

THE INTEGRATION OF HEALTH COACHING AND PHYSICAL THERAPY

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A Case Study

Presented to

The College of Health Professions and Social Work

Florida Gulf Coast University

In Partial Fulfillment of

the Requirement for the Degree of

Doctor of Physical Therapy

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By

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2015

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APPROVAL SHEET

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the requirements for the degree of  
Doctor of Physical Therapy

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Approved: May 2015

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*The final copy of this Case Study has been examined by the signatories and we find that both the content and the form meet scholarly work in the abovementioned discipline.*

# THE INTEGRATION OF HEALTH COACHING AND PHYSICAL THERAPY

## ACKNOWLEDGEMENTS

I would like to acknowledge, the clients that were willing to serve as case studies, as well as Dr. Black and Dr. Pignataro, for their advice and encouragement. Thanks also to my daughter and editor, Stacey Mann, Dr. Venglar for her guidance in formatting the paper properly, and my supportive husband David Mann.

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## **ABSTRACT**

**Introduction:** Health Coaching is a new method of facilitating improved individual self-management of disease processes, aimed at preventing catastrophic health incidences such as risks associated with heart disease and stroke relative to increases in levels of obesity, stress, cholesterol, and sedentary lifestyles, and, systemic inflammation.<sup>1, 2,3, 4</sup>

**Purpose:** The purpose was to determine how a physical therapist could be successful in coaching a client to wellness, and what kind of training would be necessary to be successful in promoting long lasting change in behavior to promote improved health in those with chronic disease, and to prevent disease and premature mortality.<sup>5, 6</sup>

**Pilot and Case Study:** Changes in personal behaviors of a pilot patient who received physical therapy, health coaching and post rehabilitation fitness training, and a case study client who received health coaching alone over several months were evaluated and compared. The pilot study utilized motivational interviewing techniques only, and the case study utilized motivational interviewing, and behavioral methods using biopsychological techniques. A 3 month vision and SMART goals, were set and monitored with the client, and facilitated by the physical therapist who utilized health coaching methods. **Result:** The result is that either a simple form of health coaching or a longer form of counseling and coaching were both effective in improving the quality of life of one patient and one client coached. There is a need for Physical Therapists to obtain more substantial education in behavioral techniques to be effective coaches.

## INTRODUCTION

Health Coaching is a new concept with relatively little scientific literature documented prior to 2005.<sup>7</sup> It is a concept that has evolved with the changing health care market. There are advances in the gathering and studying of epidemiological data. Data about the incidence and prevalence of chronic disease processes, disability and premature mortality, are utilized to help develop evidence based treatment techniques that improve the outcomes of health care intervention. Health coaching is a technique designed to promote improvement in health behaviors of clients, through self-actualization, using motivation and behavioral methods. The primary goal of the patient is to have the best quality of life possible, avoiding pain and suffering from the disease process. The primary goal of the health care system is to reduce the costs of health care by preventative measures, and to improve the quality of life by promoting effective self-management, and improved adherence of the individual receiving health coaching services.

The aging population is increasing in number, and living longer. Those over 60 years of age, in contrast to those under 50, account for a larger portion of health care costs.<sup>8</sup> The major contributors to the increasing health care costs are Heart Disease, high Cholesterol, Diabetes, and Cancer from cigarette smoking. The past medical model consisted of treating patients when they were sick. When preventative medicine is promoted, money is saved for every dollar spent on the treatment of an illness. For example Harvard's Family Van saved 36 dollars for each dollar spent for clinical care for the poor,<sup>9</sup> and the CDC reports childhood immunizations save 18.40 cents for every

dollar spent.<sup>10</sup> Physical Therapists are academically qualified and strong candidates for becoming Health Coaches and some Physical Therapists are already integrating the Health Coaching Concept into treatment. Health Coaching principles have been defined by several researchers.<sup>12,13,14,15,16</sup>

The US is ranked 37<sup>th</sup> in the world in terms of health care quality, infant mortality, and life expectancy.<sup>8</sup> The average American is at high risk for obesity, heart disease, and diabetes, which increases their risk for disability, and premature death. Other problems that contribute to the incidence of disease are poor eating habits, sedentary nature, smoking, alcohol and drug abuse, environmental, behavioral, and cultural and media influences.<sup>11</sup> Health care disparities affect outcomes by increasing the risks for occurrence of catastrophic events due to lack of preventative health care. Health Care Coaching is a mentorship for a healthier lifestyle.

It is easier for individuals who are at risk for disease progression, to change their habits voluntarily, and in their own time frame. Health coaching allows for the client to become the “expert” and decision maker regarding his/her own health habits, based on individual barriers and drawing on past experiences and personal strengths to make a positive change. Health Coaching techniques depart from the former paternalistic approach of “Teaching and Telling” commonly used in the health profession and in physical therapy. Instead they focus on the influence of the mind over the body, and spirit utilizing positive thinking, reaching for past success and building an excitement or energy about the future possibilities This leads to Design Thinking, a combination of several biopsychological techniques, used to elicit the desire and the means to make changes,

such as Appreciative Inquiry (getting the client to think about past successes), Motivational Interviewing (reflective listening and open ended questions), and the Transtheoretical Model (assessing the client's readiness to change).<sup>17</sup> The client's statement about what they are such as "I am healthy", is a stronger statement than "I will be healthy".<sup>17</sup> Wayne Dyer, a 20-21st Century Philosopher and expert in Mind Body Spirit issues says "The more you see yourself as what you'd like to become, and act as if what you want is already there, the more you'll activate those dormant forces that will collaborate to transform your dream into a reality".<sup>18</sup> This statement can be transferred to the purpose of health coaching. The coach works to help the client see themselves as healthy, and to help them to initiate activities through their own will, that will effectively bring them to the health he or she has envisioned for themselves.

Traditional roles of physical therapists have been to evaluate, treat, and educate patients who present with some type of disability. The APTA has only recently suggested that PTs play a major role in the health and wellness of the patient.<sup>12</sup> The physical therapist throughout the history of practice has generally taken a paternalistic approach to treating patients by telling them what to do, and educating them in how to manage their situation.<sup>13</sup> A study was conducted about the shared decision making process between physical therapists and patients. 237 consultations by 13 therapists, with 210 audio recordings, were analyzed by the Observing Patient Involvement (OPTION) instrument (a valid scale in English, but not validated in Dutch), which contains 12 items focused on decision-making. Questions on the OPTION instrument included "Therapist checks if the patient understood the information, Therapist offers the patient the opportunity to ask



questions, and, Therapist draws attention to problem as one that requires a decision – making process”.<sup>13</sup> Another scale was utilized called the CPS (Control Preference Scale) prior to treatment, which consisted of questions about the patient’s preferences, and about the therapist’s perceptions of what the patient wants “I prefer to, and I think the patient prefers”.<sup>13</sup> The data was analyzed using multi-level analysis, between individual variables, and shared decision making levels. Kappa coefficients were used for agreement on preferences. The results indicated that 36.7% of the patients wanted shared decisions, and 36.2% of the patients preferred to give his/her opinions about the treatment.

