=12), and 'Population applicability' (MU=6). According to the themes that emerged within 'Health benefits/therapeutic relevance' (MU=25), most respondents believed dance to be a positive and holistic alternative exercise that may address clients' physical (MU=4), social (MU=3) and psychological needs (MU=11). The enjoyment component of dance, in particular, emerged as an important aspect that may influence clients' interest (MU=11) – a factor that may be increased as compared to traditional exercise (MU=3) and may facilitate physical therapists in motivating clients (MU=1). Within the 'Client interest' category (MU=12), 'Age category' emerged as the most common theme (MU=7), with all client ages except adults being perceived as interested in dance as exercise. Children were the most common category of clients to be interested (MU=5), with one respondent describing dance as 'typical activity' of that population. 'Quantity of interested clients' (MU=2) and 'Gender category'

(MU=2) both emerged as the second most common themes, with respondents believing that 'some' (MU=2) of their female clients (MU=2) would be interested. Within the small category of 'Population applicability' (MU=6), 'Age category' emerged as the most frequent theme, with respondents believing that children (MU=2) and elderly (MU=2) clients would be applicable, and thus interested in pursuing dance.

Within the 'Disagree' group (n=12), the two most common categories were 'Client interest' (MU=10) and 'Population applicability' (MU=4). The 4 remaining categories all had only 2 MU's ('No explanation', 'Client environment', 'Physical therapist', and 'Not special attention'). Under 'Client interest' (MU=10), the theme of 'Quantity of interested clients' was the most prominent (MU=4) with respondents stating that 'None' (MU=2) or 'Small/few' (MU=2) of their clients would be interested. The theme of 'Age category' was second to emerge; respondents believed that adolescents through elderly would not be receptive to dance as therapeutic exercise (MU=3). 'Dance history' (MU=2) was the third theme to emerge with respondents stating that clients were not interested in dance unless it had been an activity they had pursued previously. Within the category of 'Population applicability' emerged four diverse themes with only one MU each: 'Quantity of applicable clients' – 'Small/few' (MU=1); 'Diagnostic category' – 'Chronic obstructive pulmonary disease' (MU=1); 'Functional capacity' – 'Insufficient' (MU=1); and 'Fitness category' – 'Trained athletes' (MU=1). Clients meeting the above criteria were deemed inapplicable and thus would not be receptive to dance as therapeutic exercise.

Physical therapy practice

Content codes of respondents' beliefs regarding whether dance warrants special attention in physical therapy practice (including why and how it may be done) and the

frequency with which they emerged are presented in **Table 9**. Eighty-five respondents were categorized as 'Yes' and 21 respondents were categorized as 'No'. Four respondents were categorized as 'Unsure', and one as 'No opinion'. Nine respondents did not answer, and the meanings of two respondents' answers were unable to be determined.

Within the 'Yes' responses (n=85) were two main categories, 'Why' (MU=57) and 'How' (MU=91). Under 'Why' (MU=57), the category of 'Health benefits/therapeutic relevance' was predominant (MU=49). Under this category, 'Psychological' (MU=12), 'Physical' (MU=11), and 'Valued tool' (MU=11) emerged as the most frequent themes. While the former two themes pertained to the benefits respondents believed clients might derive from dance, the latter referred to the utility and value of dance in physical therapy practice in general. Under this theme, respondents believed dance was an 'exciting addition to skill set' (MU=1), suitable 'for clients who need alternatives to rigid exercise programs' (MU=1). It was also postulated as being 'appropriate for the purposes of CLCs' (MU=1). One respondent believed dance to be a natural fit in physical therapy practice stating, 'dance incorporates learning, balance, flexibility, music – an extension of what physiotherapy practice already is'. Across various themes in this category was the idea of dance being a meaningful alternative to traditional exercise (MU=4), which may improve clients' compliance and adherence to activity (MU=4) – particularly on account of its social and psychological/enjoyment features. An example of this sentiment is captured in one respondent's statement that 'it's a good/fun way to exercise without feeling like you are exercising'. Under 'How' (MU=91), two major categories emerged: 'Practice: therapeutic application' (MU=57) and 'Population applicability' (MU=29). Within the category of 'Practice: therapeutic application' (MU=57), the themes of 'How use' (MU=32) and

'Educate physical therapists' (MU=20) emerged most frequently. The theme of 'How use' (MU=32) presented a myriad of potential uses for dance in physical therapy and how it should be conceptualized within the discipline. Most commonly, respondents believed that dance should be conceived of as a treatment option (MU=5), and should be used for balance (MU=3) and coordination (MU=2), either through community classes (MU=2) referred to by physical therapists (MU=4) or by prescription of basic steps by physical therapists (MU=2). Within the theme of 'Educate physical therapists' (MU=20), respondents were most interested in professional development courses (MU=8) and research and knowledge translation (MU=4) as means of informing physical therapists about the therapeutic relevance of dance. Within the category of 'Population applicability' (MU=29), the most frequent theme to emerge was 'Diagnostic category' (MU=15), in which respondents reported 11 conditions (or condition categories) they believed were amenable to dance; chronic pain (MU=3), chronic conditions (MU=2) and depression (MU=2) were the three most frequently mentioned. To a lesser extent in 'Population applicability' emerged the themes of 'Age category' (MU=6) and 'Culture category' (MU=4). Elderly (MU=4) and dancers (MU=3) were the most commonly applicable clients to be mentioned in the former and latter themes, respectively.

Within the 'No' responses (n=21), most respondents did not provide an explanation of 'Why' (MU=9). Of those who did, the most frequent category to emerge was 'Not special attention' (MU=6). Here, respondents qualified that while dance may deserve some attention within physical therapy practice, it should receive 'no more/no less than other forms of physical activity'. The categories of 'Health benefits/therapeutic relevance' and 'Physical therapist' also emerged modestly with 3 MU's each. The most frequent theme to emerge was

'Not physical therapy' (MU=3) under the category of 'Health benefits/therapeutic relevance' (MU=3) which reflected respondents' beliefs that dance was not appropriate for physical therapists to prescribe or was not appropriate for addressing therapeutic objectives. Under the category of 'Physical therapist' (MU=3), respondents believed that the use of dance in physical therapy practice was conditional on the circumstances of each client (MU=2).

Physical therapy education – entry-level

Content codes of respondents' beliefs regarding whether dance warrants special attention in physical therapy entry-level education (including why and how it may be done) and the frequency with which they emerged are presented in **Table 10**. Fifty-six respondents were categorized as 'No' and 49 respondents were categorized as 'Yes'. Five respondents were categorized as 'Unsure/Don't Know' and 11 respondents did not answer. One respondent did not understand the question.

Within the 'No' responses (n=56), the 'Focus on basics/essentials' category predominated (MU=25). Under this category, there was a resounding sentiment among respondents that entry-level education was full enough ('Not enough time/curriculum full', MU=12) and should be reserved for basic training ('Focus on basics/essentials', MU=12), although what comprised 'basic training' was not explicitly defined. A modest 'Slippery slope' theme emerged in which respondents were hesitant to include one recreation activity (dance) to the curriculum in case that should lead to the inclusion of other recreation activities (MU=3).

Within the 'Yes' responses (n=49), were two main categories 'Why' (MU=35) and 'How' (MU=43). Under 'Why' (MU=35), the category 'Health benefits/therapeutic relevance' emerged most frequently (MU=28). The three most frequent themes to emerge

under this category were 'Increase knowledge/awareness' (MU=9), 'Physical' (MU=5), and 'Psychological' (MU=5). Within the 'Increase knowledge/awareness' theme (MU=9), respondents believed dance deserved greater attention in entry-level education than it was believed to be currently receiving. This was either stated in general (MU=4) or qualified with the reasoning that it should be given attention similar to other activities (MU=3) or be offered as an option (which was valued as 'good' in its own right) (MU=1), or because it offers an alternative to traditional exercise (MU=1). 'Physical' and 'Psychological' health benefits emerged with the same frequency in this category (MU=4), with the additional themes of 'Enjoyable' (MU=2) and 'Mood enhancer' (MU) coming out under the 'Psychological' theme. Under the 'How' (MU=43), two main categories emerged: 1) 'Course layout ('Where/When')' (MU=22), and 2) 'Content ('What')' (MU=21) emerged. Within the 'Course layout ('Where/When')' (MU=22) the two major themes to emerge were 'Brief mention/introduction' (MU=9) and 'Combined with other material' (MU=8) representing respondents beliefs that although dance should be included in entry-level education it should not be given too much time within the curriculum. Within the 'Content ('What')' (MU=21) category, the two major themes to emerge were 'Health: benefits/therapeutic relevance' (MU=7) and 'Practice: therapeutic application' (MU=7), The exception to this was one respondent who felt that only theory should be delivered at entry-level education (MU=1).

Physical therapy education – professional development

Content codes of respondents' beliefs regarding whether dance warrants special attention in physical therapy professional development education (including why and how it may be done) and the frequency with which they emerged are presented in **Table 11**.

Eighty-one respondents were categorized as 'Yes' and 19 respondents were categorized as 'No'. Six respondents were categorized as 'Unsure', and 16 respondents did not answer.

Within the 'Yes' responses (n=81) were two main categories, 'Why' (MU=41) and 'How' (MU=70). Under 'Why' (MU=41), the category of 'Health benefits/therapeutic relevance' was again predominant (MU=30). In this category, 'Increase knowledge/awareness' emerged as the most frequent theme (MU=14), followed to a lesser extent by 'Valued tool' (MU=5), physical (MU=4) and 'Psychological' (MU=4) themes. Within the 'Increase/knowledge/awareness theme', respondents believed that there should be improved dissemination of knowledge pertaining to the therapeutic relevance of dance in general (MU=4), but also as a means of increasing the use of dance within practice ('In mainstream practice', MU=1; 'May increase use as a therapy modality', MU=1), its long term benefits (MU=1) and doing so appropriately ('Appropriate prescription', MU=1). Within this theme were also several less enthusiastic MU by respondents who believed an increase of knowledge was generally good but not necessarily specific to dance ('Of options', (MU=4); 'As with other activities', (MU=1). Within the 'Valued tool' theme (MU=5), respondents believed dance warranted special attention within physical therapy professional development education because it was functional (MU=1) as well as: 1) a new idea (MU=2), 2) a form of group fitness (MU=1), 3) a great social and professional development tool (MU=1). Finally, 'Physical' (MU=4) and 'Psychological' (MU=4) themes also emerged. Again, under the 'Psychological' category emerged the themes of dance being 'Enjoyable' (MU=2) and a 'Mood enhancer' (MU=1).

Under the 'How' (MU=70), two main categories of 'Course layout ('Where/When')' (MU=43) and 'Content ('What')' (MU=27) emerged. Within the 'Course layout

('Where/When')' category (MU=43), 'As a distinct course' (MU=19) was the most frequent theme to emerge, followed by 'Combined with other material' (MU=7), and 'As a distinct workshop' (MU=6). Within this category was also the themes representing respondents' beliefs that professional development education on dance was not required for all physical therapists ('Special interest group', MU=4; 'Post grad specialty', MU=4). Within the 'Content ('What')' category (MU=27), 'Practice: therapeutic application' was the most frequent theme to emerge (MU=15). In this theme, respondents were interested in content pertaining to how to apply dance in a therapeutic setting, refer to community programs, or treat individuals involved in some dance activity. The second most frequent theme to emerge was 'Theory: health benefits/therapeutic relevance' (MU=8), and pertained to respondents' beliefs that the conceptual basis underlying the use of dance in physical therapy should be included in professional development education.

Within the 'No' responses (n=19), there was little explanation offered as to why respondents believed dance did not warrant special attention within professional development ('No explanation', MU=13). For those who did reply, the most common category that emerged was 'Health benefits/therapeutic relevance' and within this, the theme of 'Not physical activity' (MU=2). In the latter theme, respondents argued that dance was not physical therapy because they either considered it sport, and not intervention (MU=1), or felt it should be left up to the professional dancers (MU=1).

Physical therapy research

Content codes of respondents' beliefs regarding whether dance warrants special attention in physical therapy research (including why and how it may be done) and the frequency with which they emerged are presented in **Table 12**. Eighty-five respondents were

categorized as 'Yes' and 15 respondents were categorized as 'No'. Four respondents were categorized as 'Unsure/Don't know'. Thirteen respondents did not answer, and the meaning of five respondents' answers was determined as irrelevant to the question or was unable to be determined.

Within the 'Yes' responses (n=85) were two main categories 'Why' (MU=65) and 'How' (MU=134). Under 'Why' (MU=65) four main categories emerged: 'In accordance with evidence based practice' (MU=16), 'Believed potential' (MU=12), 'To add research' (MU=11), and 'Knowledge is good' (MU=10). The most prevalent theme under the 'In accordance with evidence based practice' category was 'Start here first' (MU=8) representing respondents belief that the evidence should support the practice and be produced before dance is promoted within the discipline of physical therapy. This is reiterated by the secondary theme that emerged, 'To substantiate clinical practice' (MU=4). The second most frequent category, 'Believed potential' (MU=12), reflected a myriad of justifying statements by respondents who believed dance warranted special attention within physical therapy research (e.g. 'lifelong, social, fun, physical activity that could have huge positive health effects'). The two most frequent themes to emerge in this category were 'To demonstrate therapeutic applicability' (MU=5) and 'To validate its effectiveness' (MU=2). The themes captured by the category of 'Believed potential' (MU=12) were distinguished by those grouped under the 'Skeptical of potential' (MU=5) category, as the latter themes reflected a suspicion of dance until it was supported by evidence versus the former reflected a belief in dance which would be justified by research. The third most frequent category, 'To add research', reflected respondents' belief that more research was required, either an addition to the established literature (MU=2) or the perceived dearth of (MU=3). The theme 'To

inform/support' (MU=3) also emerged within this category, and reflected respondents belief that research could be used to inform policy makers (MU=1), clients (MU=1), clinical guidelines (MU=12), or the development of dance programs (MU=1). Finally, the fourth major category to emerge was 'Knowledge is good' (MU=10). Themes within this category were in support of research in general and the appreciation respondents would have for further knowledge on this topic ('Would be interesting', (MU=3); 'Would be helpful', (MU=1); 'Could be helpful', (MU=1); 'Good to be aware' (MU=1); etc.). Under 'How' (MU=134), 'What' was the major category to emerge (MU=117), followed distantly by 'Who' (MU=6). Under the category 'What' emerged 3 major themes emerged: 1) 'Outcomes' (MU=64), 2) 'Population' (MU=29) and 3) 'Design' (MU=14). The theme 'Outcomes' was represented 30 potential outcomes (MU=63) categorized under 6 outcome areas ('Physical', MU=29; 'Social', MU=3; 'Psychological', MU=8; 'Neurological', MU=1; 'Participation', MU=4, and 'Various', MU=18) that respondents believed should be assessed in studies evaluating the use of dance in physical therapy. Under the theme 'Population' emerged three themes ('Diagnostic category', MU=9; 'Age category', MU=9, and 'Various', MU=11) of potentially applicable client populations that should be included in research studies. Diagnostic categories listed by respondents to be studied ranged from physical disabilities to cardiovascular and neurological chronic conditions to psychiatric illnesses. Age categories listed by respondents to be studied ranged from children to elderly, although the majority of responses fell into the elderly theme (MU=6). The theme 'Various' was comprised of a diverse array of general condition categories that were not elaborated on by respondents ('Chronic conditions', MU=4; 'Clients', MU=2; 'Community', MU=1; 'Special population', MU=1; and 'Various', MU=3). Under the theme 'Design' (MU=14), emerged

various study designs offered by respondents to explore the use of dance in physical therapy. Pre-post studies were most commonly suggested (MU=6), followed by experimental (MU=3) and case studies (MU=2). One respondent suggested the execution of a randomized controlled trial (MU=1) comparing dance classes to an instructor-led exercise program.

Within the 'No' responses (n=13), little explanation was offered as to why respondents believed dance did not warrant special attention within physical therapy research ('No explanation', MU=8). For those who did reply, the most common category that emerged was 'Questions' in which respondents believed research should first focus on more relevant clinical issues ('Focus on clinical questions', MU=1; 'Focus on serious illness or disability first', MU=1) before exploring questions on dance. Interestingly, one response to emerge under 'Health benefits/therapeutic utility' argued against the research of dance because of its intuitive value (as perceived by the respondent) to which research on dance would add little: 'I think most would agree dance has general aerobic, anaerobic and balance benefits. I don't think research would add a lot'.

General comments

Some general themes that emerged from Question 10 asking 'is there anything you would like to add about your perceptions and thoughts about dance as a therapeutic intervention in the practice of physical therapy". These were diverse and reinforced the responses to the questionnaire.

Definition of dancer

Content codes of respondents' definition of 'dancer' and the frequency with which they emerged are presented in **Table 13**. Responses were categorized into two main

categories, ‘Inclusive’ (n=61; MU=111) and ‘Restrictive’ (n=31; MU=53). Twenty-four respondents did not answer, and the meaning of five respondents’ answers was unable to be determined.

The main theme to emerge within the ‘Inclusive’ category was ‘Participation’ (MU=29), followed by smaller themes of ‘Knowledge and skill-average’ (MU=14), ‘Takes classes/lessons’ (MU=13), ‘As a recreational activity’ (MU=12), and ‘Enjoys dancing’ (MU=11). The main theme to emerge within the ‘Restrictive’ category was ‘Knowledge and Skill-above average’ (MU=10), followed by ‘Formalized training’ (MU=9), ‘As a professional occupation’ (MU=8) and ‘Participation’ (MU=8).