The therapists often did not recognize the patient’s desire to participate in decision-making, and often dictated the course of action. Female therapists had a mean score of 7.2 (SD 7.5, median 4.2) and male therapists 4.0 (SD 6.1, median 2.1) indicating that female therapists were more highly correlated to involvement with the patient ( $r=.34$ ,  $P<.001$ , and  $b = -0.86$ ,  $P=.01$ ).<sup>13</sup> PT treatment outcomes were maximized at 64% of the patients studied, in the areas of compliance, patient satisfaction, and follow through as a result of an increase in shared decision making about the treatment between the therapist and patient.<sup>13</sup>

Many patients have multiple comorbidities, which makes the management of his/her situation more complex. Careful assessment of the patient’s previous medical history, medications, and current symptoms has to be completed to set appropriate treatment goals. The patient needs to express what they want and are willing to do.<sup>14</sup> Self-management of one’s health care risks through self-efficacy, before the need for medication and invasive techniques provides for enhanced health and well-being, greater

longevity, less disability, and lower health care costs.

Physical therapists are beginning to take on new roles to help promote self-actualization and self-management of symptoms to improve long-term outcomes. The new role is health coach. The researcher, Jeanette Olsen PhD RN formed a Health Coaching operational definition. Her definition based on the Concept Analysis of 215 articles was: Health Coaching is a goal-oriented, client-centered partnership that promote healthy behaviors through a process of client enlightenment and empowerment.<sup>7</sup> The health coach uses biopsychological, techniques to get the patient to develop plans for improving his or her own personal wellness. It is important to receive proper training and significant practice when utilizing biopsychological techniques in order to be effective. The following is a review of the techniques learned from US Health Foundations, Wellcoaches, Dr. Rose Pignataro personal interviews and seminars, and additional reference materials.

It is important to be a coach not a fixer or rescuer, and to avoid taking responsibility for the ability of the client to change. Self-care of the coach is important to allow the coach to avoid bias, and to be able to provide the best coaching experience for the client. Mindful listening is at three levels, internal listening to what the words mean to us, level 2 is listening to what the words mean to the other person, and level 3 is listening to verbal intonation, emotional engagement, and observe body language.<sup>19</sup>

Techniques used to communicate with a client to motivate for change include: Reflective Statements based on Mindful listening, Open Ended Questions, Empathy Statements, Appreciative Inquiry and Generative Inquiry. Reflective Statements include:

Simple (repeat back) amplified (exaggeration of the statement) “so you REALLY want to do this?” and double sided (“on the one hand you say that you would like to do this, but so far have not”), shifted focus (taking a negative statement and turning it towards the positive: “So you hate vegetables, what else could you do to get more fiber in your diet?”), and empathy (listening and acknowledging the persons heart felt concerns, and fears: (“You are feeling depressed and anxious about your upcoming surgery, yet wanting to come out of it ok”).

Generative inquiries include, what would it look like to you if you had your dream situation, what are the methods you could use to accomplish your goals, how much do you want to do this? Efforts should be made to be non-judgmental, and observe directly what the client has to say vs. evaluating their statement (“Your blood pressure is 160/90”: an observation, and an evaluation is: “Your blood pressure is way too high and out of control, and this is not good, What on earth have you been doing that would make your blood pressure go up like this?”). Non Violent Communication means that statements are without pity, criticism, or sarcasm.

A coach can use Motivational Interviewing techniques to engage the client. The client starts to talk about the problem and the coach uses empathy, focuses on and explores the topics at hand, to evoke the client to resolve the issue with a variety of ideas. The coach uses generative inquiry to help the process: “On a scale of 0-10, (zero being not wanting to change, and 10 being highly motivated to change) how ready are you to change?”<sup>19</sup> Visualizing for Success helps to focus on where the client wants to go in regards to their health. The client creates the plan of action. SMART Goals are set, with

the coach facilitating planning. Appreciative inquiry and Decisional Balance are used to focus on realistic goals.<sup>20</sup> The question is: “So what is your best-case scenario, and how do you get there?”<sup>21</sup> The ultimate goal is to encourage improved cognitive and behavioral self-esteem.<sup>22</sup> Cognitive self-esteem is -what one thinks of oneself, and behavioral self-esteem is –how assertive and self-reliant one is. The ability and motivation to achieve one's goals is called Self Efficacy. Self-Compassion is self-kindness combined with self-acceptance rather than self-judgement. Generating self-efficacy and self-compassion occurs with reviving positive memories, emotions and past events so to remind the client that they have been successful in the past, and can be successful now and in the future.<sup>17</sup>

The Transtheoretical model is integrated with the coaching techniques which includes precontemplation: thinking that something is not possible, contemplation: thinking that something could happen, preparation: thinking that one will do something, action: thinking that I am doing something, maintenance: still doing something, and preventing relapse. A confidence scale can be utilized to measure each category by, “How ready are you to change on a 0-10 scale”. Techniques such as Appreciative Inquiry, Motivational Interviewing and Transtheoretical Models can be interwoven into Design Thinking: which consists of methods to integrate the human factor and innovative thinking. Empathy, integrative thinking, optimism, experimentalism, and collaboration, can be used to solve or come up with new and better methods of accomplishing a goal.<sup>20</sup> Goal setting for health coaching is similar to goal setting in physical therapy including short-term weekly goals, and medium term goals up to 3 months, and long-term goals for permanent behavior changes to avoid relapse. The goals are written by the client “I will--

-“ vs. the traditional physical therapy goals stating with “the patient will---“. A Generative Inquiry, Nonviolent Communication and Decisional Balance are used to explore the client’s hopes, feelings and aspirations, and to resolve ambivalence.

Decisional Balance refers to a discrepancy in the clients knowledge, for example “on the one hand you say you would like to lose weight but on the other hand you do not want to give up drinking soda”, or “You say you are confident, on a 0-10 scale (zero no confidence, 10 highly confident) at 3/10, why did you not choose a lower number?” The client then begins to talk about the barriers to change and explore the possibilities of increasing confidence by coming up with a solution based on exploring past successes. Appreciative inquiry focuses on the dreams and wishes of the client to help them move forward, towards reasonable desires. The health coach avoids emphasizing deficits, and focuses on the positive experiences in the past, recent experiences, and future anticipation. The success of the coaching programs can be measured using tests of happiness, well-being and satisfaction, functional scores, and health coaching as a cost benefit ratio.<sup>24</sup> Care must be given to ensure that there is no bias in regards to cost benefit ratios that may be set by an institution (such as a health care insurance or PT clinic). The health coach’s role to help the client to realize his or her goals, and not manipulate them into a template of success set by the organization or institution.<sup>23</sup>

Studies have been conducted regarding physical therapy and the use of biopsychological techniques with patients to improve adherence to healthy behaviors and patient outcomes. In a study conducted by Nessen, T., Opava, C.H. and Martin C. qualitative content analysis was utilized during the interview process of 12 PT’s to study

education methods used, to teach and encourage patients to increase physical activity.<sup>15</sup> The emphasis was not only in educating patients in self-management but to overcome barriers to compliance, which include “biological, psychological, behavioral, environmental, and social determinants of health and disease”.<sup>15</sup> The treatment sessions included a more collaborative approach, focusing on patient centered care, in order to increase the patient’s physical activity compliance.

Another study by Black, B., Marcoux, B.C. and Xianggui Qu, indicated that at least 80% of Physical Therapists already model healthy behaviors including exercising regularly, eating at least 5 servings of vegetables and fruits, avoiding smoking (at least 90%), and getting enough sleep.<sup>16</sup> Female therapists were more likely to eat fruits and vegetables than male therapists. This indicates that physical therapists consistently demonstrate healthy behaviors, and are good role models for patients.<sup>16</sup> Several papers have cited the education of physical therapists in a variety of health coaching techniques including Pain Management, the use of patient centered questionnaires to find out what the patient wants, and the use of biopsychological techniques. Various measurement tools have been utilized and validated, such as the Transtheoretical model for behavior change, which includes questions such as pre-contemplation, contemplation, preparation, action and maintenance of health habits.<sup>25</sup> In addition, the BRFSS Behavioral Risk Factor Surveillance System Questionnaire, designed by the Centers for Disease Control, includes questions about health habits, and attitudes towards healthy modeling.<sup>26</sup>

The purpose of the Administrative and Interventional Case Study of Wellness Coaching and Physical Therapy was to establish a protocol that utilizes evidenced based

techniques for Wellness Coaching, and to apply the protocol to a client, using valid and reliable tools to measure the outcome in a reasonable amount of time (3-6 months).

Physical Therapists are well suited to health coaching because 90% agree that role modeling is important and 80 % of physical therapists exhibit healthy habits over other professionals in the US.<sup>27</sup> Patients are seen for repeated visits with the physical therapist so there is time to develop rapport, and to get to know the client's health and wellness issues, as well as environmental and social factors affecting outcome. More Physical Therapy Doctorate programs are including Wellness and Health Promotion education, and Biopsychological techniques for promoting patient self-motivation. Health coaching, is compared to sports coaching, and is a relatively new concept, with most scientific articles being published since 2005.

The seven elements of health coaching are: setting goals, client based, development of a partnership, focused on healthy behaviors, processing information, learning new information, and empowering the client to take action for the purpose of improving one's health.<sup>7</sup> Health coaching is the interaction between the health care professional and client for an improved outcome of healthy and balanced living.

Variations occur in frequency and duration of intervention, and in credentials of health coaches. Physical Therapists are qualified to discuss health behaviors with clients judging by their education, experience in the clinical setting, and their ability to exhibit healthy behaviors to others.<sup>16</sup>

The Purpose of the Pilot and Case Study is to set up a protocol for health coaching for physical therapists using valid and reliable tools for effective outcomes of improved

health and wellbeing of the client. In 2020 there will be at least 150 million people in the United States who will be living with a chronic condition. It will be important for health care providers to be able to promote and teach self-management to maximize health.

Health coaches and physical therapists both, utilize techniques like Motivational Interviewing, to get the patient thinking about possible solutions for his/her health care problems. Motivational Interviewing is an approach that focuses on open-ended questions, collaboration between the patient and therapist, and recognition of patient autonomy. Repeating the patient's answers to questions through the use of reflective listening verifies that the patient's goals and aspirations have been heard and recognized. The Motivational Interviewing technique emphasizes behavior change. Patients become more aware of their habits, versus forcing a diagnosis, and acceptance of the diagnosis, on the patient. The patient learns to self-manage using skills that are taught through a partnership with the health care provider which include problem solving, learning about outside resources, and taking action to realize goals.<sup>27</sup> Motivational Interviewing is becoming a more important part of physical and occupational therapy said Robyn McHugh, PT, DPT, OCS, CSCS, and Victoria McQuiddy, OTR/L, MHS, at the June 13, 2014 NEXT Physical Therapy National Conference.<sup>28</sup> Motivational Interviewing is one of the major techniques of communication that has been validated scientifically to work. Elements of coaching that prove valuable in eliciting change are "mindfulness, self-awareness, self-motivation, resilience, optimism, and self-efficacy."<sup>29</sup>



**PROPOSAL FOR HEALTH COACHING METHOD**

The initial visit for health coaching consists of a discussion of what health coaching is, what the client's and health coach's expectations are, and how the coaching will help the client reach his or her goals. Specific baseline biometric data can be taken such as Body Mass Index (BMI), cholesterol levels, blood pressure, Body Fat Impedance, Waist to Hip Ratio, and Waist Circumference. Although Body Mass Index is not as accurate of a predictor of weight status, it is being used as a method of functional scoring by Medicare for PQRS guidelines, because it is easier to use (vs. body fat calipers, or under water weighing).<sup>30</sup> Calculating BMI is easy with weight and height measurements. The problem with BMI is that it more accurately reflects body weight than body fat. It is the body fat that increases the patient's disease risks, and some individuals may weigh more but have less body fat.

The VARK questionnaire can be administered to determine what learning style is appropriate for the client.<sup>25</sup> A Risk Assessment Screening includes Medical Indicators: Total Cholesterol, HDL Ratio, Blood Pressure, Blood Glucose, Weight, and Triglycerides, and Lifestyle Indicators: including physical activity, tobacco, use, dietary fat intake, fruit and vegetable intake, stress levels, alcohol intake, and seatbelt use.<sup>25</sup> Clients fill out a health risk review form, in order for the health coach to discuss the biometric information, and potential health risks for the present and future, and to assess the client's willingness to change, including a visual aide scale on a 0-10 'How important is it for you right now to change? "Zero" being not important and "ten" being very important, and on a 0-10 scale how confident are you that you could make this

change? Wellcoaches has their own Internet based Health Assessment form for exclusive use by its certified Wellcoaches and their clients, however it is not Physical Therapy based but more generic for Wellcoaches with a general health care background.<sup>19</sup>

Additional testing may be done during the Physical Therapy Evaluation, or The American Physical Therapy Annual Checkup, which includes questions about the client's goals and aspirations using the PROMIS Global Health Scale, or other short form Health Surveys; medical, surgical history and current medications; personal factors using a confidence or self-efficacy scale, history of physical activity, dietary intake, disease risk, emotional status, hearing, integumentary status, pain, and vision categories. A physical performance examination is completed including aerobic capacity, balance, ambulation speed, mobility, flexibility, functional strength, posture and quality of movement. Many of the categories can be tested using valid and reliable functional scores with normative data for age related comparisons.<sup>31</sup>

Motivational Interviewing is applied to coaching, which includes collaboration of the coach with the client to assist the client in his or her efforts for change. This promotes client discussion of what and how they would like to change, and respects the autonomy of the client to become motivated to change. Motivational Interviewing is the use of questions to lead the client to constructive conclusions and ideas for change, which include reflective listening (rather than parroting).<sup>16</sup> A questionnaire is provided to promote self-awareness in the client as to what he or she wants to accomplish, regarding his or her personal goals, and is reviewed with the health coach. The client may share with the physical therapist medical history information and copies of previous medical

exams or tests. The physical therapist can conduct an examination of strength, flexibility, function, gait, pain levels, and posture. The patient may be seen for a series of physical therapy appointments for a specific issue, but has additional health issues that need to be addressed. The patient may continue on a private pay basis with health coaching to further address these issues.