CHAPTER 5

DISCUSSION

To our knowledge this is the first study to explore physical therapists' beliefs and practices with respect to dance. These findings are important as various forms of dance have been shown to be a safe and effective exercise modality for certain populations. Dance may have an even wider applicability to CLCs that physical therapists, as exercise experts, play a role in preventing and treating. As our population ages and becomes more sedentary, the burden of CLCs rises, as do their associated social and economic costs. As such, increasing the levels of physical activity is critical to sustaining a healthy and productive population. A recent prospective study demonstrated that as little as one year of regularly physical activity can markedly decrease the burden of CLCs (or their symptoms) requiring medical attention, and this drop is associated with substantial reductions in healthcare costs (Martinson, Crain, Pronk, O'Connor, & Maciosek, 2003). Because dance is often perceived as being social and fun – almost so that 'it does not feel like exercise', it may offer physical therapists an excellent tool with which to increase, and importantly sustain, physical activity among their clients.

Representativeness of the sample

An ambitious response rate of 40% (Portney & Watkins, 2000) was selected to better ensure the data were representative (i.e. externally valid) of the population from which it was attained. Dillman's method recognizes that the external validity of survey is severely limited by low response rates, and thus advises researches to allocate resources to multiple contacts

with a small sample (the tailored-design) as opposed to few contacts with a large sample (Dillman, 2007). In our study, the Dillman method was effective with more than half of the randomized sample (56.5%) responding to the questionnaire. The minimal burden imposed to complete the survey and its novel topic may have facilitated the high response rate. With respect to respondent demographics and characteristics, the survey appeared to have captured a representative sample of physical therapists in BC, which increased our confidence in the findings with respect to this populations' beliefs and practices.

Dance-related beliefs and practices

As a whole, respondents expressed moderate to strong agreement that dance, in some form, could positively impact physiological and psychological clinical parameters (**Table 3 and 4**). Interestingly, respondents' strongest beliefs pertained to the influence of dance on outcomes of mood and balance, which are among the most extensively studied outcomes that have been shown to have improvement in response to dance (Federici et al., 2005; Hackney, 2007; McKinley et al., In press; Noreau et al., 1995; Noreau et al., 1997; Palo-Bengtsson, 2002). Although respondents' positive beliefs seemed to reflect knowledge about the dance literature, it is likely that their beliefs were informed by a general notion of the attributes of dance and less by an intimate knowledge of the evidence. Indeed, content analysis of open-ended questions revealed a lack of familiarity with the dance literature among respondents (with some questioning if it even existed), save for an isolated few who cited the literature with confidence. Respondents' lack of familiarity with the attributes of dance and their potential effects was also supported by the consistent, albeit small, presence of 'Don't know' responses with respect to the beliefs of the impact of different dance categories on various physiological and psychological effects (**Table 2**). Although respondents' lack of

knowledge with respect to dance may be partly explained by the small-to-moderate base of literature supporting it (and thus further research, as suggested by respondents is warranted) it may also suggest poor translation, or poor consumption, of the existing evidence.

While most respondents did not prescribe dance in their practices, most were interested in learning more and doing so in the future (for health and wellness, prevention, and remediation of CLCs) (**Figures 5, 6, and 7**). A moderate portion did prescribe dance but stated that they would like to do it better. A small proportion of respondents stated that they did not include dance in their practice and had no interest in doing so (extreme negative response), or did include dance in their practice but believed that they were prescribing it effectively (extreme positive response). While a proportion of respondents stated that the practice of dance was 'Not Applicable', it is difficult to determine what dimensions of dance or their practice they felt to be incompatible with each other. For example, while some respondents perceived an age category (e.g. elderly), or functional limitation as a limitation to the prescription of dance, others perceived them as an opportunity.

Relationship between dance-related beliefs and practices

Comparing respondents' beliefs and practice with respect to the use of dance in promoting health and wellness, or preventing and/or treating a CLC showed little to no relationship, suggesting that respondents' beliefs do not influence their practice with respect to dance. While respondents reported moderate to strong beliefs regarding the utility of dance, their beliefs failed to translate into practice for those reasons. Considering that beliefs are included in several behavioral models (e.g. Theory of planned behavior, Social-cognitive theory, Self-determination theory) as just one component contributing to the action of an

individual, a discordance between beliefs and practices here is not entirely surprising (Ajzen, 1991; Bandura, 1989; Ryan & Deci, 2000). Future studies aimed at either assessing or modifying physical therapists' beliefs and practices may benefit from combining the preliminary findings of this study with a key behavior model.

Relationship between demographic characteristics and dance-related beliefs and practices

In general, respondents' beliefs and practices were only somewhat explained by their demographic characteristics. Correlations, when present, ranged between .24 (little or no relationship) and .34 (fair relationship) (Portney & Watkins, 2000), with all but one of the seven significant correlations falling in the 'fair' category (**Tables 5 and 6**). The strongest correlations were observed between practices and clinical experience (**Table 6**). Interesting, however, was the observation that years of clinical experience was not related to beliefs of dance. Similar discordance between beliefs and practices was seen with demographic characteristics of age and sex. Women had stronger beliefs, but there was no difference between sexes with respect to practices; older clinicians more commonly employed dance in their practice, but there was no association between age and beliefs.

Respondents perceptions of the utility of dance in physical therapy

Client receptivity

Most respondents neither strongly agreed nor disagreed that their clients would be receptive to dance as a therapeutic intervention but, rather, had beliefs somewhere in between

(**Table 8**). Of note were the respondents' diverse beliefs with respect to the number of clients perceived as interested in dance, which ranged from none at all, to many. Women and children (and sometimes the elderly) predominantly emerged as being potentially interested clients. Men, teenagers and adults were believed to be disinterested. The reasons explaining why clients may not be interested were difficult to interpret, as it was unclear whether respondents were reporting actual perceptions of their client, or the assumed perceptions based on their own norms and cultural values. For example, are 'truck drivers' and 'male laborers' stated to be uninterested because those individuals have explicitly declared disinterest to the physical therapist, or is their disinterest assumed by the respondent based on their own cultural interpretations of masculine and feminine? A limitation of self-administered questionnaires as opposed to an interview format is that we cannot tease out these issues further with respondents. Therefore, caution is advised in interpreting these findings in which the respondents were asked to speak on behalf of their clients.

Practice

Within our sample, the belief that dance deserved attention within physical therapy practice was markedly more prominent than the belief that it did not (**Table 9**). The justifications for the inclusion of dance were related to perceived health benefits and therapeutic relevance. Respondents stated interest in dance, not only for its potential physiological impacts, but notably for its concomitant social and psychological attributes. Despite dance's perceived benefits however, only one respondent stated the number of clients to which dance could be applied, and her or his response of 'some' did not indicate that she or he perceived dance to be a comprehensively applicable modality. Indeed, respondents questioned applicability of dance emerged in the ambiguous category of 'Yes,

but…' where one respondent reported that only a small number of their clients would be interested, or two other respondents who believed that dance was not applicable to elderly with poor functional capacity or non-dancers. The perceived limits of dance was reiterated even within the affirmative 'Yes' group of responses, by the restricted groups of age (children) and diagnostic ('certain physical conditions') categories indicated as populations to which dance might apply.

Justifications for why dance is not deserving of attention in physical therapy practice were unrelated to the perceived health benefits of dance. Indeed some respondents answering 'No' did still perceive a potential utility of dance in physical therapy. Their agreement however was conditional, as they believed dance was not worthy of special attention (compared with other activities or alternatives), and was contingent on a therapists' particular interest and clientele.

Perceptions of how dance should be applied, or even conceptualized (e.g. a therapeutic intervention, an adjunct, a functional and enjoyable activity of daily living), within physical therapy were diverse. As a whole, respondents believed that dance could be used for goals related to balance, coordination, or other rehabilitation goals in a class or on an individual basis. What did emerge as a strong and consistent theme under how dance should be applied in practice, was respondents' perception of the need for more education for therapists on the evidence for and application of dance in physical therapy – namely through professional development courses and information on classes and specifics on dance promotion and/or prescription.

Entry-level education

Entry-level education was the one area where more respondents believed dance was less deserving of special attention (**Table 10**). The reason for its exclusion however, appeared to have little to do with its perceived therapeutic utility. Rather, respondents believed the 2-year master's degree entry-level curriculum to be too full with 'basics' to justify additional material. Even those responding affirmatively often prefaced their agreements with the condition that dance receive only brief attention, and suggestion that it would perhaps be better as a post-graduate specialty (also a response often stated by respondents answering 'No'). As with the affirmative responses in physical therapy practice, the most prominent justification by those answering 'Yes' to the inclusion of dance in entry-level education, were the believed health benefits (physical, social, psychological) and therapeutic relevance (valued tool) of dance, and the increased awareness of these attributes it deserves.

Professional development

Most respondents believed that dance warranted attention within physical therapy professional development (**Table 11**). Again, the majority of respondents believed dance was worthy of attention because of its perceived health benefits and therapeutic relevance (physical and psychological), which deserved increased awareness by physical therapists. With respect to how dance should be included, most therapists believed the practical implications of dance in practice should be emphasized over its theoretical foundations, particularly with respect to increased knowledge of classes in the community or in establishing collaborations with other professionals who may help facilitate the use of dance among clients (e.g. dance professionals, fitness instructors). Most respondents were interested in this material being delivered via a distinct course or workshop specific to dance

for interested therapists. It was difficult to determine the reasoning of respondents who did not believe dance warranted attention in professional development, as most respondents, save a few, provided no explanation for their disagreement. Those who did, believed as above, that dance should not be incorporated into physical therapy unless a physical therapist treated a dancer (but not used as an intervention). Based on those who answered affirmatively but with qualification ('Yes, but…'), it may presumed that some negative respondents believed dance deserves some attention, but not 'special attention' ('no more than any other form of physical activity') as indicated in the question.

Research

Most respondents agreed that dance warranted attention within physical therapy research (**Table 12**). Research on dance was considered worthwhile because it was necessary to substantiate its current or future use within clinical practice consistent with evidence-based practice. Within the affirmative responses, not all respondents believed in the utility of dance as a therapeutic intervention or health promotion activity, but did believe it was worthwhile to investigate if this was the case. Overall, respondents answering both in the affirmative and negative perceived research and related knowledge with high regard. Interesting as well was the diverse range of populations and outcomes considered as worthy of study. Balance, the most commonly stated outcome to be studied, reflects the literature to date.

Common themes

Several prominent themes that emerged through content analysis warrant attention. Responses of those not in favor of dance can be categorized in the following themes: 'Dance history', 'Functional capacity – limitations', and 'Not special attention'.

With respect to 'dance history', respondents believed that clients would only be interested in dance, or the therapist would only consider prescribing dance, if the client had danced in the past. Respondents perceived clients would not be interested in a new (and potentially unfamiliar) activity (**Table 8**), and furthermore because few clients have danced prior to therapy, dance was not considered a very applicable modality in physical therapy. First, although it may not be applicable to everyone, dance may be applicable to some; as noted by other respondents, by those who are not interested in traditional therapeutic exercises (Visram, Crosland, Unsworth, & Long, 2007). What is noteworthy is the preference respondents had for universal therapies (which may not be effective and meaningful to all clients) as compared with alternative therapies such as dance (which may impact fewer clients, but do so effectively). Populations are heterogeneous with respect to the interest and needs of individuals, and thus warrant a variety of exercise modalities from which to choose (Connor, 2000). Second, although dance may be familiar only to some, lack of experience does not preclude a client from enjoying and benefiting from dance in the future. Several studies have evaluated dance in individuals with little to no dance experience (in both men and women) and have shown those individuals to have been satisfied with dance as a form of activity, often over other more familiar forms of activity (e.g. walking or aerobic exercise classes) (Belardinelli et al., 2008; Federici et al., 2005; Hackney, 2007; McKinley et al., In press; Sandel et al., 2005; Visram et al., 2007).

With respect to the theme 'functional capacity', most respondents who believed that dance was not applicable to their clients justified this on basis of their physical limitations. The emergence of this theme could be explained by a lack of understanding by therapists with respect to the diversity and malleability of dance. El-Halawani (El-Halawani, 1982), reported a case study of belly-dancing with elderly people confined to wheelchairs, where rather than a focus on foot work, movement included those of the torso and upper limbs. In McKinley's randomized controlled trial evaluating the use of the tango for balance, a diverse group of senior seniors (over 80 years of age) were evaluated with several conditions and limitations (e.g. required canes, had a hip replacement, stable cardiovascular disease), and were able to markedly improved their balance. Investigators noted that the participant who had previously reported the most falls and needed to walk slowly with a cane, was the best dancer (subjectively assessed) in the study (McKinley et al., In press).

With respect to the theme 'not special attention', respondents often stated that while dance may deserve some attention, it did not deserve 'special attention' over other therapies. They argued that competing demands of resources and time within physical therapy practice, education, and research should limit the degree of attention to dance. Although this did not emerge in pre-testing, it would be worthwhile to revise future surveys or assessments of physical therapists' beliefs with phrasing of questions to better understand this point.

Respondents answering positively with respect to dance often presented reasoning that emerged in the following themes: 'Enjoyable', and 'Social'. For 'Enjoyable', many respondents believed that dance was an enjoyable and fun activity that would encourage clients' participation because it does not feel like onerous exercise. Some went further to suggest that dance was more fun that traditional exercise, and may promote greater

motivation for, and adherence to, exercises and sustained activity. These beliefs were reflected in respondents' justification for why dance should be included in physical therapy practice and education, but also emerged as a potential question for research – that is, to compare adherence in dance program (activity perceived to be enjoyable) to adherence in an exercise program (activity not perceived to be enjoyable) via a randomized controlled trial. Indeed, Belardinelli and colleagues' randomized controlled trial tested this hypothesis specifically, and demonstrated significantly higher adherence to waltzing classes then traditional exercise class (using a bike and treadmill) (Belardinelli et al., 2008). Respondents' perceived enjoyment of dance is also supported by other literature showing improved psychological responses to dance (Noreau et al., 1995; Noreau et al., 1997; Sandel et al., 2005), however further study of this dimension across diverse dance styles and client populations is warranted.

With respect to dance being 'Social', many respondents believed that this attribute of dance facilitates clients' connection with others and participation within the community. While some believed dance to be a positive social activity, others went further to suggest that the social qualities of dance may improve clients' psychological state as well as improve their adherence to the activity compared with traditional forms of exercise.

Study limitations

This study has a number of limitations. First, the main tool used is a self-report questionnaire survey, and thus our findings are subject to the limitations of self-report data (e.g., misunderstanding/misinterpretation of questions and unknown accuracy or motivation of the respondent). Self-administered surveys are however considered a valid method for

examining phenomena that can be assessed through self-observation (i.e., beliefs), and allow for more comprehensive and efficient sampling than that afforded by one-on-one interviews or focus groups (Dillman, 2007; Portney & Watkins, 2000). Thus, while limitations may exist, questionnaires remain the state of the art to examine this type of information and data. Further, based on our high response rate of questionnaires, and low rate of missing data within the questionnaires, we are confident that we have captured the true range of beliefs and practices for this population.

Second, dance is a complex construct with diverse components that limit a universal understanding of 'dance' (Kaeppler, 2000). To capture the broad spectrum of dance, we included an array of dance types informed by those in the science and social science literature. While we aimed to be as comprehensive as possible, the dance types included may be insufficient to capture all 'dance' categories. Conversely, our selections may be too broad to be meaningful. Because this is a descriptive study, we chose to examine as broad a picture as possible to assess the beliefs and practices of physical therapists related to dance as a therapeutic exercise alternative. Studies are needed, however, to further evaluate the physiologic and psychosocial benefits of different dance types, their prescription parameters, and whether the beliefs of physical therapists are supported.

Third, because there is a paucity of studies in the area of beliefs and practices of physical therapists with respect to dance, we had relatively little literature to draw upon in our discussion. Because of this however, our study provides an important base for future research in this neglected area.

CHAPTER 6

SUMMARY AND CONCLUSIONS

Summary

Dance is a form of activity that physical therapists believe can improve various physiological and psychological outcomes. Although few practitioners prescribe dance for these reasons, they expressed interest in doing so in the future. Respondents reported some reservation with respect to the widespread applicability of dance and the range of clients who may be interested in or benefit from dance as a therapeutic intervention. There was strong agreement however that dance deserved greater attention within physical therapy practice, professional development and research, but to a lesser extent entry-level education.

Conclusions

The role of physical activity in health promotion is unequivocal. Its converse, physical inactivity, is associated with extensive cost to human lives and the health care delivery system. Physical therapy is a health care profession that exploits physical activity and exercise in the prevention of lifestyle conditions and sometimes their 'cure' as well as management. To our knowledge, this is the first study to assess physical therapists' beliefs and practices with respect to the use dance as an intervention. The results of this study have illuminated the present and future role of dance as an intervention prescribed by physical therapists with the potential for greater sustained adherence. Generally, physical therapists have favorable beliefs about the physiological and psychological benefits of dance as a physical activity and potential therapeutic intervention. Those with less favorable opinions about dance tended to believe its application was limited by the gender of the client, age,

conditions, cost and interest. Further study is needed to verify the beliefs of practitioners about dance and its actual attributes. Further study will also clarify which clients are more suited and most responsive to the benefits of dance. Different types of dance are likely to be associated with a range of physical and psychological benefits, thus warrant being examined in controlled longitudinal studies.

TABLES

Table 1. Respondent demographic and personal characteristics

	n (%)	Range	Mean (SD)
Sex	121 (99.2)		
Women		--	94 (77.7)
Men			27 (22.3)
Age	119 (97.5)	25-66	42.5 (10.1)
Year graduated from entry-level PT program	119 (97.5)		
1961-1970			4 (3.4)
1971-1980		--	23 (19.3)
1981-1990			31 (26.1)
1991-2000			36 (30.3)
2001-2007			25 (21.0)
Country of entry-level PT education	119 (97.5)		
Canada		--	93 (78.2)
Other[a]			26 (21.8)
Primary area of specialization or area of practice	120 (98.4)[b]		
Cardiovascular			8 (4.7)
Neurological			24 (14.1)
Orthopedics		--	72 (42.4)
Respiratory			11 (6.5)
Research			2 (1.2)
Other[c]			53 (31.2)
Years clinical experience	120 (98.4)	.5-43	17.3 (10.8)
Dance background	118 (96.7)		
No experience			7 (5.9)
Social occasions only		--	74 (62.7)
As a form of exercise			9 (7.6)
Formal dance lessons			28 (23.7)
Self-defined dancer	121 (99.2)		
Yes		--	26 (21.5)
No			95 (78.5)

[a]Top 3= United Kingdom (11); Australia (7); and New Zealand (3)
[b]Respondents were allowed to answer in more than 1 area of practice, 170 responses provided by 120 respondents
[c]Top 3= Pediatrics(10); Geriatrics (9); and Community Care (6)

Table 2. 'Don't know' responses about specific dance categories[a]

Potential effect	Dance Category				
	Ballroom	**Latin Am.**	**Formalized**	**Ethnic/Folk**	**Informal**
Aerobic capacity					
Total n (%)	n=122 (100)	n=122 (100)	n=122 (100)	n=122 (100)	n=122 (100)
'Don't know' n (%)	n=5 (4.1)	n=4 (3.3)	n=6 (4.9)	**n=16 (13.1)**	n=5 (4.1)
Anaerobic capacity					
Total n (%)	n=121 (99.2)	n=121 (99.2)	n=121 (99.2)	n=121 (99.2)	n=121 (99.2)
'Don't know' n (%)	**n=17 (14.0)**	**n=17 (14.0)**	**n=18 (14.9)**	**n=28 (23.1)**	**n=17 (14.0)**
Balance					
Total n (%)	n=122 (100)	n=122 (100)	n=122 (100)	n=122 (100)	n=121 (99.2)
'Don't know' n (%)	n=2 (1.6)	n=2 (1.6)	n=2 (1.6)	**n=13 (10.7)**	n=2 (1.7)
Flexibility					
Total n (%)	n=122 (100)	n=122 (100)	n=122 (100)	n=120 (98.4)	n=121 (99.2)
'Don't know' n (%)	n=7 (5.7)	n=6 (4.9)	n=3 (2.5)	**n=16 (13.3)**	n=6 (5.0)
Mood					
Total n (%)	n=122 (100)	n=122 (100)	n=120 (98.4)	n=122 (100)	n=121 (99.2)
'Don't know' n (%)	n=4 (3.3)	n=4 (3.3)	n=7 (5.8)	**n=13 (10.7)**	n=4 (3.3)
Relaxation					
Total n (%)	n=122 (100)	n=121 (99.2)	n=121 (99.2)	n=122 (100)	n=121 (99.2)
'Don't know' n (%)	n=7 (5.7)	n=5 (4.1)	n=5 (4.1)	**n=14 (11.5)**	n=5 (4.1)
Strength: Core/Trunk					
Total n (%)	n=121 (99.2)	n=122 (100)	n=122 (100)	n=121 (99.2)	n=121 (99.2)
'Don't know' n (%)	n=4 (3.3)	n=4 (3.3)	n=4 (3.3)	**n=15 (12.4)**	n=5 (4.1)
Strength: Extremities					
Total n (%)	n=121 (99.2)	n=122 (100)	n=122 (100)	n=122 (100)	n=121 (99.2)
'Don't know' n (%)	n=4 (3.3)	n=6 (4.9)	n=5 (4.1)	**n=17 (13.9)**	n=5 (4.1)
Weight Loss					
Total n (%)	n=121 (99.2)	n=122 (100)	n=122 (100)	n=122 (100)	n=121 (99.2)
'Don't know' n (%)	n=5 (4.1)	n=5 (4.1)	n=7 (5.7)	**n=17 (13.7)**	n=6 (5.0)

[a] In response to the template question for Section 1 (45 questions): "Prescribed optimally, [dance category] can improve [potential effect]". Bolded values highlight responses in which more than 10% of respondents answered 'Don't know'.

Table 3. Mean scores of beliefs about specific dance categoriesa

Potential effect	Dance Category				
	Ballroom Mean (SD)[b] n (%)	**Latin Am.** Mean (SD) n (%)	**Formalized** Mean (SD) n (%)	**Ethnic/Folk** Mean (SD) n (%)	**Informal** Mean (SD) n (%)
Aerobic capacity	**4.97 (0.97)** n=117 (95.9)	**5.43 (0.69)** n=118 (96.7)	**4.98 (1.13)** n=116 (95.1)	**5.02 (1.01)** n=106 (86.9)	**4.79 (1.05)** n=117 (95.9)
Anaerobic capacity	3.83 (1.46) n=104 (85.2)	**4.36 (1.34)** n=104 (85.2)	**4.48 (1.48)** n=103 (84.4)	**4.05 (1.49)** n=93 (76.2)	3.88 (1.42) n=104 (85.2)
Balance	**5.29 (0.83)** n=120 (98.4)	**5.28 (0.81)** n=120 (98.4)	**5.67 (0.59)** n=120 (98.4)	**4.87(1.06)** n=109 (89.3)	**4.55 (1.18)** n=119 (97.5)
Flexibility	**4.51 (1.16)** n=115 (94.3)	**4.86 (1.07)** n=116 (95.1)	**5.68 (0.57)** n=119 (97.5)	**4.36 (1.33)** n=104 (85.2)	3.87 (1.32) n=115 (94.3)
Mood	**5.47 (0.65)** n=118 (96.7)	**5.42 (0.74)** n=118 (96.7)	**5.23 (0.80)** n=113 (92.6)	**5.25 (0.85)** n=109 (89.3)	**5.23 (0.77)** n=117 (95.9)
Relaxation	**5.03 (1.10)** n=115 (94.3)	**4.87 (1.28)** n=116 (95.1)	**4.92 (1.15)** n=116 (95.1)	**4.93 (1.17)** n=108 (88.5)	**4.80 (1.20)** n=116 (95.1)
Strength: Core/Trunk	**4.68 (1.13)** n=117 (95.9)	**5.03 (1.01)** n=118 (96.7)	**5.41 (0.78)** n=118 (96.7)	**4.48 (1.28)** n=106 (86.9)	**4.16 (1.27)** n=116 (95.1)
Strength: Extremities	**4.70 (1.12)** n=117 (95.9)	**4.87 (1.07)** n=116 (95.1)	**5.26 (0.98)** n=117 (95.9)	**4.57 (1.25)** n=105 (86.1)	**4.15 (1.26)** n=116 (95.1)
Weight Loss	**4.71 (1.15)** n=116 (95.1)	**4.93 (1.08)** n=117 (95.9)	**4.76 (1.16)** n=115 (94.3)	**4.59 (1.12)** n=105 (86.1)	**4.42 (1.24)** n=115 (94.3)

[a]In response to the template question for Section 1 (45 questions): "Prescribed optimally, [dance category] can improve [potential effect]".

[b]Means based on respondents with responses ranging from 1 to 6, and did not include respondents who answered 'Don't Know' (Table 2). Bolded values highlight responses with stronger agreement (mean $\geq$ 4 on the Likert scale of 6).

Table 4. Mean scores of beliefs about dance as a general concept[a]

Belief	Mean (SD) [b] n (%)
Health and wellness	**5.36(0.87)** n=115 (94.3)
Prevention of a CLC	**5.02(0.98)** n=115 (94.3)
Remediation of a CLC	**4.95(1.02)** n=114 (93.4)
Perception of clients/patients receptivity	3.78(1.06) n=101 (82.8)[a]

[a]In response to the template question for Section 2: "In some form, dance can be prescribed optimally for [Health an wellness/Prevention of a CLC/Remediation of a CLC]". The bottom category was in response to the the last question in Section 2: "My clients/patients would be receptive to dance as therapeutic exercise".
[b]Mean based on respondents with responses ranging from 1 to 6, and did not include respondents who answered 'Not Applicable' (n=17; 14.4%). Bolded values highlight responses with stronger agreement (mean $\geq$ 4 on the Likert scale of 6).

Table 5. Comparison of dance-related beliefs and practices by age and sex

	Belief	Pearson correlation	Pearson Chi-square	Students' T-test
Age	Health and wellness	r =.044 (*p*=ns)	--	--
	Prevention of a CLC	r =.013 (*p*=ns)	--	--
	Remediation of a CLC	r =.021(*p*=ns)	--	--
Sex	Health and wellness	--	--	*p*=ns
	Prevention of a CLC	--	--	*p*=.003
	Remediation of a CLC	--	--	*p*=.007
	Practice	**Pearson correlation**		**Students' T-test**
Age	Health and wellness	r=.236 (*p*=.019)	--	--
	Prevention of a CLC	r=.266 (*p*=.010)	--	--
	Remediation of a CLC	r=.287 (*p*=.005)	--	--
Sex	Health and wellness	--	*p*=ns	--
	Prevention of a CLC	--	*p*=ns	--
	Remediation of a CLC	--	*p*=ns	--

ns=Not significant

Table 6. Comparison of dance-related beliefs and practices by years of clinical experience

Beliefs		Pearson correlation
Years of clinical experience	Health and wellness	r=.075 (*p*=ns)
	Prevention of a CLC	r=.063 (*p*=ns)
	Remediation of a CLC	r=.043 (*p*=ns)
Practices		**Pearson correlation**
Years of clinical experience	Health and wellness	r=.298 (*p*=.003)
	Prevention of a CLC	r=.321 (*p*=.002)
	Remediation of a CLC	r=.340 (*p*=.001)

ns=Not significant

Table 7. Relationship between dance-related beliefs and practices

Variable	Pearson correlation
Health and wellness	r=.21 (*p*=.041)
Prevention of a CLC	r=.15 (*p*=ns)
Remediation of a CLC	r=.16 (*p*=ns)

ns=Not significant

Table 8. Content analysis of client receptivity[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
Somewhat agree, somewhat disagree[b] (70 responses)				
1. Don't know client receptivity (+/-)[c] (4)	-	-	-	-
2. Don't know enough to know if possible or appropriate (+/-) (1)	-	-	-	-
3. Why (+/-) (159)	3.1 No explanation (7)	-	-	-
	3.2 Not applicable (-) (1)	3.2.1 No explanation (1)	-	-
	3.3 Unable to determine (3)	-	-	-
	3.4 Health benefits/ therapeutic relevance (15)	3.4.1 No explanation (+) (2)	-	-
		3.4.2 Easier to prescribe certain types of dance (e.g. ballroom) (+) (1)	-	-
		3.4.3 Valued tool (4)	3.4.3.1 Functional (+) (1)	
			3.4.3.2 Low impact for extended period (+) (1)	-
			3.4.3.3 As an alternative to other forms of aerobic exercise (+) (1)	-
			3.4.3.4 Gets people moving (1)	3.4.3.4.1 Huge part of health and wellness (+) (1)
		3.4.4 Clients may not see dance as a therapeutic intervention (-) (1)	-	-
			-	-
		3.4.5 Physical (+) (1)	3.4.6.1 As compared to traditional exercise (+) (1)	-
		3.4.6 Social (1)	3.4.7.1 Enjoyable (3)	3.4.8.1.1 Enjoyable (+) (1)
		3.4.7 Psychological (4)		3.4.8.1.2 May improve compliance and adherence (+) (1)
				3.4.8.1.3 Thus, potential therapeutic tool (+) (1)
			3.4.7.2 Relaxing (+) (1)	-
				-
		3.4.8 Other aspects 'as compared to traditional exercise' (1)	3.4.8.1 More familiar (+) (1)	-
	3.5 Population applicability (25)	3.5.1 Not applicable (1)	3.5.1.1 Too early (-) (1)	-
		3.5.2 Quantity of applicable	3.5.2.1 Not all (-) (2)	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		clients (2)	3.5.3.1 Orthopedic injuries (-) (1)	
		3.5.3 Diagnostic category (6)	3.5.3.2 Total knee replacement/total hip replacement (2)	3.5.3.2.1 In some form (+) (1)
				3.5.3.2.2 Post in-patient (+) (1)
			3.5.3.3 Osteoarthritis/rheumatoid arthritis (1)	3.5.3.3.1 In some form (+) (1)
			3.5.3.4 Lower extremity amputations (1)	3.5.3.4.1 Post in-patient (+) (1)
			3.5.3.5 Chronic pain (-) (1)	-
			3.5.4.1 Children (3)	3.5.4.1.1 Mildly disabled (+) (1)
		3.5.4 Age category (4)		3.5.4.1.2 Severely disabled (-) (1)
				3.5.4.1.3 Severely disabled (+) (1)
				3.5.4.2.1 In some form (+) (1)
			3.5.4.2 Elderly (1)	-
			3.5.5.1 Insufficient (-) (10)	-
		3.5.5 Functional capacity (11)	3.5.5.2 Sufficient (+) (1)	
			3.5.6.1 Not in need of increased activity (-) (1)	-
		3.5.6 Fitness category (1)		-
			3.6.1.1 No explanation (-) (1)	
	3.6 Client interest (71)	3.6.1 Not interested (4)	3.6.1.2 In dance as exercise (-) (2)	-
			3.6.1.3 In exercise in general (-) (1)	-
				-
		3.6.2 Quantity of interested clients (20)	3.6.2.1 None (-) (1)	-
			3.6.2.2 Most not (-) (2)	-
			3.6.2.3 Not all (-) (1)	-
			3.6.2.4 Small/few (-) (2)	-
			3.6.2.5 Others not (-) (2)	-
			3.6.2.6 Some (+) (7)	-
			3.6.2.7 Many (+) (2)	-
			3.6.2.8 Many (-) (1)	3.6.2.9.1 Due to increased cultural exposure (+) (2)
			3.6.2.9 Increasing (2)	
				3.6.3.1.1 Children (+) (2)
		3.6.3 Age category (16)	3.6.3.1 Children (3)	3.6.3.1.2 Parents of (+) (1)
				3.6.3.2.1 (-) (1)
			3.6.3.2 Adolescents (2)	3.6.3.2.2 Except informal (+) (1)
				3.6.3.3.1 (-) (1)

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
			3.6.3.3 Adults (2)	3.6.3.3.2 (+) (1) 3.6.3.4.1 (-) (2)
			3.6.3.4 Elderly (8)	3.6.3.4.2 (+) (6)
				-
			3.6.3.5 Families (+) (1)	-
		3.6.4 Gender category (9)	3.6.4.1 Female (+) (4)	-
			3.6.4.2 Male (-) (5)	
		3.6.5 Culture category (3)	3.6.5.1 Trades people/laborers (-) (1)	-
			3.6.5.2 Truck drivers, construction workers, etc. (-) (1)	-
			3.6.5.3 First nations (1)	3.6.5.3.1 Poor compliance with group instruction courses (-) (1)
				-
		3.6.6 Fitness category (1)	3.6.6.1 Less active (+) (1)	
		3.6.7 In improving personal health (2)		-
			3.6.7.1 Not interested (-) (1)	-
			3.6.7.2 Interested (+) (1)	-
		3.6.8 Point of recovery (2)	3.6.8.1 In-hospital (-) (1)	-
			3.6.8.2 Later in recovery (+) (1)	-
		3.6.9 Dance history (9)	3.6.9.1 Have experience (+) (4)	-
			3.6.9.2 No experience (-) (2)	-
			3.6.9.3 No experience (+) (3)	-
		3.6.10 Perceived lack of (3)	3.6.10.2 Skill (-) (2)	-
			3.6.10.2 Time and energy (-) (1)	-
		3.6.11 Poor self image (-) (2)	-	3.7.1.1.1 With peers (+) (1)
	3.7 Client environment (25)	3.7.1 Community classes (5)	3.7.1.1 Available (1)	
			3.7.1.1 Unaware if available (+/-) (2)	-
			3.7.1.1 Limited to no availability (-) (2)	-
		3.7.2 Appropriate/modified classes (8)		-
			3.7.2.1 Rural community (-) (2)	-
			3.7.2.2 Perceived lack of (-) (1)	
			3.7.2.3 Unaware if available (+/-) (2)	-
			3.7.2.4 Limited to no availability (-) (1)	-
			3.7.2.5 Taught by physical therapist (+) (1)	-
				-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		3.7.3 Accessibility barriers (7)	3.7.2.6 Clients may like (+) (1)	-
			3.7.3.1 Transportation (-) (1)	-
			3.7.3.2 Cost (-) (4)	-
		3.7.4 Social network (3)	3.7.3.3 Time (-) (2)	3.7.4.1.1 Involved (+) (1)
			3.7.4.1 Family and friends (3)	3.7.4.1.2 Not involved (-) (2)
		3.7.5 Homebound (2)		-
			3.7.5.1 (-) (1)	-
	3.8 Physical therapist (10)	3.8.1 Qualifications (3)	3.7.5.1 (+) (1)	
			3.8.1.1 Question competency to	-
		3.8.2 Specific practice (7)	prescribe (-) (3)	-
			3.8.2.1 Home care (-) (1)	-
			3.8.2.2 Outpatient rotation (-) (1)	-
			3.8.2.3 Inpatient rotation (-) (1)	-
	3.9 Other (2)	3.9.1 Tend to recommend more of 'recreation sports' (-) (1)	3.8.2.4 Client dependent (+/-) (4)	
		3.9.2 Clients like a variety of options to improve their deficits and work on their goals (+) (1)	-	-
			-	-
Agree[d] (19 responses)				
1. Why (+/-) (45)	1.1 No explanation (2)	-	-	-
	1.2 Health benefits/therapeutic relevance (25)	1.2.1 No explanation (3)	-	-
		1.2.2 Valued tool (1)	1.2.2.1 Unique form of exercise (1)	-
		1.2.3 Holistic (1)	1.2.3.1 Addresses all aspects of health and wellness (1)	-
		1.2.4 Physical (4)	-	-
		1.2.5 Social (3)	1.2.5.1 Social (1)	-
			1.2.5.2 As compared to traditional exercise (1)	-
			1.2.5.3 Easier to motivate clients (1)	-
		1.2.6 Psychological (11)	1.2.6.1 Enjoyable (11)	1.2.6.1.1 Enjoyable (6)
				1.2.6.1.2 As compared to traditional exercise (3)
				1.2.6.1.3 Easier to motivate clients (1)
				1.2.6.1.4 Especially if incorporate