The client sets goals with the therapist, through collaborative brainstorming, about what it is he or she wants to accomplish. The goals are focused on health improvement, with a vision towards Wellness. The therapist and patient or client discuss what would be realistic time frames and realistic “smart” goals. The SMART goal is specific, measurable, attainable, and realistic or relevant and timely.<sup>13</sup> Each goal should be periodically reassessed and can be adjusted with changing circumstances. The plan is then implemented using a client-centered concept that includes motivational and behavioral interventions such as self-mapping (keeping a diary, keeping records of vital signs, weight, and circumference of a body part (waistline or thigh), blood pressure, heart rate, and oxygen consumption. The focus of Motivational Interviewing is on behavior change, which includes items such as increasing fruit and vegetable intake, reducing carbonated beverages, increasing exercise, or improving sleep patterns, using quantifiable goals. Physiological data may be recorded to help verify results over a period of time.

Behavioral considerations include the idea that the client needs to know what his or her behavior is and know how to change it. The client can also learn by observing others. Learning can be through peer groups such as weight loss groups, social media such as on line support groups, blogs, searching for information on a topic, or modeling

behaviors of one's fitness coach or physical therapist, or celebrities who have made a drastic change in health behaviors (such as the biggest loser), or through electronic self-monitoring bracelets and watches. Transtheoretical Models include: pre-contemplation, contemplation, preparation, action and, maintenance.<sup>25</sup> The idea is that the patient starts to think about change, considers change, thinks that they may be able to change, begins to take action to change, and works on maintenance of the change. Follow up intervals can be set with the client determining how often to meet with the therapist, and methods determined by the client and therapist to keep relapse in abeyance. Initial coaching should be at least once per week with follow up intervals once per month.

#### **CASE STUDIES: INTRODUCTION**

I have been interested in adding Health Coaching to my physical therapy practice and decided to take some courses on Health Coaching and then practice working with patients/clients to perfect my skills. The case studies discussed in this paper have been completed over the span of almost one year and have been completed as I progressed through my health coaching education. The Pilot study was initiated after I attended a weekend seminar on Health Coaching and became certified under USA Health Foundations. I utilized the techniques that I learned from the course, consisting of using the Transtheoretical Model questionnaire to determine readiness to change, and Motivational Interviewing techniques (reflective listening and open ended questions). My health coaching skills were limited. I realized after working with the first patient from February 2014 through April 2014 for physical therapy treatment for back pain, and then from April 2014 to August 2014 for personal training and health coaching, that I needed

more training. In September 2014, I enrolled in the Wellcoaches 18 week training and certification program, and started a second case study from Sept 2014 to November 2014 utilizing the techniques of health coaching as I learned them, with greater focus on the biopsychological techniques.

The last year has been a learning experience through attending courses, writing the Capstone Project and practicing with patients/clients. I have also informally tried the health coaching techniques in a shorter form during traditional insurance-based physical therapy treatment sessions. My main goal was to try to figure out how to integrate health-coaching techniques within physical therapy practice, to get better long term results for the patient. I am considering adding health coaching to my practice as an added value and service.

### **PILOT STUDY: HEALTH COACHING INTEGRATED WITH PHYSICAL THERAPY AND PERSONAL TRAINING**

The patient was a 70-year-old female, who I had seen previously a few years ago in a clinical setting for a diagnosis of back pain. The patient contacted me in January 2014, due to having a flare up of sciatica. She had a concierge doctor and did not want to go through insurance, and wanted me to come and see her at her home for personal training. The patient agreed to be a subject for the research project, being fully informed of the nature of the project, and signed permission and confidentiality forms. She had a history of Diabetes, obesity, high blood pressure, right total Hip replacement, previously torn right rotator cuff injury; right thoracic, left lumbar scoliosis, kyphosis, pelvic obliquity, and thoracic surgery for partial removal of left lung due to cancer. The patient

was taking insulin shots. Her medication consisted of Humira injections several times per day and blood pressure regulating medication. The patient's chief complaint was sciatica down the left leg to the calf, aggravated by prolonged sitting. The patient exhibited positive straight leg raising on the left to 30 degrees. Strength was decreased at the left lower extremity in comparison to the right. Abdominal strength was 3+/4-, left hip extensor 4-, hamstrings 4-, hip abductors 4-. (0-5 manual muscle test scale). The patient had an antalgic gait pattern over the left lower extremity, and her pace of ambulation was slowed. The patient reported that she was doing accounting for her husband's company in preparation for taxes, and had been sitting at the computer for hours, all day long, for several weeks.

The patient's vitals were taken at each session and it soon became apparent that her blood pressure was fluctuating at above normal levels, as well as her blood sugars. I recommended that she eat a small snack before and after the treatment session, and monitor her blood sugars, before and after treatment, and her blood pressure daily. The patient was advised to work closely with her doctor regarding the regulation of both blood pressure and blood sugars. The patient reported she was "trying to lose weight and the Humira insulin injections were making her gain weight, so she wasn't taking it as often as she should." She also reported periodically that she was skipping a meal to lose weight. This is an example of listening to the client without judgement or criticism, and an example of free and open communication between the physical therapist and client. The patient was willing to tell me about her lack of adherence to the Diabetes medications and why she chose to be non-adherent. The non- judgmental (Non Violent

communication) method of listening used in Health Coaching provides a safe environment for the client to discuss her concerns.

The patient was advised she needed to take injections as prescribed by the doctor and to eat regular meals, including small healthy snacks throughout the day in order to keep her blood sugar levels stable. The patient was very insistent that she didn't need to go to the doctor; she only needed to get her back better and to start exercising so she could lose some weight. She said, "I have spoken with the doctor and I have a table that I follow so I know how much Humira to inject based on the blood sugar reading."

Motivational Interviewing techniques can be utilized to work with the patient regarding their resistance to change, using a technique called "Rolling with Resistance". The technique involves listening to the client and empathizing with them, using reflective statements such as "I understand how frustrated you are, you feel like you really need to focus on getting your back better, and that you don't need to go back to the doctor, because you already know what to do." How important is it to you on a 0-10 scale to get your blood sugars under control? Or how confident are you that you can make a change?" I proceeded to closely monitor her vitals, and set a plan of care for the low back pain, weight reduction, and to increase her compliance with following the doctor's protocol for insulin, dietary guidelines and blood pressure, so that we could exercise safely.