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				music from era (1)
		1.2.7 Neurological (1)	1.2.7.1 Body awareness and motor planning (1)	-
		1.2.8 Compliance and adherence (1)	1.2.8.1 Increases/is better (1)	-
	1.3 Population applicability (6)	1.3.1 Diagnostic category (2)	1.3.1.1 Balance difficulties, postural problems, weakness (1)	-
			1.3.1.2 Movement disorder (1)	-
		1.3.2 Age category (4)	1.3.2.1 Children (2)	-
			1.3.2.2 Elderly (2)	-
	1.4 Client interest (12)	1.4.1 Quantity of interested clients (2)	1.4.1.1 Some (2)	1.4.1.1.1 Some (1) 1.4.1.1.2 Consider dance welcome and worthwhile exercise (1)
		1.4.2 Age category (7)	1.4.2.1 Children (5)	1.4.2.1.1 Children (3) 1.4.2.1.2 And their families (1) 1.4.2.1.3 Typical activity (1)
			1.4.2.2 Adolescents (1)	-
			1.4.2.3 Elderly (1)	-
		1.4.3 Gender category (2)	1.4.3.1 Female (2)	-
		1.4.4 Dance history (1)	1.4.4.1 Have experience (1)	-
2. Agree, but… (8)	2.1 Population applicability (1)	2.1.1 Functional capacity (1)	2.1.1.1 Sufficient (1)	2.1.1.1.1 Depends on (1)
	2.2 Client interest (4)	2.2.1 Quantity of interested clients (1)	2.2.1.1. Some would not! (1)	-
		2.2.2 Gender category (2)	2.2.2.1 Male (2)	2.2.2.1.1 Male (1) 2.2.2.1.2 Boys less interested than girls? (1)
		2.2.3 Dance history (1)	2.2.3.1 Have experience (1)	2.2.3.1.1 Otherwise not prescribed (1)
	2.3 Client environment (3)	2.3.1 Community classes (1)	2.3.1.1 Availability (1)	2.3.1.1.1 Depends on (1)
		2.3.2 Social network (1)	2.3.2.1 Depends on (1)	-
		2.3.3 Accessibility barriers (1)	2.3.3.1 Geriatric population (1)	-
Not applicable (17 responses)				
Disagree (12 responses)[e]				
1. Why (22)	1.1 No explanation (2)	-	-	-
	1.2 Population applicability (4)	1.2.1 Quantity of applicable clients (1)	1.2.1.1 Small/few (1)	-
		1.2.2 Diagnostic category (1)	1.2.2.1 COPD (1)	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		1.2.3 Functional capacity (1)	1.2.3.1 Insufficient (1)	-
		1.2.4 Fitness category (1)	1.2.4.1 Trained athletes (1)	1.2.4.1.1 No benefit (1)
	1.3 Client interest (10)	1.3.1 Quantity of interested clients (4)	1.3.1.1 None (2)	-
			1.3.1.2 Small/few (2)	-
		1.3.2 Age category (3)	1.3.2.1 Adolescents (1)	-
			1.3.2.2 Adults (1)	-
			1.3.2.3 Elderly (1)	1.3.2.3.1 Depends on type of dance (1)
		1.3.3 Dance history (2)		
		1.3.4 Activity of lifestyle choice (1)	1.3.3.1 No experience (2)	-
	1.4 Client environment (2)	1.4.1 Community classes (1)	-	-
			1.4.1.1. Limited to no availability (1)	-
		1.4.2. Appropriate/modified classes (1)		
	1.5 Physical therapist (2)		1.4.2.1 Limited to no availability (1)	-
		1.5.1 Qualifications (1)	1.5.1.1 Client may question (1)	-
		1.5.2 Specific practice (1)	1.5.2.1 Occupational rehabilitation (1)	-
	1.6 Not special attention (2)	1.6.1 Other activities equally or more applicable (2)		
2. Disagree, but...(1)	2.1 Client interest (1)	2.1.1 Dance history (1)	-	-
			2.1.1.1 Have experience (1)	2.1.1.1.1 Used dance as an adjunct (1)
No answer (4 responses)				

[a]In response to the question: "Why do you agree or not agree with the above statement? [Question 9a: My clients/patients would be receptive to dance as therapeutic exercise]"

[b]'Somewhat agree, somewhat disagree' category comprised of respondents answering either 3 or 4 to the preceding question 9a.

[c]Positive and negative signs appear only in the somewhat agree, somewhat disagree categories as it comprises categories and themes from both the agree (+) and disagree (-) responses. The signs are used as a means of reflecting the respondents' perception about dance or some aspect that might affect it (+, positive; -, negative).

[d]'Agree' category comprised of respondents answering either 5 or 6 to the preceding question 9a.

[e]'Disagree' category comprised of respondents answering either 1 or 2 to the preceding question 9a.

Table 9. Content analysis of dance in physical therapy practice[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
Yes (85 responses)				
1. No explanation (1)	1.1 No explanation (1)	-	-	-
2. Why (57)	2.1 Health benefits/therapeutic relevance (49)	2.1.1 Valued tool (11)	2.1.1.1 Potential social good (2)	-
			2.1.1.2 Another form of activity (5)	-
			2.1.1.3 For clients who need alternatives to rigid exercise programs (1)	-
			2.1.1.4 Exciting addition to skill set (1)	-
			2.1.1.5 Helpful to have clinicians promote dance (1)	-
			2.1.1.6 Seems appropriate for the purposes of chronic lifestyle conditions (1)	-
		2.1.2 Increase knowledge/awareness (4)	2.1.2.1 Little consideration currently (1)	-
			2.1.2.2 Interest in learning more (1)	-
			2.1.2.3 Of the application of recreational activities in physical therapy (1)	-
			2.1.2.4 As with other activities (1)	-
		2.1.3 Benefits (unspecified) (2)	-	-
		2.1.4 Holistic (2)	-	-
		2.1.5 Physical (11)	-	-
		2.1.6 Social (5)	2.1.6.1 Social (3)	-
			2.1.6.2 May improve compliance and adherence (2)	2.1.6.2.1 May improve compliance and adherence (1)
				2.1.6.2.2 As compared to traditional exercise (1)
		2.1.7 Psychological (12)	2.1.7.1 Psychological (1)	-
			2.1.7.2 Enjoyable (9)	2.1.7.2.1 Enjoyable (4)

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				2.1.7.2.2 Does not feel like exercise (1) 2.1.7.2.3 Will motivate people (1) 2.1.7.2.4 May improve compliance and adherence (2) 2.1.7.2.5 May improve compliance and adherence - As compared to traditional exercise (1)
			2.1.7.3 Movement confidence (1)	-
			2.1.7.4 Mood enhancer (1)	-
		2.1.8 Other aspects 'as compared to traditional exercise' (1)	2.1.8.1 Dance is a beneficial, but marginalized form of movement (1)	-
		2.1.9 Compliance and adherence (1)	2.1.9.1 Increases/is better (1)	2.1.9.1.1 As compared to traditional exercise - potentially (1)
	2.2 Population applicability (4)	2.2.1 Quantity of applicable clients	2.2.1.1 Some (1)	-
		2.2.2 Diagnostic category	2.2.2.1 Certain physical conditions (unspecified) (1)	-
			2.2.2.2 Long term physical limitation (unspecified) (1)	-
		2.2.3 Age category	2.2.3.1 Children	2.2.3.1.1 Dance integral to development (1)
	2.3 Client interest (1)	2.3.1 Quantity of interested clients	2.3.1.1 Many (1)	-
	2.4 Physical therapist (1)	2.4.1 Specific practice	2.4.1.1 Outpatient private practice	2.4.1.1.1 Treat dancers (1)
	2.5 Other (1)	2.5.1 Dance incorporates learning, balance, flexibility, music - an extension of what physiotherapy practice already is (1)	-	-
3. How (91)	3.1 Practice: therapeutic application (57)	3.1.1 Collaborate (3)	3.1.1.1 With people who run balance programs (1)	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
			3.1.1.2 With people who run chronic disease management programs (1)	-
			3.1.1.3 With professional dancers (1)	-
		3.1.2 Get involved (2)	3.1.2.1 At local YMCA's (1)	-
			3.1.2.2 With dance groups (1)	-
		3.1.3 Educate physical therapists (20)		
			3.1.3.1 Professional development courses (8)	-
			3.1.3.2 Research and knowledge translation (4)	-
			3.1.3.4 With information to promote/prescribe dance (3)	-
			3.1.3.5 Client environment (2)	3.1.3.5.1 Community classes - what's available (2)
			3.1.3.6 Entry-level education (2)	3.1.3.6.1 Elective course (1) 3.1.3.6.2 Brief mention (1)
			3.1.3.7 No explanation (1)	-
		3.1.4 How use (32)	3.1.4.1 As a therapeutic intervention (1)	-
			3.1.4.2 As a treatment option (5)	As a treatment option (4) For exercise prescription (1)
			3.1.4.3 As a functional and fun ADL activity (1)	-
			3.1.4.4 As an adjunct (2)	-
			3.1.4.5 As a class? (1)	-
			3.1.4.6 For balance (3)	-
			3.1.4.7 For coordination (2)	-
			3.1.4.8 For relearning motor planning (1)	-
			3.1.4.9 For relieving anxiety in dementia clients (1)	-
			3.1.4.10 In a balance class in rehab facility (1)	-
			3.1.4.11 In community classes (2)	-
			3.1.4.12 In WorkSafe BC pain management programs (1)	-
			3.1.4.13 In a knee class for total	

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
			knee replacement (1)	-
			3.1.4.14 To teach basic steps (2)	-
			3.1.4.15 To refine exercise prescription (1)	-
			3.1.4.16 To refer to community classes (4)	3.1.4.16.1 To refer to community classes (3) 3.1.4.16.2 During and after treatment (1)
			3.1.4.17 To incorporate into certain areas of practice (unspecified) (1)	-
			3.1.4.18 Individually determined by therapist (1)	-
			3.1.4.19 Study and apply dance mechanics to daily life (1)	-
	3.2 Population applicability (29)	3.2.1 Appropriate populations (unspecified) (4)	-	-
		3.2.2 Diagnostic category (15)	3.2.2.1 Cardiorespiratory conditions (1)	-
			3.2.2.2 Chronic conditions (2)	-
			3.2.2.3 Chronic pain (3)	-
			3.2.2.4 Dementia (1)	-
			3.2.2.5 Depressed (2)	-
			3.2.2.6 Neurological impairments (1)	-
			3.2.2.7 Post stroke (1)	-
			3.2.2.8 Post head injury (1)	-
			3.2.2.9 Post most any injury (1)	-
			3.2.2.10 Pre-rehab (for prevention) (1)	-
			3.2.2.11 Total knee replacement (1)	-
		3.2.3 Age category (6)	3.2.3.1 Children (1)	-
			3.2.3.2 Adults (1)	-
			3.2.3.3 Elderly (4)	-
		3.2.4 Culture category (4)	3.2.4.1 Dancers (3)	-
4. Yes, but... (14)	3.3 Physical therapist (5)		3.2.4.2 Musicians (1)	-
	4.1 Population applicability (2)	3.3.1 As a specialty practice (5)	-	-
		4.1.1 Age category	4.1.1.1 Elderly	4.1.1.1.1 Poor functional capacity

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				(1)
		4.1.2 Culture category	4.1.2.1 For dancers, not general population (1)	
	4.2 Client interest (1)			-
		4.2.1 Quantity of interested clients	4.2.1.1 Small (1)	-
	4.3 Physical therapist (5)	4.3.1 Specific practice	4.3.1.1 Depends on client (2)	-
			4.3.1.2 Private practice	4.3.1.2.1 Difficult to implement (1)
		4.3.2 Facilitates involvement in dance, not applies it as an intervention (1)	-	-
		4.3.3 Required only for advising		
	4.4 Not special attention (6)	clients with specific precautions, not for general prevention (1)	-	-
		4.4.1 Not special attention (2)	-	-
		4.4.2 Treatment of dance related injuries more important (1)	-	-
		4.4.3 One of many options to	-	
5. Yes, if…(3)		encourage (1)		-
	5.1 Physical therapist (3)	4.4.4 No more than any other form of physical activity (2)	-	-
		Interested (3)	-	-
No (21 responses)				
1. Why (21)	1.1 No explanation (9)	-	-	-
	1.2 Health benefits/therapeutic relevance (3)	1.2.1 Not ‘physical therapy’ (3)	1.2.1.1 Not a therapeutic modality (1)	1.2.1.1.1 Sport, not intervention (1)
			1.2.1.2 Not for physical therapists to prescribe (1)	-
			1.2.1.3 Does not adequately address pathology and functional limitation (1)	-
	1.3 Physical therapist (3)	1.3.1 Specific practice (2)	1.3.1.1 Depends on client (2)	-
		1.3.2 Interested (1)	1.3.2.1 Should pursue outside of physical therapy (1)	-
	1.4 Not special attention (6)	1.4.1 Not special attention (1)	-	-
		1.4.2 Other activities equally or more applicable (1)	-	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		1.4.3 One of many options to encourage (2)	-	-
		1.4.4 No more than any other form of physical activity (1)	-	-
		1.4.5 Not for everyone (1)	-	-
2. No, but.. (2)	2.1 Other (2)	2.1.1 Maybe in certain settings (not acute care) (1)	-	-
		2.1.2 Important to practice prevention with young dancers (1)	-	-
3. No, unless… (1)	3.1 Physical therapist (1)	3.1.1 Specific practice (1)	3.1.2 Treat dancers (1)	-
No answer (9 responses)				
Unsure (4 responses)				
1. Why	1.1 No explanation (1)	-	-	-
	1.2 Question (2)	1.2.1 Worth investment (1)	-	-
		1.2.2 Clinical utility (1)	-	-
	1.3 Other (1)	1.3.1 Not enough experience to comment (1)	-	-
Unable to determine (2 responses)				
No opinion (1 responses)				

[a]In response to the question: "Do you believe dance warrants special attention in physical therapy practice? Please tells us why and how this might be done?"

Table 10. Content analysis of dance in physical therapy entry-level education[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
No (56 responses)				
1. Why (67)	1.1 No explanation (18)	-	-	-
	1.2 Health benefits/therapeutic utility (4)	1.2.1 Would need extra study to develop (1)	-	-
		1.2.2 Not 'physical therapy' (1)	1.2.2.1 More recreation therapy (1)	-
		1.2.3 Not directly applicable to function and work activities (1)	-	-
		1.2.4 Too specialized (1)	-	-
	1.3 Population applicability (1)	1.3.1 Quantity of applicable clients (1)	1.3.1.1 Most not (1)	-
	1.4 Client interest (2)	1.4.1 Quantity of interested clients (2)	1.4.1.1 None (1)	-
			1.4.1.2 Some (1)	-
	1.5 Physical therapist (1)	1.5.1 Specific practice (1)	1.5.2 Not pertinent to all specialties (1)	-
	1.6 Not special attention (2)	1.6.1 Just awareness/overview (1)	-	-
		1.6.2 One of many options to encourage (1)	-	-
	1.7 Focus on basics/essentials (25)	1.7.1 Focus on basics/essentials (9)	-	-
		1.7.2 Not enough time/curriculum full (12)	-	-
		1.7.3 Would have to address other lifestyle/recreation activities ("Slippery slope") (3)	-	-
		1.7.4 Other	1.7.4.1 "We need to teach the principles and recommend the 'activity'" (1)	-
	1.8 Post grad specialty (15)	1.8.1 Post grad specialty (15)	-	
2. No, but… (4)	2.1 Physical therapist (1)	2.1.1 Need to look at lifestyle choices more, including appraising activities of recreation (1)	-	-
	2.2 Post grad specialty (2)	2.2.1 If enough people interested (2)	-	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
	2.3 If added… (1)	2.3.1 How	2.3.1.1 Course layout ('Where/When')	2.3.1.1 Only a short course to outline the supporting evidence and basic steps (1)
Yes (49 responses)				
1. Why (35)	1.1 Health benefits/therapeutic relevance (28)	1.1.1 Introduction important (1)	1.1.1.1 No explanation (1)	-
		1.1.2 Valued tool (4)	1.1.2.1 Unspecified (1)	-
			1.1.2.2 Many benefits (unspecified) (2)	-
			1.1.2.3 Functional (1)	-
		1.1.3 Increase knowledge/awareness (9)	1.1.3.1 Increase knowledge/awareness (4)	-
			1.1.3.2 As with other activities (3)	-
			1.1.3.3 Of options (2)	1.1.3.3.1 Besides sports and/or traditional exercises (1)
				1.1.3.3.2 Good to be aware (1)
		1.1.4 Physical (5)	-	-
		1.1.5 Social (2)	-	-
		1.1.6 Psychological (5)	1.1.6.1 Psychological (1)	-
			1.1.6.2 Enjoyable (2)	-
			1.1.6.3 Mood enhancer (2)	-
		1.1.7 Other aspects 'as compared to traditional exercise' (2)	1.1.7.1 More accessible (1)	-
			1.1.7.2 Less competitive (1)	-
	1.2 Population applicability (2)	1.2.1 Age category (2)	1.2.1.1 Elderly (2)	-
	1.3 Client interest (2)	1.3.1 Age category (2)	1.3.1.1 Adults (1)	-
			1.3.1.2 Elderly (1)	-
	1.4 Physical therapist (3)	1.4.1 Students (3)	1.4.1.1 May be interested (1)	-
			1.4.1.2 May have expertise to offer (2)	-
2. How (43)	2.1 Content ('What') (21)	2.1.1 'Basics' (3)	-	-
		2.1.2 Theory: health benefits/therapeutic relevance (7)	2.1.2.1 Theory: health benefits/therapeutic relevance (5)	-
			2.1.2.2 Evidence based research (1)	-
			2.1.2.3 Only (1)	-
		2.1.3 Practice: therapeutic	2.1.3.1 Practice: therapeutic	

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		application (7)	application (1)	-
			2.1.3.2 Recommending specific dance categories (1)	-
			2.1.3.3 Treating those involved in some dance activity (1)	-
			2.1.3.4 Focus on core strength and stability (1)	-
			2.1.3.5 Safety considerations (1)	-
			2.1.3.6 Setting up small supervised classes (1)	-
			2.1.3.7 Client environment (7)	2.1.3.7.1 Community classes – what's available (1)
		2.1.4 Conceptualized as (4)	2.1.4.1 An alternative therapy (1)	-
			2.1.4.2 A treatment option (3)	-
	2.2 Course layout ('Where/When') (22)	2.2.1 Brief mention/introduction (9)	-	-
		2.2.2 Combined with other material (8)	2.2.2.1 With other therapeutic interventions in exercise prescription (4)	2.2.1.1 With other therapeutic interventions in exercise prescription (3)
				2.2.1.2 Add some dance steps (1)
			2.2.2.2 With neuro (1)	-
			2.2.2.3 With Yoga and Pilates (1)	-
			2.2.2.4 With community or geriatric placement (1)	-
			2.2.2.5 Recreational activities (1)	-
		2.2.3 As a distinct course (2)	2.2.3.1 Elective (2)	
		2.2.4 As a distinct workshop/class (2)	-	-
		2.2.5 Course design unspecified (1)		-
			2.2.5.1 Trialed by students (1)	
3. Yes, but…(21)	3.1 Health benefits/therapeutic relevance (2)	3.1.1 Not modality to teach, but recommend (depending on clients interests) (1)		-
			-	
		3.1.1 For movement patterning theory, not as a therapeutic intervention (1)		-
			-	
	3.2 Focus on basics/essentials (8)	3.2.1 Focus on basics/essentials (2)		-
			-	
		3.2.1 Not enough time/curriculum		-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		full (5)	-	
		3.2.2 Specific exercise prescription vs. general (1)	-	-
	3.3 Post grad specialty (3)	3.3.1 May be better (2)	-	-
		3.3.2 For interested physical therapists to learn more (1)	-	-
	3.4 Not special attention (6)	3.4.1 No more than any other form of physical activity (5)	-	-
		3.4.2 One of many options to encourage (1)	-	-
	3.5 Physical therapist (2)	3.5.1 Specific practice (2)	3.5.1.1 Client dependent (2)	-
4. Yes, if…(1)	4.1 Time allows (1)	-	-	
No answer (11 responses)				
Unsure/Don't Know (5 responses)				
1. Why (5)	1.1 No explanation (4)	-	-	-
	1.2 Not special attention (1)	1.2.1 Dance singled out? (1)	-	-
2. How (1)	2.1 What (1)	2.1.1 Possible movement analysis and activity modification (1)	-	-
Don't understand question (1 response)				

[a]In response to the question: "Do you believe dance warrants special attention in entry-level physical therapy education? Please tells us why and how this might be done?"

Table 11. Content analysis of dance in physical therapy professional development education[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3	Sub-category 4
Yes (81 responses)				
1. Why (41)	1.1 No explanation (4)	-	-	-
	1.2 Health benefits/therapeutic relevance (30)	1.2.1 Valued tool (5)	1.2.1.1 Functional (1)	-
			1.2.1.2 New idea (2)	-
			1.2.1.3 Group fitness (1)	-
			1.2.1.4 Great social and professional development tool (1)	-
		1.2.2 Increase knowledge/awareness (14)	1.2.2.1 Increase knowledge/awareness (4)	-
			1.2.2.2 In mainstream practice (1)	-
			1.2.2.3 As interest develops (1)	-
			1.2.2.4 As with other activities (1)	-
			1.2.2.5 Appropriate prescription (1)	-
			1.2.2.6 May increase use as a therapy modality (1)	-
			1.2.2.7 Long term benefits (1)	-
			1.2.2.8 Of options (4)	1.2.2.8.1 Of options (2) 1.2.2.8.2 Good to be aware (2)
		1.2.3 Physical (4)	-	-
		1.2.4 Psychological (4)	1.2.4.1 Psychological (1)	-
			1.2.4.2 Enjoyable (2)	-
			1.2.4.3 Mood enhancer (1)	-
		1.2.5 Other aspects ‘as compared to traditional exercise’ (2)	1.2.5.1 Means of encouraging those who don’t like formal exercise (1)	-
			1.2.5.2 Uses different skills than sports (1)	-
		1.2.6 Compliance and adherence (1)	1.2.6.1 Increases/is better (1)	1.2.6.1.1 As compared to traditional exercise (1)
	1.3 Client interest (1)	1.3.1 Quantity of interested clients (1)	1.3.1.1 Increasing (1)	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3	Sub-category 4
	1.4 Physical therapist (5)	1.4.1 Specific practice (2)	1.4.1.1 Sport physiotherapy (1)	1.4.1.1.1 Increased knowledge is important due to increase in competition dance (1)
			1.4.1.2 Outpatient rehabilitation (1)	1.4.1.2.1 Treats many dancers (1)
		1.4.2 Interested (1)	1.4.2.1 In learning more (1)	-
		1.4.3 Means to impact the health of many (via group class) (2)	-	-
	1.5 Other (1)	1.5.1 Could serve as a useful review/application of basic material (1)	-	-
2. How (70)	2.1 Content ('What') (27)	2.1.1 'Basics' (3)	-	-
		2.1.2 Theory: health benefits/therapeutic relevance (8)	2.1.2.1 Theory: health benefits/therapeutic relevance (7)	-
			2.1.2.2 Evidence based research (1)	
		2.1.3 Practice: therapeutic application (15)	2.1.3.1 Practice: therapeutic application (3)	-
			2.1.3.2 For specific populations (1)	-
			2.1.3.3 Treating those involved in some dance activity (1)	-
			2.1.3.4 Focus on core strength and stability (1)	-
			2.1.3.5 Safety considerations (1)	-
			2.1.3.6 Client environment (4)	2.1.3.6.1 Community classes – what's available (2)
				2.1.3.6.2 Community classes – led by physical therapist (1)
				2.1.3.6.3 Appropriate/modified classes – what's available (1)
			2.1.3.7 Collaborate (4)	2.1.3.7.1 With dance professionals (2)
				2.1.3.7.2 With recreation therapists? (1)
				2.1.3.7.3 Fitness instructors and kinesiology graduates (1)
		2.1.4 Conceptualized as (1)	2.1.4.1 A treatment option (1)	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3	Sub-category 4
	2.2 Course layout ('Where/When') (43)	2.2.1 Brief mention/introduction (1)		-
		2.2.2 Combined with other material (7)	2.2.2.1 With other therapeutic interventions in exercise prescription (2)	-
			2.2.2.2 With other activities alternative to traditional exercise (2)	-
				-
			2.2.2.3 With Yoga and Pilates (1)	-
			2.2.2.4 Tai Chi (1)	
			2.2.2.5 Chronic pain management (1)	-
				-
		2.2.3 As a distinct course (19)	2.2.3.1 As a distinct course (15)	-
			2.2.3.2 To determine interest (1)	
			2.2.3.3 Ideally taught by a physical therapist who can dance (1)	-
			2.2.3.4 With master dance class (1)	-
			2.2.3.5 Elective or non elective (1)	-
		2.2.4 As a distinct workshop/class (6)	2.2.4.1 As a distinct workshop/class (4)	-
			2.2.4.2 Through Physiotherapy Association of British Columbia (1)	-
				-
			2.2.4.3 With dance instruction (1)	-
		2.2.5 Special interest group (4)		-
		2.2.6 Post grad specialty (4)		
		2.2.7 Course design unspecified (1)	2.2.7.1 Make it part of the curriculum (1)	-
		2.2.8 Attend a dance studio to observe movement (1)	-	-
3. Yes, but…(11)	3.1 Health benefits/therapeutic relevance (1)	3.1.1 Not modality to teach, but recommend (depending on clients		-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3	Sub-category 4
		interests) (1)	-	-
	3.2 Population applicability (1)	3.2.1 How comprehensive? (1)	-	
	3.3 Focus on basics/essentials (1)	3.3.1 Focus on basics/essentials (1)	-	-
	3.4 Not special attention (8)	3.4.1 No more than any other form of physical activity (8)	-	-
4. Yes, if…(8)	4.1 Physical therapist (8)	4.1.1 Interested (8)	-	
No (19 responses)				
1. Why (16)	1.1 No explanation (13)	-	-	-
	1.2 Health benefits/therapeutic utility (3)	1.2.1 Quantity of interested clients/therapists (unspecified) (1)	1.2.1.1 Small (1)	-
		1.2.2 Not 'physical therapy' (2)	1.2.2.1 Sport, not intervention (1)	-
			1.2.2.2 Leave it to professional dancers (1)	-
2. No, unless (1)	2.1 Physical therapist (1)	2.1.1 Specific practice (1)	2.1.1.1 Treat dancers (1)	-
No answer (16 responses)				
Unsure/don't know (6 responses)				
1. Why (5)	1.1 No explanation (3)	-	-	-
	1.2 Physical therapist (1)	1.2.1 Not area of expertise (1)	-	-
	1.3 Not special attention (1)	1.3.1 Dance singled out? (1)	-	-
2. Unsure, but….(1)	2.1 Basic knowledge would be good (1)	-	-	-

[a]In response to the question: "Do you believe dance warrants special attention in professional development education? Please tells us why and how this might be done?"

Table 12. Content analysis of dance in physical therapy research[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
Yes (85 responses)				
1. Why (65)	1.1 No explanation (4)	-	-	-
	1.2 Knowledge is good (10)	1.2.1 Would be interesting (3)	-	-
		1.2.2 Warrants some attention (1)	-	-
		1.2.3 To understand (1)	-	-
		1.2.4 Question practice/methods (1)	-	-
		1.2.5 Would be helpful (1)	-	-
		1.2.6 Could be helpful (1)	-	-
		1.2.7 As with other research (1)	-	-
		1.2.8 Good to be aware (1)	-	-
	1.3 To add research (11)	1.3.1 To add research (1)	-	-
		1.3.2 To the perceived dearth of literature (3)	-	-
		1.3.3 To the established literature (2)	-	-
		1.3.4 To inform/support (5)	1.3.4.1 Decision makers (government) (1)	-
			1.3.4.2 Clients (1)	-
			1.3.4.3 Physical therapy guidelines (2)	-
			1.3.4.4 Development of hospital/community programs (1)	-
	1.4 In accordance with evidence based practice (16)	1.4.1 In accordance with evidence based practice (3)	-	-
		1.4.2 Start here first (8)	-	-
		1.4.3 To substantiate clinical practice (4)	-	-
		1.4.4 Needed in order to make strong recommendations (1)	-	-
	1.5 Believed potential (12)	1.5.1 Lifelong, social, fun, physical activity that could have huge positive health effects (1)	-	-
		1.5.2 Accessible, fun, group activity with huge potential to improve patients lifestyle (1)	-	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		1.5.3 To demonstrate therapeutic applicability (5)	-	-
		1.5.4 To validate its effectiveness (2)	-	-
		1.5.5 To bring attention to the potential value of dance as an intervention (1)	-	-
		1.5.6 To determine how to use dance more effectively (1)	-	-
		1.5.7 To show benefits (1)	-	-
	1.6 Skeptical of potential (5)	1.6.1 To see if it works or not (1)	-	-
		1.6.2 To establish effectiveness (3)	-	-
		1.6.3 Would be great intervention if it can be supported by evidence (1)	-	-
	1.7 As compared to traditional exercise (3)	1.7.1 Alternative exercise always in demand (1)	-	-
		1.7.2 Means of encouraging those who don't like formal exercise (1)	-	-
		1.7.3 Compliance and adherence (1)	1.7.3.1 More likely on account of social/fun aspects (1)	-
	1.8 Other (4)	1.8.1 'Could help us access movement patterns the way singing can help with aphasis/stuttering' (1)	-	-
		1.8.2 Importance of addressing chronic health conditions (1)	-	-
		1.8.3 Physical therapists can learn from dance and dancers (1)	-	-
		1.8.4 'Dance=compliance=better outcomes' (1)	-	-
2. How (134)	2.1 Unsure/Don't know (2)	-	-	-
	2.2 Who (6)	2.2.1 For those interested (3)	-	-
		2.2.2 Physical therapist (1)	2.2.2.1 For those interested (1)	-
		2.2.3 PhD students (2)	-	-
	2.3 What (117)	2.3.1 Population (29)	2.3.1.1 Diagnostic category (9)	2.3.1.1.1 Cerebral vascular

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				accident (1) 2.3.1.1.2 Depression (1) 2.3.1.1.3 Down syndrome (1) 2.3.1.1.4 Fibromyalgia (1) 2.3.1.1.5 Neuro (1) 2.3.1.1.6 Physically challenged (1) 2.3.1.1.7 Post-cardiac (1) 2.3.1.1.8 Post injury (orthopedic) (1) 2.3.1.1.9 Psychiatric/Parkinson group (1)
			2.3.1.2 Age category (9)	2.3.1.2.1 Children (1) 2.3.1.2.2 Adolescents (1) 2.3.1.2.3 Adults (1) 2.3.1.2.4 Elderly (6)
			2.3.1.3 Various (11)	2.3.1.3.1 Chronic conditions (unspecified) (3) 2.3.1.3.2 Chronic conditions – mild (1) 2.3.1.3.3 Clients (unspecified) (2) 2.3.1.3.4 Community (1) 2.3.1.3 .5 'Special populations' (unspecified) (1) 2.3.1.3.6 Various (3)
		2.3.2 Intervention (9)	2.3.2.1 Dance classes (3)	2.3.2.1.1 Dance classes (2) 2.3.2.1.2 At certified dance studies (1)
			2.3.2.2 Different types of dance (3)	-
			2.3.2.3 Falls prevention (2)	-
			2.3.2.4 Group intervention (1)	-
		2.3.3 Outcomes (64)	2.3.3.1 Unspecified (1)	
			2.3.3.2 Physical (29)	2.3.3.2.1 Aerobic capacity (4) 2.3.3.2.2 Balance (8) 2.3.3.2.3 Blood pressure (1) 2.3.3.2.4 Body changes (1) 2.3.3.2.5 Falls (2) 2.3.3.2.6 Fitness (2)