The prognosis for reduction of the back pain was 4 weeks, however for weight reduction, steady and normal blood pressure, and improved blood sugar readings was 4 months. Short-term goals for Physical Therapy were to reduce radicular symptoms by 2

weeks, and have the patient teach back the importance of following the doctor's orders regarding use of insulin in one week. Four week goals were to normalize her gait pattern for community ambulation 1000 ft., improve lower extremity strength and flexibility, improve posture, improve knowledge of body mechanics, and improve knowledge of safe exercise for weight reduction. Four month goals were to decrease weight to normalize blood pressure and blood sugars, and increase healthy habits. The client's goals were to: To reduce her back pain so she can tolerate exercise, to start an exercise program in order to help control her blood sugars and to lose weight in order to control her blood sugars and to feel better. Physical Therapy interventions included Patient education to reduce prolonged sitting, use of proper positioning with lumbar roll, ergonomic education, pacing, pain management, home exercise including spinal stabilization, stretching, and progression to aerobic training, and aquatic therapy

The patient began to exhibit a decrease in symptoms by the fourth week with improved gait pattern, hamstring length to 50 degrees, strength in lower extremities to 4 through out, and the radicular pattern was almost gone except periodic muscle spasms into the left hip. The patient's posture was more erect. As the patient's pain subsided, and gait pattern became more normal, more emphasis was placed on aerobic training, and more aggressive core conditioning. The patient was still having trouble with her blood pressure and blood sugar levels and was not compliant with recommendations. It was at that time I started using motivational interviewing techniques, since the patient was not receptive to direct education. When given direct advice about dietary intake, blood pressure, and blood sugar regulation the patient became resistive, coming up with a



number of reasons why she could not or would not do what the therapist suggested. The patient was very strong willed and did not like being told what to do. Motivational Interviewing techniques were introduced to increase the client's motivation to self-regulate her behavior towards better health.

The health coaching technique is designed to get the client to self-discover a course of action that he or she feels confident in. The health coach utilizes reflective listening, empathy, and open-ended questions to help guide the client to come up with their own solutions in their time frame. Research literature indicates that Motivational interviewing can be helpful to the ambivalent client to promote change.<sup>32</sup>

The patient had shown improvement in strength endurance, tolerance of the treadmill or Nustep starting at 3-5 minutes and progressing to 20 minutes. The patient had fluctuating blood sugars, reported drinking up to 16 oz. of orange juice, at one sitting, and continued to skip meals. She said she knew all about diet and did not need to go see a dietician, even after I had suggested several times that she see a dietician. Instead of teaching the patient I started to ask a number of questions using Motivational Interviewing. The following are some examples of the questions I asked at various treatment sessions, and the answers she gave in response. The answers she gave, provided an additional opportunity for teaching. The teaching sessions were directly related to the topic at hand, and answered her questions or concerns. Questions were asked about dietary intake, use of insulin, weight and blood pressure control, stress levels, knowledge of exercise, and safe levels of exercise.

Motivational Interviewing Intervention:

**1. Therapist question:** “How many grams of sugar are in a 4 oz. glass of orange juice?”

And how many grams would be in a 16 oz. glass? “

**Patient response** “I really like drinking a large glass of orange juice or grape juice and I know it is good for you. I know how many grams of sugar are in 4 oz. of Orange Juice”

**Therapist response:**” Well if there are 26 grams of sugar in 4 oz., of orange juice how much is there in 16 ounces? How many grams of sugar should you have at any one time?”

**Teaching opportunity:** Becoming aware of how many grams of sugar are actually consumed and how to modify that by having 4 oz. of orange juice instead of 16 at any one time.

**2. Therapist question:** “What did your doctor tell you, regarding your insulin injections and use?”

**Patient response:** “I know what I am supposed to do, I have been over it with the doctor, and I don’t feel like I should be calling him all the time, because he will tell me the same thing, he has already told me. He told me to follow the chart he gave me that indicates the dosage of insulin based on my blood sugar readings. I suppose I shouldn’t be skipping my insulin dosages.”

**Teaching opportunity:** Keeping the insulin levels steady throughout the day will actually help in weight reduction, and reduce the stress on the body that comes from high and low insulin levels, and prevent any adverse effects such as syncope, abnormal blood pressure, and organ failure.

**3. Therapist Question:** “Do you know the warning signs when your blood pressure is too high?”

**Patient response:** “Well, I don’t know, I know I don’t feel good when my blood pressure is too high, just sore, tired, and I get a headache.”

**Teaching opportunity:** The warning signs of high blood pressure are fatigue, headache, and overall achiness. High blood pressure can lead to stroke or heart attack. Dangerous levels of blood pressure are 170/100, blood pressure is considered high at 150/90.

Likewise abnormally low blood pressure would be less than 90/60. Exercise in the pool at 160/90 or above is contraindicated.

**4. Therapist question:** “Do you know the warning signs when your sugars are too high or too low?”

**Patient response:** “Of course I know the signs when my sugar is too high or low, I check my sugars every day, and they are too high.”

**Teaching response:** high blood sugars can cause excessive fatigue and confusion; Low blood sugars can cause dizziness, and syncope

**5. Therapist question:** “Do you know about how increased stress, workload or sedentary nature may affect your blood pressure and blood sugars?”

**Patient response:**” I know you told me to change position every 30-60 minutes and I am trying to do that. I have to get the taxes done, so I don’t have any choice but to keep working on it until it is done.”

**Teaching opportunity:** I know you have to get your taxes done, but you may try pacing your activity, and perhaps looking at other avenues like getting someone to assist you if the burden is too great.

See Appendix A: Pilot Study - Health Coaching with Physical Therapy and Personal Training: Additional Questions using Motivational Interviewing Techniques pages 55-57.

### **Pilot Study Results**

Please see Appendix D: **Table 5**, Initial and Discharge Data for Pilot Study ( Physical Therapy, Personal Training and Health Coaching ) pg. 68, which provides the results of her rehabilitation and personal training program. The patient had great success regarding reduction of back pain with radicular pain subsiding from the knee area to spinal centralization, and eventually reported no pain. She regained her ability to community ambulate and complete most functional skills. We did not weigh her during any of the sessions. The weight listed on the table is what the patient reported. She had a full exercise program for the low back pain, and instructions in the use of the treadmill, Nu Step, and aquatics protocol. The patient had purchased aquatic exercise equipment, and was able to utilize them appropriately with cueing in the pool.