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				2.3.3.2.7 Flexibility (2) 2.3.3.2.8 Heart rate (1) 2.3.3.2.9 Oxygen uptake (1) 2.3.3.2.10 Physical benefits (2) 2.3.3.2.11 Posture (1) 2.3.3.2.12 Reaction time (1) 2.3.3.2.13 Strength (2) 2.3.3.2.14 Weight loss (1)
			2.3.3.3 Social (3)	2.3.3.3.1 Social aspects (3)
			2.3.3.4 Psychological (8)	2.3.3.4.1 Client satisfaction (1) 2.3.3.4.2 Depression/mood (1) 2.3.3.4.3 Emotional benefits (1) 2.3.3.4.4 Mental benefits (2) 2.3.3.4.5 Quality of life (2) 2.3.3.4.6 Spiritual benefits (1)
			2.3.3.5 Neurological (1)	2.3.3.5.1 Memory tests (1)
			2.3.3.6 Participation (4)	2.3.3.6.1 Active lifestyle (1) 2.3.3.6.2 Compliance and adherence (2) 2.3.3.6.3 Participation in dance as therapeutic exercise (1)
			2.3.3.7 Various (18)	2.3.3.7.1 Adverse effects – long term (1) 2.3.3.7.2 Adverse effects – and their treatment (3) 2.3.3.7.3 Health benefits (unspecified) –long term (2) 2.3.3.7.4 Health benefits (unspecified) (9) 2.3.3.7.5 Section 1 effects[b] (3)
		2.3.4 Design (14)	2.3.4.1 Case studies (2)	-
			2.3.4.2 Community-based observational studies (1)	-
			2.3.4.3 Pre-post (6)	-
			2.3.4.4 Pilot test in community centers (1)	-
			2.3.4.5 Experimental (3)	2.3.4.5.1 Dance classes vs. less social activities, e.g., Tai Chi, Pilates/Yoga (1)

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
				2.3.4.5.2 Dance (format unspecified) vs. recreational activities (1)
				2.3.4.5.3 Dance (format unspecified) vs. traditional physical therapy interventions (1)
			2.3.4.6 RCT (1)	2.3.4.6.1 Dance classes vs. instructor-led exercise program (1)
		2.3.5 Other (1)	2.3.5.1 'Should be left up to the individual researchers to develop' (1)	-
	2.4 Knowledge translation (3)	2.4.1 Knowledge translation (1)	-	-
		2.4.2 Increase publication of articles (1)	-	-
		2.4.3 Create interest (1)	-	-
	2.5 Other (6)	2.5.1 'Observe/experience and apply to practice' (1)	-	-
		2.5.2 'How do we prescribe is the question. Control is the issue' (1)	-	-
		2.5.3 'Not enough space provided to answer' (1)	-	-
		2.5.4 'Unsure how different from any other research' (1)	-	-
		2.5.5 'And how best to teach dance' (1)	-	-
		2.5.6 'Yes, with continuization of the info garnered from this survey and application in a formal study' (1)	-	-
3. Yes, but…	3.1 Not special attention (3)	3.1.1 No more than any other form of physical activity (1)	-	-
		3.1.2 Any recreational activity that purports to have benefits should have a body of literature behind it (1)	-	-
		3.1.3 Over other research (1)	-	-
4. Yes, if…(2)	4.1 Physical therapist (1)	4.1.1 Specific practice (1)	4.1.1.1 It can be used (1)	-
	4.2 Resources (1)	4.2.1 Funded by grants (not		

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
		association fees) (1)	-	-
No (15 responses)				
1. Why (13)	1.1 No explanation (8)	-	-	-
	1.2 Health benefits/therapeutic utility (1)	1.2.1 Fairly obvious aerobic, anaerobic and balance benefits – research would not add a lot (1)	-	-
	1.3 Not special attention (1)	-	-	-
	1.4 Questions (2)	1.4.1 Focus on clinical questions (1)	-	-
		1.4.2 Focus on serious illness or disability first (1)	-	-
	1.5 Resources (1)	1.5.1 Not enough to deal with basic needs (1)	-	-
2. No, but… (2)	2.1 Population (1)	2.1.1 Intervention for people who dance as a sport or occupation (1)	-	-
	2.2 Intervention (1)	2.2.1 Cross training (1)	-	-
No answer (13 responses)				
Irrelevant to question/Data un-interpretable (5 responses)				
Unsure/Don't Know (4 responses)				
1. Why (4)	1.1 No explanation (2)	-	-	-
	1.2 Other (2)	1.2.1 If there is existing research by other professionals and if so, physical therapy research would differ (1)	-	-
		1.2.2 Skeptical whether even positive research would get people to dance more (hard to get them to exercise for their health) (1)	-	-

[a]In response to the question: "Do you believe dance warrants special attention in entry-level physical therapy research? Please tells us why and how this might be done?"

[b]Aerobic capacity, anaerobic capacity, balance, flexibility, mood, relaxation, strength: core/trunk, strength: extremities; weight loss

Table 13. Content analysis of definition of 'dancer'[a]

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
Inclusive (61 responses) and Exclusive (31 responses)				
1. Inclusive (111)	1.1 Participation (29)	1.1.1 Purposefully seeks out opportunities (3)	-	-
		1.1.2 Strong desire to participate (1)	-	-
		1.1.3 Regular participation (25)	-	-
	1.2 Enjoys dancing (11)	1.2.1 Enjoys dancing (10)	-	-
		1.2.2 Passionate (1)	-	-
	1.3 As a recreational activity (12)	-	-	-
	1.4 Takes classes/lessons (13)	-	-	-
	1.5 All inclusive (4)	1.5.1 'Someone who dances' (2)	-	-
		1.5.2 'One left, one right foot' (1)	-	-
		1.5.3 'Anyone that moves…well' (1)	-	-
	1.6 Knowledge and skill – average (14)	1.6.1 Knowledge and skill – average (3)	-	-
		1.6.2 Reasonable competency (4)	-	-
		1.6.3 Trained (4)	-	-
		1.6.4 'Competent in instructing/performing some form of dance' (1)	-	-
		1.6.5 Natural aptitude (1)	-	-
		1.6.6 Confident in several dance styles (1)	-	-
	1.7 Social dancing (6)	-	-	-
	1.8 More than social (unspecified) (3)	-	-	-
	1.9 Other (19)	1.9.1 As a social activity (1)	-	-
		1.9.2 As a form of exercise (1)	-	-
		1.9.3 As a professional occupation (9)	-	-
		1.9.4 'Some training' (1)	-	-
		1.9.5 Formalized training (4)	-	-
		1.9.6 Competitive dancing (1)	-	-
		1.9.7 As part of a group (1)	-	-

Category (MU)	Sub-category 1 (MU)	Sub-category 2 (MU)	Sub-category 3 (MU)	Sub-category 4 (MU)
Inclusive (61 responses) and Exclusive (31 responses)				
		1.9.8 'Defines their social status with dance' (1)	-	-
		1.9.8 Experience (unspecified) (1)	-	-
2. Restrictive (53)	2.1 Formalized training (9)	-	-	-
	2.2 Formalized performance (6)	-	-	-
	2.3 Formalized setting (1)	-	-	-
	2.4 Formalized group (1)	-	-	-
	2.5 Competitive dancing (5)	-	-	-
	2.6 Participation (8)	2.6.1 Purposefully seeks out opportunities (1)	-	-
		2.6.2 Regular participation (7)	-	-
	2.7 As a professional occupation (8)	-	-	-
	2.8 Knowledge and skill (above average) (10)	2.8.1 Trained (2)	-	-
		2.8.2 Very good (5)	-	-
		2.8.3 Min. of 1 style of dance (2)	-	-
		2.8.4 In different styles of dance (>1) (1)	-	-
	2.9 Dances with a group (1)	-	-	-
	2.10 Substantial performance experience (1)	-	-	-
	2.11 Substantial training (1)	-	-	-
	2.12 Doing dance ≠ dancer (2)	-	-	-
No answer (24 responses)				
Data un-interpretable (6 responses)				

[a]In response to the question: "In relation to 18b [Have you ever described yourself as a dancer?], how did you define 'dancer'?"

FIGURES

Figure 1. Flow chart of excluded registrants from the College of Physical Therapists of British Columbia (CPTBC) sample frame

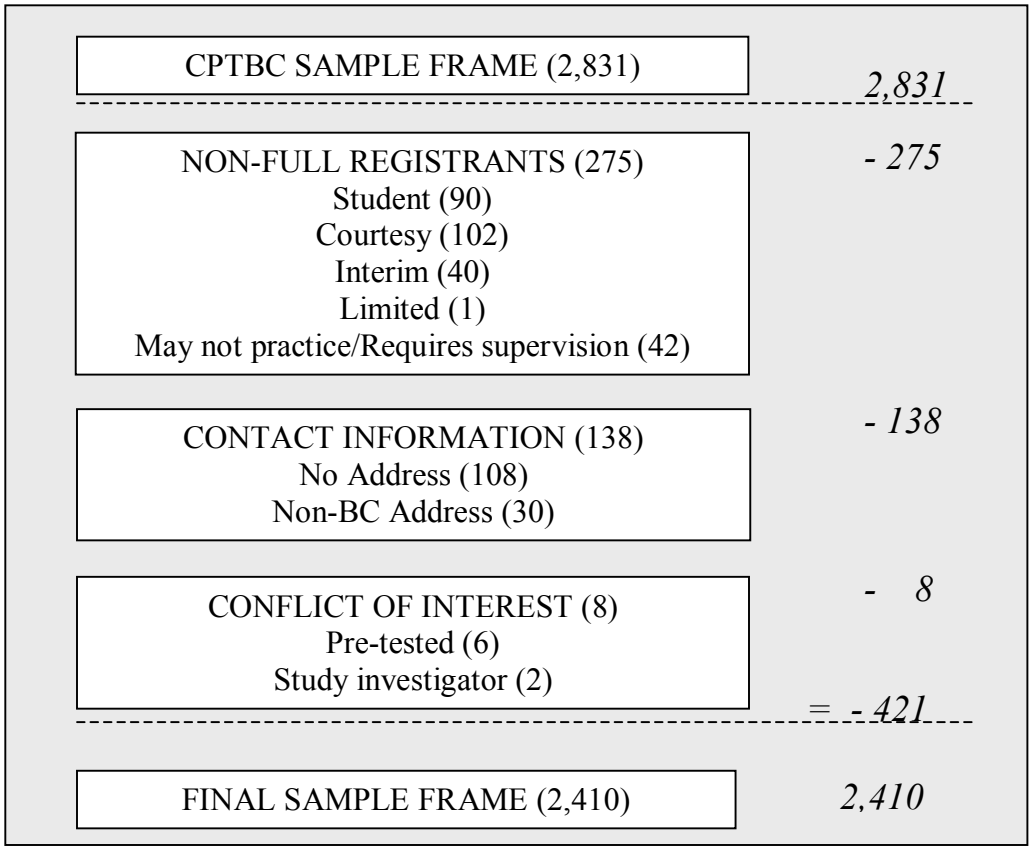


Figure 2. Formula for calculating sample of completed questionnaires and calculated sample

$$Ns = \frac{(Np)(p)(1-p)}{(Np-1)(B/C)^2 + (p)(1-p)}$$

Ns = completed sample size needed for desired level of precision

Np = size of population

p = proportion of population expected to choose one of the two response categories

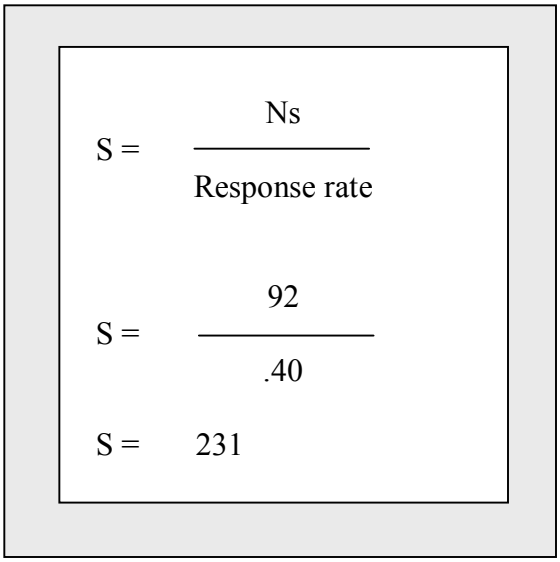
B = acceptable amount of sampling error

C= Z statistic associated with the confidence level

$$Ns = \frac{(2410)(.5)(.5)}{(2410-1)(.1/1.96)^2 + (.5)(.5)}$$

Ns= 92

Figure 3. Calculated survey sample



Ns=completed sample size needed; S=sample to be surveyed

Figure 4. Recruitment methods

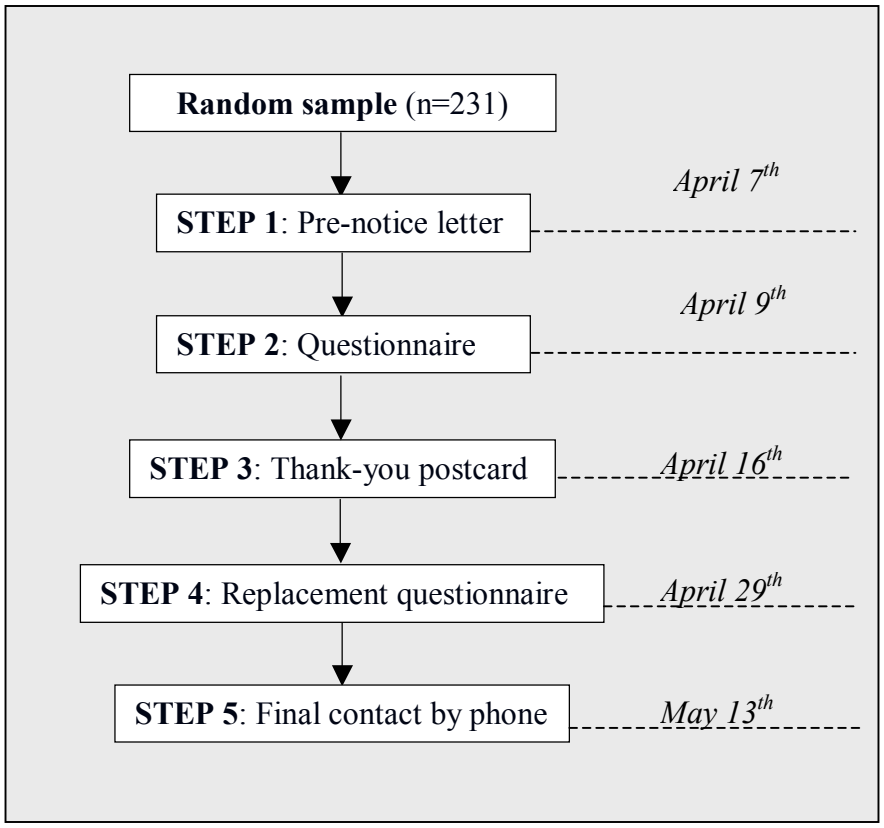
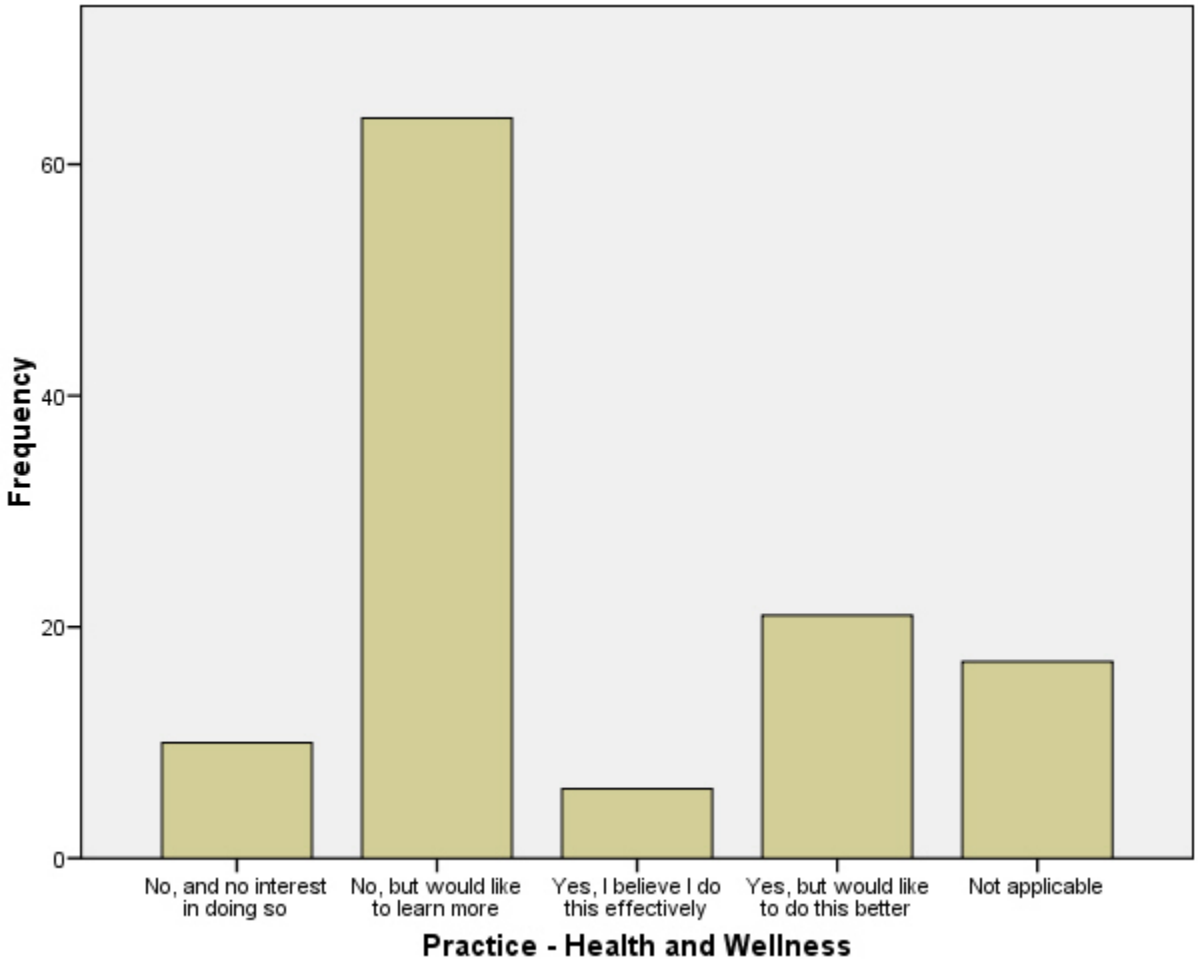
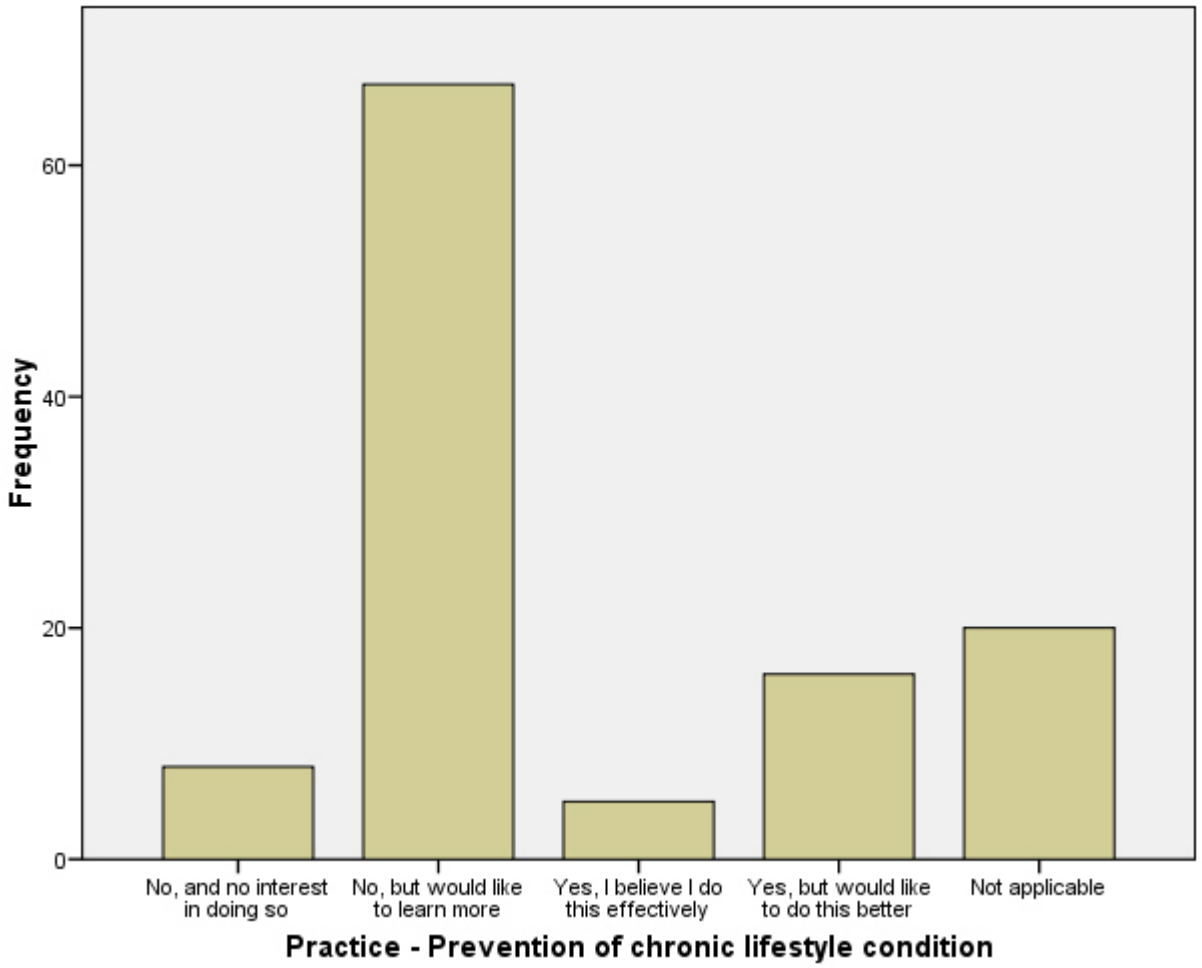


Figure 5. Health and wellness – practice[a]



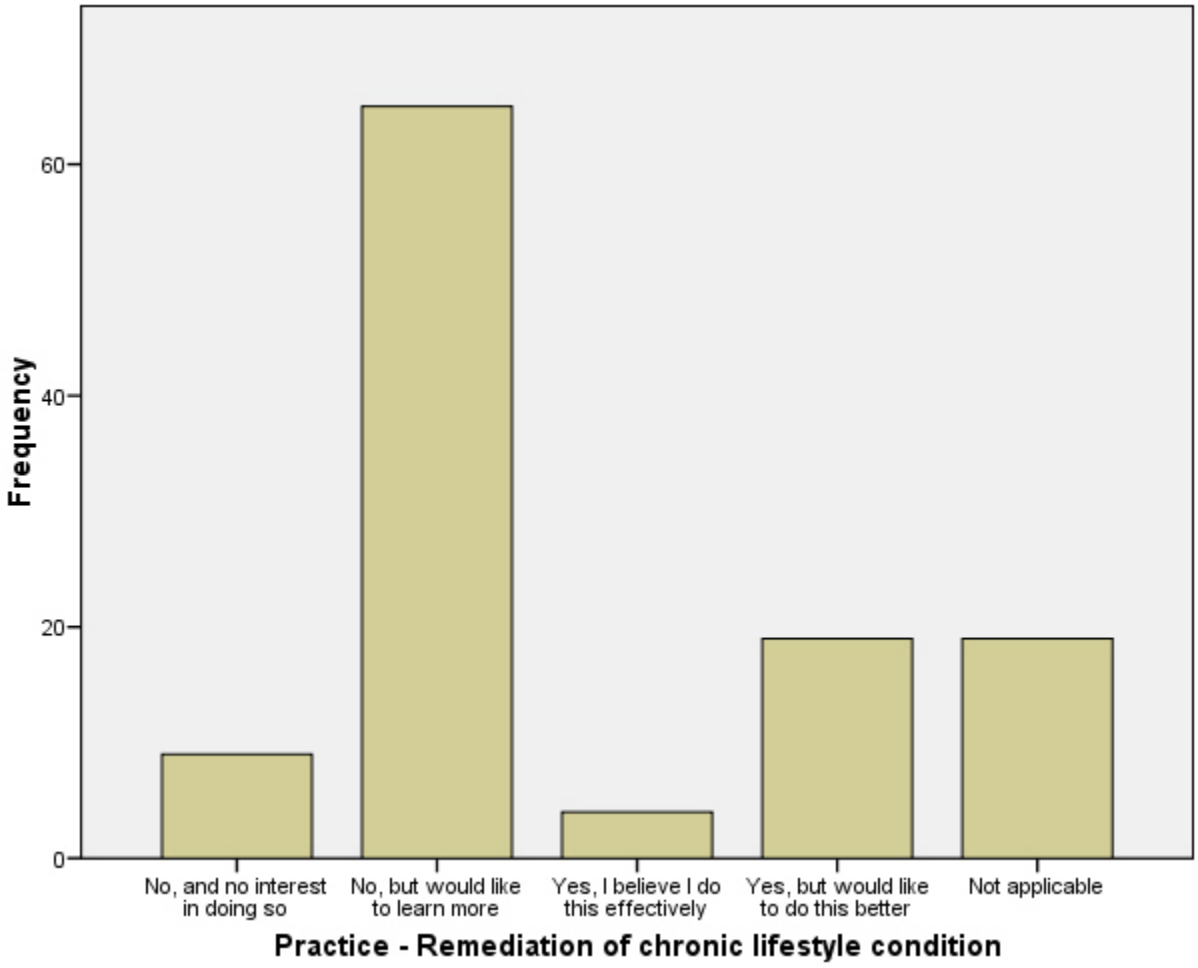
[a]In response to the question: "Do you prescribe dance for this reason [Health and wellness] in some clients/patients?"

Figure 6. Prevention of a chronic lifestyle condition – practice[a]



[a]In response to the question: "Do you prescribe dance for this reason [Prevention of a chronic lifestyle condition] in some clients/patients?"

Figure 7. Remediation of a chronic lifestyle condition – practice[a]



[a]In response to the question: "Do you prescribe dance for this reason [Remediation of a chronic lifestyle condition] in some clients/patients?"

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APPENDICES

Appendix A. Components of questionnaire package

Cover Page

Provided the title and description of the questionnaire including its objectives, instructions for completion and return, and ethical disclosures. The University of British Columbia's institutional logo and signature of the principal investigator and co-investigator MSc student were included as endorsement for the study.

Section 1 – Beliefs about the effects of specific dance categories

Nine close-ended questions for five dance categories (total items=45). Questions aimed to assess respondents' beliefs about the effects associated with particular forms of dance practiced in Western cultures using a 6-point Likert scale anchored by 6-Strongly Agree and 1-Strongly Disagree. The option 'Don't Know' was given for each statement and equated to 0. This statement was included such that clinicians unfamiliar with a particular dance category, or the relationship between a dance category and a potential therapeutic effect, may indicate so. The believed effects included aerobic capacity, anaerobic capacity, balance, flexibility, mood, relaxation, strength: core/trunk, strength: extremities, and weight loss. The dance categories included ballroom dancing (e.g., foxtrot, tango, waltz); Latin American dancing (e.g., rumba, salsa, samba); formalized dancing (e.g., ballet, modern); ethnic/folk dancing; and informal dancing (e.g., club dancing, line dancing).

Section 2 – Information about the physical therapist's beliefs and practices with respect to dance as a therapeutic intervention.

Seven close-ended questions and one open-ended question (total items=8). Questions aimed to assess respondents' beliefs about whether dance could be prescribed optimally for 3 dimensions of health and function, and practices with respect to prescribing dance for these reasons. Beliefs were assessed synonymously as in Sections 1, while practices were assessed by 4 ranked statements of which one statement must be chosen. Also included in the latter questions was the response option, 'Not Applicable', for clinicians who believed the question did not apply to their area of practice/client caseload. The second last question in this section was unique, in that it aimed to assess respondents' beliefs pertaining to their clients' receptiveness to dance as a therapeutic exercise, also assessed on a 6-point Likert scale and including 'Not Applicable' as a non-ranked response option. A follow-up open-ended question asked respondents to explain their response.

Section 3 – Open-ended belief questions

Five open-ended questions that aimed to capture a richer perspective of respondents' beliefs about the role of dance in physical therapy practice, as well as physical therapy education, professional development and research.

Section 4 – General information

Eight close-ended questions and one open-ended question. The first 6 questions aimed to capture respondents' professional and sociodemographic characteristics including sex, age, country of physical therapy professional education, year of graduation from entry-level training, predominant area(s) of practice, and years of clinical experience. The final three questions aimed to assess respondents experience with dance and self-definitions of

what it meant to be a ‘dancer’ (would you describe yourself as a dancer, and how do you define dancer?).

Appendix B. Survey pre-notice letter

Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices

Principal Investigator: Dr. Elizabeth Dean, PhD, PT, Department of Physical Therapy
Co-Investigators: Ms. Kristin Konnyu, BSc, MSc Student, Department of Physical Therapy
Dr. Lyn Jongbloed, PhD, OT, Associate Professor, Department of Occupational Science and Occupational Therapy
Dr. W. Darlene Reid, PhD, PT, Department of Physical Therapy

Dear Colleague,

We would like to inform you of an important questionnaire that will be arriving in a few days. We are interested in describing the beliefs and practices of physical therapists living in British Columbia with respect to dance as an intervention for individuals at risk of or experiencing one or more chronic lifestyle conditions. This study is part of thesis requirements of Ms. Kristin Konnyu, a masters graduate student in rehabilitation sciences.

Please take the time to review the cover letter for this study and complete the questionnaire when it arrives. It should take less than 15 minutes to complete, and will be very important to success of the project and potentially impact future educational initiatives, curriculum advancement, and innovation in clinical practice and research. Your time and interest in this study are greatly appreciated.

Sincerely,

Elizabeth Dean, PhD, PT
Professor
elizabeth.dean@ubc.ca

Kristin J. Konnyu, BSc
MSc Student (Candidate)

Appendix C. Survey cover letter

Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices

Principal Investigator: Dr. Elizabeth Dean, PhD, PT, Department of Physical Therapy
Co-Investigators: Ms. Kristin Konnyu, BSc, MSc Student, Department of Physical Therapy
Dr. Lyn Jongbloed, PhD, OT, Associate Professor, Department of Occupational Science and Occupational Therapy
Dr. W. Darlene Reid, PhD, PT, Department of Physical Therapy

Dear Colleague,

To improve physical therapy outcomes, we are interested in the beliefs and practices of physical therapists regarding dance as an intervention for their clients at risk of or experiencing one or more chronic lifestyle conditions (conditions such as coronary artery disease, stroke, hypertension, type II diabetes and certain cancers, caused by one of three modifiable risk factors – smoking, poor diet, and physical inactivity). We need your assistance in making recommendations to physical therapists regarding physical activity that will be sustained, and long-term benefit derived.

You are a unique health professional in that in addition to providing non-invasive treatment to clients, you educate them with respect to optimizing quality of life. Given the length of treatments and overall duration of episode of care, physical therapists have the opportunity for many 'teachable moments' and impact on health. Dance has not been studied in detail as a therapeutic intervention, yet is social and often considered highly enjoyable and thus may provide a more sustainable alternative to traditional modes of physical activity.

Purpose of the Study
We are evaluating the beliefs and practices of physical therapists living in British Columbia with respect to dance as an intervention for individuals at risk of or experiencing one or more chronic lifestyle conditions. This study is part of thesis requirements of Ms. Kristin Konnyu, a masters graduate student in rehabilitation sciences.

Study Procedures and Your Involvement:
As a licensed physical therapist, we would appreciate your completing the enclosed questionnaire and return it in the postage-paid envelope provided in the survey package. The questionnaire has four sections related to your beliefs and practices related to dance and some general information about you. *There are no incorrect answers*. Please provide information as accurately as possible. It should take less than 15 minutes to complete.

The results of the study will be presented at conferences and published in professional journals. In this way, the information will contribute to the furthering of health promotion initiatives by physical therapists with a view to improve their outcomes.

Confidentiality:
All information you provide will be kept strictly confidential and your name will not be used when reporting data or results. Prior to distribution of all survey packages, each questionnaire has received a study number and therefore, contains no personal identifying data. A separate administrative file that links respondent names and addresses with these study numbers is kept in a password protected file. This and all returned surveys will be kept in a locked, secure storage facility at the UBC Department of Physical Therapy.

Refusal and Withdrawal:
Your participation in this study is entirely voluntary. You may refuse to participate or choose to withdraw from the study at any point in time.

Risks and Benefits:
There are no foreseen risks in your completion of this questionnaire. Potential benefits related to participating in the study include a sense of contribution from being involved in a study that could result in appropriate educational initiatives, curriculum advancement, and innovation in clinical practice and research.

If you have additional questions concerning the study or you are not satisfied with the manner in which it is being conducted, you may contact Dr. Elizabeth Dean (Principal Investigator) at (604) 822-7398.

Furthermore, if you have additional questions about your rights as a participant you may contact the Office of Research Services at the UBC at (604) 822-8598.

Consent:
Please complete and return the enclosed questionnaire in the postage-paid envelope provided within the next two weeks. Upon receipt of your completed questionnaire, it will be assumed that you understand the study as it has been explained to you, and that your consent to participate has been given.

I have enclosed both the questionnaire and return envelope for your convenience. Your time and interest in this study are greatly appreciated. If you have any questions, please contact me.

Sincerely,

Elizabeth Dean, PhD, PT
Professor
elizabeth.dean@ubc.ca

Kristin J. Konnyu, BSc
MSc Student (Candidate)

Appendix D. Survey

Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices

SECTION 1:
Beliefs about the Effects of Specific Dance Categories

Instructions: Listed below are 5 categories of dance. For each dance category, please indicate (circle), how strongly you agree or disagree that each form of dance, **when prescribed optimally**, will elicit the listed potential effects. Answer options range from 1-Strongly Disagree to 6-Strongly Agree. If you are unfamiliar with the particular form of dance or its potential effect on the stated variable, you may select 'Don't Know'.