Progress related to the initial goals was as follows. The patient's radicular symptoms were gone with a pain level of 0/10. She had shown some improvement in blood pressure however had a setback on 5/15/14, with a significant increase in blood pressure, which required a physician visit. After her visit and further regulation of medications her blood pressure became more stable. Between 6-16-14 and 6-23-13 her

blood sugars had dropped down to more reasonable levels. She had a relapse as of 7-6-14. The patient had reported following the doctor's orders regarding Humira injections but blood sugars were 220, and 330. She was demonstrating a more normalized gait pattern and able to ambulate community distances without an assistive device within four weeks, including being able to go to the grocery store and run errands however she had residual fatigue after doing errands. Her general lower extremity strength improved to 4/4+ out of a 0-5 scale, and she was able to complete sit to stand without difficulty. She showed improved hamstring flexibility initially at 45 degrees and at discharge 55 degrees in the straight leg raising position. She met her posture and body mechanics goals partially, still needing cueing to follow through. She did not meet her goals of regular exercise, and was able to complete exercise only when the therapist came to see her once or twice a week. On the other days she reported she was not doing any formal exercise, although she would try to walk more while on errands, and sometimes did the spinal stabilization exercises. The patient did not meet her weight loss goal, with minimal changes in weight noted. She had been making progress with a gradual reduction in blood pressure and blood sugars from 5-15 to 6-23-14. She suffered a setback between 6-23 to 7-7-14 due to suffering from a respiratory infection.

In general she made progress regarding her low back symptoms meeting most of her goals, and showed gradual improvement in blood sugar, and blood pressure levels, and a little change in weight. She was non adherent to exercising independently. The motivational interviewing techniques about her management of blood pressure, blood sugars and dietary intake, weight loss and exercise were partially effective. The initial

phase of treatment was traditional physical therapy to manage back pain, using the teach-and-tell strategy, whereas the post rehabilitation phase was focused more on overall health and disease management and aquatic exercise/ personal training. The motivational interviewing techniques were partially effective. The Optimal Functional Score improved from initial evaluation to discharge from the low back pain treatment episode, from 46/75 (61%) to 28/75 (37%) disabled. The patient's Confidence Score in her ability to perform daily functional tasks initially was 4, and at DC 7 out of a 0-10 score with 0 not at all confident, and 10 very confident. See Appendix C: A Comparison of Initial and Discharge Optimal Score Functional Test Results for Pilot and Case Study pgs 65 -67.

The Optimal Score provides a ruler to measure functional capabilities, but does not reflect the patient's overall ability to manage Diabetes.

### **Pilot Study Discussion**

The literature sites that physical therapists are good candidates to model healthy behavior.<sup>16</sup> Physical therapists have had a history of utilizing a more paternalistic method of instruction to most patients in a rehabilitation setting.<sup>13</sup> It also sites that therapists need training when utilizing specialized techniques of coaching of patients with chronic pain.<sup>26</sup> I feel like I have been a good role model for my patients, having normal body weight, exercising daily, and eating healthy meals and snacks. I found that utilizing the technique of motivational interviewing after years of telling patients what to do, to get better, is more difficult than it appears. I believe that I was successful in reducing back pain and improving function in the patient as evidenced by the Optimal Functional Score, but was not completely successful in altering the patient's health habits, and behaviors. When

transferring roles from physical therapist to personal trainer, and health coach, the relationship changes. I feel that when a patient is paying privately for services, they become more dependent on the therapist/personal trainer to help them do their exercise protocol, especially when they have the funds to continue services for as long as they would like. The patient expects that the therapist will coach them to health, without the patient taking full responsibility. The goal is to promote independence and self-efficacy for self-care, by empowering the patient to change his/her behavior.<sup>33</sup>

A study conducted at the University of North Carolina, Wilmington regarding exercise self-efficacy in 611 students taking a Wellness course indicated that exercise self-efficacy improved one's perceived Wellness, including the psychological, spiritual, intellectual, and emotional wellness subscales, but did not improve social wellness.<sup>34</sup> Student Self-efficacy in exercise, was gained through effective educational programming provided by the Wellness course instructors. Health coaching is an activity that is long term, due to the extent and need for changing deep seated behavior problems, such as eating disorders, high stress from over work, and decreased compliance with healthy behaviors. Motivational Interviewing is not enough, and physical therapists need additional education about how to assist a client in behavior changes. New technology using the internet (iPhone, iPad apps, fit bracelets, heart rate monitors, for weight, activity, and dietary management) may make it easier by providing a number of applications that can be used to track sleep, activity, walking steps, and dietary intake, as long as the patient is willing to use them. Fitbit, developed in 2007, a wearable wrist band, with activity trackers that clip on, and tracks your steps, sleep, and activity. The

Fitbit device accounts for 50% of the market of wearable activity trackers. Accessories include mobile apps, and an online dashboard, which functions as a step, weight, food intake, and workout diary. Other companies have produced similar items such as Jawbone, Misfit, Mio, Basis and Garmin. Microsoft has produced similar items and Apple will be launching its Apple Watch. Another company that Fitbit is considering buying to complement its services is Fit Star an app that help motivates Fitbit wearers to increase their activity level.<sup>35</sup>

Patients can self-monitor blood pressure, waist circumference, blood sugars, and cholesterol, but then need to take action to self-manage their condition while working with the health care professional. Sometimes we are our own worst enemies when it comes to self-control, even when we know that we are doing something that is harmful to us. Smoking for example is a hard habit to quit, even with outside help, and the use of nicotine patches. Physical Therapists can be trained to utilize the Transtheoretial models, and Motivational Interviewing for smoking cessation.<sup>36</sup> Additional factors may be involved regarding barriers to behavior changes, such as the effects of family environment, work environment, exposure to popular culture and the media, and social interactions with others. My Pilot study only involved the use of Motivational Interviewing and informal goal setting. The patient's initial primary stated goal was to lose weight, and to feel better, with less back pain. The secondary goals such as controlling her blood pressure, and blood sugars were recognized by the physical therapist as ways to allow the patient to exercise safely. The patient can become empowered to make self-changes by becoming enlightened by the education provided to



them, when they are ready to accept it from the physical therapist. The most difficult thing I found was to increase the receptivity of the patient to the information, and to get the patient to integrate the ideas into action. I did have success with teaching the patient the fundamentals of safe exercise and providing her with a program that could be utilized to successfully lose weight if she exercised 6 days per week. The patient was aware of this information but non-compliant due to her work activities, which she said were a priority over everything else.

When questioned about how many hours she spent on the computer she indicated that it was anywhere from 4 to 9 hours per day. The patient was reminded to break her day up and to change position every 30-60 minutes. Reminding the patient or telling them what to do would be a method of teaching. Health coaching incorporates appreciative inquiry (dreams, desires, definition, doing) and brainstorming to come up with an “ah ha” moment that the client can discover for him/herself to solve the problem of not moving around enough. The patient may have had other issues which I was not equipped to evaluate, and did not question her on, such as family dynamic issues. She continued to drink 16 oz. of orange juice at one sitting even though we had discussed it months ago. Providing the patient with written goals, and a contract for compliance, and tracking her progress specifically each week, may have allowed for greater success. I believe that becoming a good health coach requires additional education, such as a more in depth Health coaching education program (a one weekend certification is not enough). As a result I enrolled in an 18 week long Wellcoaches Training and Certification program after completing the Pilot Case Study. There was some progress regarding her blood pressure

but only after she had a crisis event of out of control blood pressure on 5-15-14, initially measured at 160/90 in the clinic, and later that afternoon 180/90, prompting her to seek immediate medical attention. Looking at the graph, it is not apparent that there has been a real change in her blood pressure or blood sugar measurements, and she may not have lost much weight.