DANCE CATEGORY	6 Strongly Agree	5	4	3	2	1 Strongly Disagree	0 Don't Know
1. Ballroom dancing (BD) – e.g., Foxtrot, Tango, Waltz							
1a. Prescribed optimally, BD can improve Aerobic capacity.	6	5	4	3	2	1	0
1b. Prescribed optimally, BD can improve Anaerobic capacity.	6	5	4	3	2	1	0
1c. Prescribed optimally, BD can improve Balance.	6	5	4	3	2	1	0
1d. Prescribed optimally, BD can improve Flexibility.	6	5	4	3	2	1	0
1e. Prescribed optimally, BD can improve Mood.	6	5	4	3	2	1	0
1f. Prescribed optimally, BD can induce Relaxation.	6	5	4	3	2	1	0
1g. Prescribed optimally, BD can improve Strength: Core/Trunk.	6	5	4	3	2	1	0
1h. Prescribed optimally, BD can improve Strength: Extremities.	6	5	4	3	2	1	0
1i. Prescribed optimally, BD can induce Weight Loss.	6	5	4	3	2	1	0
2. Latin American dancing (LAD) – e.g., Salsa, Rumba, Samba							
2a. Prescribed optimally, LAD can improve Aerobic capacity.	6	5	4	3	2	1	0
2b. Prescribed optimally, LAD can improve Anaerobic capacity.	6	5	4	3	2	1	0
2c. Prescribed optimally, LAD can improve Balance.	6	5	4	3	2	1	0
2d. Prescribed optimally, LAD can improve Flexibility.	6	5	4	3	2	1	0
2e. Prescribed optimally, LAD can improve Mood.	6	5	4	3	2	1	0
2f. Prescribed optimally, LAD can induce Relaxation.	6	5	4	3	2	1	0
2g. Prescribed optimally, LAD can improve Strength: Core/Trun	6	5	4	3	2	1	0
2h. Prescribed optimally, LAD can improve Strength: Extremities	6	5	4	3	2	1	0
2i. Prescribed optimally, LAD can induce Weight Loss.	6	5	4	3	2	1	0
3. Formalized dancing (FD) – e.g., Ballet, Modern							
3a. Prescribed optimally, FD can improve Aerobic capacity.	6	5	4	3	2	1	0
3b. Prescribed optimally, FD can improve Anaerobic capacity.	6	5	4	3	2	1	0
3c. Prescribed optimally, FD can improve Balance.	6	5	4	3	2	1	0
3d. Prescribed optimally, FD can improve Flexibility.	6	5	4	3	2	1	0
3e. Prescribed optimally, FD can improve Mood.	6	5	4	3	2	1	0
3f. Prescribed optimally, FD can induce Relaxation.	6	5	4	3	2	1	0
3g. Prescribed optimally, FD can improve Strength: Core/Trunk.	6	5	4	3	2	1	0
3h. Prescribed optimally, FD can improve Strength: Extremities.	6	5	4	3	2	1	0
3i. Prescribed optimally, FD can induce Weight Loss.	6	5	4	3	2	1	0

DANCE CATEGORY (continued)	6 Strongly Agree	5	4	3	2	1 Strongly Disagree	0 Don't Know
4. Ethnic/Folk dancing (ED)							
4a. Prescribed optimally, ED can improve Aerobic capacity.	6	5	4	3	2	1	0
4b. Prescribed optimally, ED can improve Anaerobic capacity.	6	5	4	3	2	1	0
4c. Prescribed optimally, ED can improve Balance.	6	5	4	3	2	1	0
4d. Prescribed optimally, ED can improve Flexibility.	6	5	4	3	2	1	0
4e. Prescribed optimally, ED can improve Mood.	6	5	4	3	2	1	0
4f. Prescribed optimally, ED can induce Relaxation.	6	5	4	3	2	1	0
4g. Prescribed optimally, ED can improve Strength: Core/Trunk	6	5	4	3	2	1	0
4h. Prescribed optimally, ED can improve Strength: Extremities.	6	5	4	3	2	1	0
4i. Prescribed optimally, ED can induce Weight Loss.	6	5	4	3	2	1	0

5. Informal dancing (ID) – e.g., Club dancing, line dancing							
5a. Prescribed optimally, ID can improve Aerobic capacity.	6	5	4	3	2	1	0
5b. Prescribed optimally, ID can improve Anaerobic capacity.	6	5	4	3	2	1	0
5c. Prescribed optimally, ID can improve Balance.	6	5	4	3	2	1	0
5d. Prescribed optimally, ID can improve Flexibility.	6	5	4	3	2	1	0
5e. Prescribed optimally, ID can improve Mood.	6	5	4	3	2	1	0
5f. Prescribed optimally, ID can induce Relaxation.	6	5	4	3	2	1	0
5g. Prescribed optimally, ID can improve Strength: Core/Trunk.	6	5	4	3	2	1	0
5h. Prescribed optimally, ID can improve Strength: Extremities.	6	5	4	3	2	1	0
5i. Prescribed optimally, ID can induce Weight Loss.	6	5	4	3	2	1	0

End of Section 1

Please go to Section 2, which will ask information about your beliefs and practice with respect to the use of dance as a therapeutic intervention

SECTION 2:

Information about Your Beliefs and Practice With Respect to Dance as a Therapeutic Intervention

Instructions: Listed below, are 4 statements (a) and their qualifiers (b), about the use of dance in physical therapy. For each statement, indicate (circle), how strongly you agree or disagree. Answer options range from 1-Strongly Disagree to 6-Strongly Agree. In each instance, qualify your answer to (a) with the follow-up question (b) by checking one (1) box that best applies to you. If you feel your practice does not involve treating patients at risk of or suffering from a chronic lifestyle condition, please indicate 'Not Applicable'.

6a. In some form, dance can be prescribed optimally for: **HEALTH AND WELLNESS**		6 Strongly Agree	5	4	3	2	1 Strongly Disagree
6b. Do you prescribe dance for this reason in some clients/patients?		□ No, and no interest in doing so. □ No but would like to learn more. □ Yes, I believe I do this effectively. □ Yes, but would like to do this better. □ Not Applicable.					
7a. In some form, dance can be prescribed optimally for: **PREVENTION OF CHRONIC LIFESTYLE CONDITION**		6 Strongly Agree	5	4	3	2	1 Strongly Disagree
7b. Do you prescribe dance for this reason in some clients/patients?		□ No, and no interest in doing so. □ No but would like to learn more. □ Yes, I believe I do this effectively. □ Yes, but would like to do this better. □ Not Applicable.					
8a. In some form, dance can be prescribed optimally as: **A THERAPEUTIC INTERVENTION FOR REMEDIATION OF A CHRONIC LIFESTYLE CONDITION**		6 Strongly Agree	5	4	3	2	1 Strongly Disagree
8b. Do you prescribe dance for this reason in some clients/patients?		□ No, and no interest in doing so. □ No but would like to learn more. □ Yes, I believe I do this effectively. □ Yes, but would like to do this better. □ Not Applicable.					
9a. My clients/patients would be receptive to dance as therapeutic exercise.	0 Not Applicable	6 Strongly Agree	5	4	3	2	1 Strongly Disagree
9b. Why do you agree or not agree with the above statement? (If you answered 'Not Applicable', please proceed to Section 3)							

End of Section 2

Please proceed to <u>Section 3</u>, which will ask you to elaborate on your beliefs about dance in physical therapy: *practice*, *education*, *professional development*, and *research*.

SECTION 3:

Open-ended Belief Questions - Your chance to let us know

Instructions: Please answer the following 5 general questions to help us further refine our understanding of dance as a potential therapeutic intervention in physical therapy, and why and how dance may be used in physical therapy practice, entry level education, professional development, and research.

10. Is there anything else you would like to add about your perceptions and thoughts about dance as a <u>therapeutic intervention</u> in the practice of physical therapy?
11. Do you believe dance warrants special attention in physical therapy practice? Please tell us <u>why</u> and <u>how</u> this might be done.
12. Do you believe dance warrants special attention in entry-level physical therapy education? Please tell us <u>why</u> and <u>how</u> this might be done.
13. Do you believe dance warrants special attention in professional development education? Please tell us <u>why</u> and <u>how</u> this might be done.
14. Do you believe dance warrants special attention in physical therapy research? Please tell us <u>why</u> and <u>how</u> this might be done.

End of Section 3

Please proceed to <u>Section 4</u> to answer a brief list of demographic and general information questions.

SECTION 4:
General Information

Instructions: Please specify your answer as indicated. For boxed answers, please select only one (1) box that best applies to you, unless otherwise stated.

15. **Sex:** □ Female □ Male

16. **Age (years):** _____

Professional Education and Experience

17a. Country in which you received your entry-level physical therapy professional education: _____

17b. Year of graduation from entry-level physical therapy training (year): _____

17c. Primary area of specialization or area of practice (please select more than 1 only if you spend ≥20% of time in that area):

□ Cardiovascular □ Respiratory
□ Neurological □ Research
□ Orthopedics □ Other (please specify): _____

17d. Number of years of clinical experience (years): _____

Dance Background

18a. How would you described your experience with dance:
□ No experience
□ Social occasions only
□ As a form of exercise
□ Formal dance lessons (structured, regular, paid classes)

18b. Have you ever described yourself as a 'dancer'? □ Yes □ No

18c. In relation to 18b, how did you define 'dancer'?

YOUR PARTICIPATION IN THIS SURVEY IS MUCH APPRECIATED.

MANY THANKS!

✂----------

We believe that the results of this study will be important in refining physical therapy practice. We would be pleased to present the results to you and your colleagues and/or share our report of the findings with you, on the completion of this study. If so, please provide the best contact information for you. This information is confidential and will only be used for contacting you regarding this follow up.

Name:
Telephone: **E-mail:**

Appendix E. Thank-you postcard

THE UNIVERSITY OF BRITISH COLUMBIA

Department of Physical Therapy
Faculty of Medicine
T325-2211 Wesbrook Mall
Vancouver, British Columbia V6T 2B5
Phone: 604.822.7392
Fax: 604.822.7624
Web: www.rehab.ubc.ca

"Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices"

Principal Investigator: Dr. Elizabeth Dean, PhD, PT, Dept. of Physical Therapy
Co-Investigators: Ms. Kristin Konnyu, BSc, MSc Student, Dept. of Physical Therapy
Dr. Lyn Jongbloed, PhD, OT, Associate Professor, Dept. Occupational Science and Occupational Therapy
Dr. W. Darlene Reid, PhD, PT, Dept. of Physical Therapy

Dear Colleague,

We are very interested in your responses to the questionnaire we recently mailed, entitled:

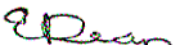
"Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices"

If you have already completed and returned the questionnaire, we sincerely thank you for your participation.

If not, we kindly invite you to participate in this study, and return your completed survey at your earliest convenience. The questionnaire should take no longer than 15 minutes to complete.

Your time and interest in this study are greatly appreciated.

Sincerely,



Elizabeth Dean
Professor
elizabeth.dean@ubc.ca

Appendix F. Reminder letter

Dance as Therapeutic Intervention: Physical Therapists' Beliefs and Practices

Principal Investigator: Dr. Elizabeth Dean, PhD, PT, Department of Physical Therapy
Co-Investigators: Ms. Kristin Konnyu, BSc, MSc Student, Department of Physical Therapy
Dr. Lyn Jongbloed, PhD, OT, Associate Professor, Department of Occupational Science and Occupational Therapy
Dr. W. Darlene Reid, PhD, PT, Department of Physical Therapy

Dear Colleague,

We would like to provide you with one last opportunity to participate in our survey regarding the beliefs and practices of physical therapists regarding dance as an intervention for their clients at risk of or experiencing one or more chronic lifestyle conditions (conditions such as coronary artery disease, stroke, hypertension, type II diabetes and certain cancers, caused by one of three modifiable risk factors – smoking, poor diet, and physical inactivity). Your response will greatly facilitate the success of this study and potentially impact future physical therapy care.

You are a unique health professional in that in addition to providing non-invasive treatment to clients, you educate them with respect to optimizing quality of life. Given the length of treatments and overall duration of episode of care, physical therapists have the opportunity for many 'teachable moments' and impact on health. Dance has not been studied in detail as a therapeutic intervention, yet is social and often considered highly enjoyable and thus may provide a more sustainable alternative to traditional modes of physical activity.

Purpose of the Study
We are evaluating the beliefs and practices of physical therapists living in British Columbia with respect to dance as an intervention for individuals at risk of or experiencing one or more chronic lifestyle conditions. This study is part of thesis requirements of Ms. Kristin Konnyu, a masters graduate student in rehabilitation sciences.

Study Procedures and Your Involvement:
As a licensed physical therapist, we would appreciate your completing the enclosed questionnaire and return it in the postage-paid envelope provided in the survey package. The questionnaire has four sections related to your beliefs and practices related to dance and some general information about you. *There are no incorrect answers*. Please provide information as accurately as possible. It should take less than 15 minutes to complete.

The results of the study will be presented at conferences and published in professional journals. In this way, the information will contribute to the furthering of health promotion initiatives by physical therapists with a view to improve their outcomes.

Confidentiality:
All information you provide will be kept strictly confidential and your name will not be used when reporting data or results. Prior to distribution of all survey packages, each questionnaire has received a study number and therefore, contains no personal identifying data. A separate administrative file that links respondent names and addresses with these study numbers is kept in a password protected file. This and all returned surveys will be kept in a locked, secure storage facility at the UBC Department of Physical Therapy.

Refusal and Withdrawal:
Your participation in this study is entirely voluntary. You may refuse to participate or choose to withdraw from the study at any point in time.

Risks and Benefits:
There are no foreseen risks in your completion of this questionnaire. Potential benefits related to participating in the study include a sense of contribution from being involved in a study that could result in appropriate educational initiatives, curriculum advancement, and innovation in clinical practice and research.

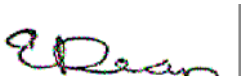
If you have additional questions concerning the study or you are not satisfied with the manner in which it is being conducted, you may contact Dr. Elizabeth Dean (Principal Investigator) at (604) 822-7398.

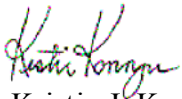
Furthermore, if you have additional questions about your rights as a participant you may contact the Office of Research Services at the UBC at (604) 822-8598.

Consent:
Please complete and return the enclosed questionnaire in the postage-paid envelope provided within the next week. Upon receipt of your completed questionnaire, it will be assumed that you understand the study as it has been explained to you, and that your consent to participate has been given.

I have enclosed both the questionnaire and return envelope for your convenience. Your time and interest in this study are greatly appreciated. If you have any questions, please contact me.

Sincerely,





Elizabeth Dean, PhD, PT
Professor
elizabeth.dean@ubc.ca

Kristin J. Konnyu, BSc
MSc Student (Candidate)

Appendix G. Ethics approval forms

The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK

PRINCIPAL INVESTIGATOR:	INSTITUTION / DEPARTMENT:	UBC BREB NUMBER:
Elizabeth Dean	UBC/Medicine, Faculty of/Physical Therapy	H08-00351

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:

CO-INVESTIGATOR(S):
Kristin Konnyu

SPONSORING AGENCIES:
Michael Smith Foundation for Health Research

PROJECT TITLE:
Dance as a Therapeutic Intervention: Physical Therapists' Beliefs and Practices

CERTIFICATE EXPIRY DATE: February 26, 2009

DOCUMENTS INCLUDED IN THIS APPROVAL:	DATE APPROVED: February 26, 2008	
Document Name	**Version**	**Date**
Protocol:		
Physical Therapist Dance Survey-Protocol	Version 1	February 8, 2008
Consent Forms:		
Physical Therapist Dance Survey-Cover letter and consent	Version 1	February 8, 2008
Questionnaire, Questionnaire Cover Letter, Tests:		
Physical Therapist Dance Survey-Questionnaire	Version 1	February 8, 2008
Letter of Initial Contact:		
Physical Therapist Dance Survey-Pre-notice letter	Version 1	February 8, 2008
Other Documents:		
Physical Therapist Dance Survey-Thank you postcard	Version 1	February 8, 2008
Physical Therapist Dance Survey-Follow-up Cover letter	Version 1	February 8, 2008

The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:

Dr. M. Judith Lynam, Chair
Dr. Ken Craig, Chair
Dr. Jim Rupert, Associate Chair
Dr. Laurie Ford, Associate Chair
Dr. Daniel Salhani, Associate Chair

Dr. Anita Ho, Associate Chair

The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK AMENDMENT

PRINCIPAL INVESTIGATOR:	DEPARTMENT:	UBC BREB NUMBER:
Elizabeth Dean	UBC/Medicine, Faculty of/Physical Therapy	H08-00351
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
CO-INVESTIGATOR(S): Kristin Konnyu		
SPONSORING AGENCIES: Michael Smith Foundation for Health Research		
PROJECT TITLE: Dance as a Therapeutic Intervention: Physical Therapists' Beliefs and Practices		

Expiry Date - Approval of an amendment does not change the expiry date on the current UBC BREB approval of this study. An application for renewal is required on or before: February 26, 2009

AMENDMENT(S):	AMENDMENT APPROVAL DATE: March 31, 2008

Document Name	Version	Date
Consent Forms:		
Physical Therapist Dance Survey-Cover letter and consent	Version 2	March 13, 2008
Questionnaire, Questionnaire Cover Letter, Tests:		
Physical Therapist Dance Survey-Questionnaire	Version 2	March 13, 2008
Other Documents:		
Physical Therapist Dance Survey-Follow-up Cover letter	Version 2	March 13, 2008

The amendment(s) and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:

Dr. M. Judith Lynam, Chair
Dr. Ken Craig, Chair

Dr. Jim Rupert, Associate Chair
Dr. Laurie Ford, Associate Chair
Dr. Daniel Salhani, Associate Chair
Dr. Anita Ho, Associate Chair