Based on my current experience, I do not think that physical therapists are currently prepared to effectively provide health coaching due to the need to understand how to perform activities such as Motivational Interviewing, and Behavioral Modification, which are normally within the realm of psychology, and social service specialists. Since the Pilot study I have taken additional training in Wellness Coaching through an 18-week program. The weekend seminar I took, is merely an introduction to a more complicated discipline. I believe that modified 7-minute health-coaching principles can be integrated into traditional insurance-based physical therapy treatments to improve patient compliance and follow through. I think that health coaching to produce major lifestyle changes is above and beyond the normal clinical duties of the physical therapist in an insurance-based fee reimbursement system, due to limited treatment time and a need for greater efficiency in the clinic due to fee schedule reductions. I do think that health coaching is a valuable concept that can be elaborated on during the post rehabilitation phase, on a cash pay basis, or in some cases paid for by insurance. Health coaching could become another specialty area in the realm of physical therapy. More research needs to be done to determine how effective health coaching is in improving one's overall long-term health expectations and goals.<sup>23</sup>

Additional research is also needed regarding technology and health coaching methods including: mobile phone text messages, phone coaching, virtual coaching, and the use of applications. There are thousands of applications available for exercise, nutrition, mental exercise, self-management of Heart Disease, Diabetes, pregnancy, Doctor's advice, and video magazines, that clients can access on their own through the Internet, or therapists can suggest to clients to use to assist them in achieving their goals. Communication between the client and therapist may be augmented through, phone conferences, email, text messages, and Skype or Facebook. Technology may supply low cost solutions to coaching people to Wellness particularly with those suffering from chronic illness. It has been proven that long-term outcomes improve with effective self-management. The compliance level for those who receive clinical advice about self-management is low. In a study conducted by De Jongh T, Gurol-Urganci I, Vodopivec-Jamsek V, Car J, Atun R. there was no significant evidence that mobile phone text messages increased compliance for patients with complex medical conditions, and patients did not seem interested in continuing the service.<sup>37</sup> In another study by Marcano Belisario JS, Huckvale K, Greenfield G, Car J, Gunn LH,. there also was no significant evidence that cell phone apps are effective in the management of clients with asthma, measured by asthma functional scores or with patient compliance with health interventions.<sup>38</sup> On the other hand one study did indicate improvement in asthma quality of life, mental components, improved lung function, and reduced emergency department visits due to complications.

In another study by Dennis SM, Harris M, Lloyd, Powell Davies G, Faruqi N, Zwar N telephone coaching proved beneficial for patients with severe uncontrolled chronic conditions who were home bound and did not have much access to health care, and showed greater relative overall health improvements than clients who had less chronic and severe conditions at baseline, who also received telephone coaching.<sup>39</sup> Both the patients with severe uncontrolled chronic conditions who were home bound, and those who had less chronic and severe conditions showed a general improvement in self-efficacy, and satisfaction with the service. Virtual coaching using an Avatar with human characteristics, and human machine dialog, where a conversation can be initiated or changed, proved to be more effective in promoting self-efficacy using the Trans theoretical model, than paper or audio visual materials, in promoting a regular practice in Meditation as reported by Hudlicka E.<sup>40</sup>

In conclusion, based on the research, phone texting and phone apps, were not as effective with improving the health status of the clients. Phone coaching alone did show improvement in chronically ill patients who were unable to leave home, and did not have any other means of counseling in regards to their health. Self-efficacy and satisfaction of service was improved in all clients who were phone coached. Virtual Coaching with an Avatar was more effective than paper or audiovisual materials when promoting regular practice of Meditation.

**CASE STUDY: HEALTH COACHING ALONE**

While attending the Wellcoaches training program I learned more about a number of techniques including Motivational Interviewing, the Transtheoretical Model, Non Violent communication, Appreciative Inquiry, Decisional Balance, and Design Thinking, described earlier in the paper. I initiated the case study in the Sept of 2014, while I was enrolled in the Wellcoaches program. I did not complete the Wellcoaches program until February 15, 2015. My certification in the Wellcoaches program was pending, an oral and written exam.

After completing a pilot study over the summer of 2014 I began a case study applying health-coaching techniques to a 78-year-old female, in need of lifestyle change. The client was informed of what health coaching was, and that I would work with her to help her to achieve her Wellness Goals, free of charge. The client agreed and signed informed consent, Privacy/HIPPA notification, and did not sign financial forms due to the service being free. She was informed that her information would be used as a case study for a tDPT Capstone project and she signed a document informing her of this, indicating that her information would be anonymous. She was willing to participate in the study starting the week of September 29, 2014 to the week of November 21, 2014, a total of 12 sessions. Her past medical history is as follows: The client reported a history of hypertension and diverticulitis with a recent surgical procedure for resection of the colon resulting in a colostomy. She reported a history of high blood pressure, diabetes, and obesity. She reported depression from several traumatic events in her life. Her

medications were Furosemide, Losartan, Atenolol, Prilosec (Omeprazole), Prozac, Tizanidine, Multivitamin, Calcium, VD3 2000 units' daily, and a daily probiotic.

She described her health habits as being sedentary, and having an aversion to exercise. The client stated that she would go to the gym door but just couldn't go inside. The aversion may have been psychological or emotional, since she had been suffering from anxiety and depression due to her grandson dying in a car accident 2 years ago. The therapist expressed empathy, and then asked if she had spoken with a counselor about her grief, and if not in the past, would she be receptive now? The patient stated she had seen a counselor in the past, but was not able to do so now, since all she could think about was getting ready for her upcoming surgery.

She and her husband ate out frequently, and she ate whatever she wanted. She also had a right total knee arthroplasty last year, and needs to have the left knee done soon, but is currently not a surgical candidate due to needing to have colon surgery. She reported that she was going to have surgery November 26, 2014 to reverse the colostomy. She said that now that she has had a close call with death, she realizes she needs to take care of her health, and is excited about the opportunity to receive health coaching. Her goal she reported was to be able to go on a cruise with her husband January 16, 2015. She reported she enjoys socializing and traveling, and she would like to be healthy enough to walk cobble stone streets and steps, and tolerate going on tours. She says her balance is off, her left knee bothers her; she has decreased endurance. She has to deal with the colostomy bag right now, which makes it socially difficult due to having to empty the bag, and worry about accidents.

The following is a summary of the session meetings and their content: Each meeting was 45-60 minutes long.

**Meeting one:** The client was informed of what health or wellness coaching is, and the intent of the case study. The patient verbally agreed to participate

**Meeting two:** Informed consent forms were signed, and health history, and medication history taken. The client filled out the Transtheoretical Model for Health Behavior Changes Questionnaire, listed in the Appendix pages 62-63, and her personal vision for wellness was discussed. Her vision was to prepare herself for her upcoming surgery so she could come out of it successfully, and to be ready to go on a cruise after recovery from the surgery.” She would like to feel better, sleep better, have less stress, and be more active and social. “Motivational interviewing techniques, appreciative inquiry, and reflective statements and questions were utilized to obtain the client’s Vision, 3 month goals and weekly SMART Goals: Specific, Measurable, Assignable, Realistic, and Time Related.

The patient’s 3-month goals were:

1. Walk a long distance in order to go on a trip by Jan 15, 2015, and be able to go on more trips after that
2. Would like to lose more weight and improve eating habits, but after her surgery scheduled for November 26, 2014. Client has already lost 24 pounds from undergoing surgical procedure for Colostomy and Colon resection.
3. Would like to get off of some of her medications, but probably won’t be able to do until after her pending surgery.

4. Would like to reduce stress levels especially prior to the surgery in November.

The behavior changes the client was willing to make were walking with a friend around the block 2-3 times per week, and cutting back on portions; pasta and sweets, and to reduce the frequency of going out to eat.

**Meeting three:** A Physical Therapy evaluation was completed, and functional score obtained using the Optimal and Berg scales. The client had been seen postoperatively by a home health agency, and was given a HEP. The client's home exercise program was discussed, and recommendations were given to continue doing the exercises.

**Meeting four:** The fourth session was devoted to going back to the SMART goals and setting a defined plan of action. The client's intent for improving her general health was: that she is going to have a colon resection/colostomy reversal November 24, 2014, and wants to be well enough afterwards to go on a Caribbean cruise scheduled for January 16, 2015. Motivational interviewing, reflective statements and appreciative inquiry were utilized to draw out additional information about what might be motivating this patient. Her issues are: weight gain, anxiety, hypertension which increases with stress, concentration/memory, depression from deaths of several members of her family who were very important to her, lack of exercise (and not sure what kind of exercise would be good for her), and difficulty with walking and balance.

Her goals are to lose weight, exercise more in order to walk further (enough to go on cruise), prepare for surgical procedure, and reduce stress. Types of exercise were discussed and the client said she could continue with the home exercise program from the home health agency and may like Pilates or Tai Chi. Tai Chi was recommended due to



triple benefits of stress reduction, strengthening, and balance improvement. Dietary intake was discussed, and recommendations were made to consult a dietician. She reports her appetite is increasing since she had the colostomy (initially restricted to  $\frac{1}{4}$  food portion intake post operatively) and she is eating anything that she wants except seafood (she is allergic to it). The client was instructed in how to keep a food diary and was asked to keep one for 1-3 days. The term intention was explained and patient advised to “think about what she wants, not what she doesn’t want” Patient expressed concern and fear about her upcoming reversal of colostomy bag surgery. Patient noted goals and intention on a work sheet. Patient instructed in  $\frac{1}{2}$  pursed lip diaphragmatic breathing for relaxation to be implemented any time she is developing anxiety, and several times per day. Her vital signs were: O<sub>2</sub> saturation 97%, HR 49 b/m, 146/100 BP.

Meetings five through 12 consisted of reviewing her 3-month vision for herself, and the goals that were set for that week. New goals were set for the following week, and any revisions to the 3-month vision were made from week to week. See Appendix Example two: Case study Interview Sessions: Health Coaching Alone, pages 62-69, for subsequent meetings, and test results from initial and discharge evaluations. Over the 12-week period her personal Wellness Vision stayed consistent. Her weekly goals were checked and revised or new goals set, regarding eating, stress reduction, exercise and activity, and sleeping patterns.

**Case Study Results**

The patient showed an improvement in all areas including the Timed Up and Go test, Berg Balance Test, lower extremity strength tests and Optimal Functional Scores. She did not show any improvement in weight reduction or waist circumference. She was utilizing stress reduction and relaxation techniques several times per day, and her eating habits had improved. She reported she was exercising more frequently up to 30 minutes, and was resuming social activities, and community ambulation up to one mile. She was limited by lingering depression over a death in the family, and mild light headedness periodically as a side effect of heart medications. Her Optimum scores were improved with a 50 % reduction in disability and a 90% confidence score regarding her ability to complete daily functional activities. The patient had improved self-confidence about her readiness for her upcoming surgery, and reduced stress levels and improved ability to ambulate long distances. Her medications were not modified. She stated she hoped to work on those goals after her surgery.

<b>Table 1. Case Study</b>	9/14/14	11/12/14
<b>Total Optimal Scores</b>	35/75	20/75
20% less disability after two months of coaching	47% disability	27% disability
<u>Confidence Score for performing ADLS:</u> 40% higher after two months of health coaching	50%	90%

**Case Study Discussion**

The Pilot study of the 75-year-old woman with low back pain and Diabetes, and the Case Study of the 78-year-old woman status post colon resection for life threatening Diverticulitis, were conducted with a different emphasis. In the Pilot study, Motivational Interviewing techniques, and open-ended questions were integrated with a primary physical therapy approach, with specific physical therapy goals. In the second case study, physical therapy was secondary to health coaching techniques that primarily emphasized a variety of techniques using reflections; open ended questions, Appreciative Inquiry, the Transtheoretical model, Motivational Interviewing, Design Theory and SMART goals. The Case study involved meeting with the client for 45 to 60 minutes once per week, for 3 months and sitting at a table envisioning and planning and checking for progress in enacting the clients SMART goals. The Pilot study client was actively receiving physical therapy intervention in the form of aerobic exercise, strength training, stretching, instruction in a home exercise, progression to an aquatic therapy protocol, from 2-3 times per week for three months. The case study client had already been through Home Health Therapy and had been discharged with a written home exercise program, and had several bouts of physical therapy over the last 2 years, for a right Total Hip Arthroplasty, and for balance issues, having a folder of several home exercise programs.

The approaches were different, and the time allotment (2-3 times per week vs. once per week) were different, the Pilot and Case Study clients both showed an improvement in Optimal scores, strength, functional ability, and engagement in activities. The Case study client showed a gradual improvement in her reported health habits. The

Pilot study client is still having difficulty following through with regular exercise when she is not being seen by the physical therapist (client is only exercising about once per week formally, but says she is making a point to walk every day).

<b>Table 2 . Comparison of Optimal Functional Scores</b>				
	<b>Pilot Study</b>		<b>Case Study</b>	
	<b>2/20/14</b>	<b>4/14/14</b>	<b>9-14-14</b>	<b>11-12-14</b>
<b>Totals:</b>	46/75	28/75	35/75	20/75
<b>Disability</b>	61%	37%	47%	27%
<b>Confidence Score</b>	40%	70%	50%	90%
Both the Pilot Study ( Physical Therapy, Post Rehab Fitness Training and Health Coaching, and the Case Study ( Health Coaching alone) showed, a decrease in disability by 20 %, and improvement in self confidence by 30% to 40%.				

Both clients made gains in all of their goals, except for significant weight reduction during the health-coaching episode. It might have been helpful to provide some information about resources for weight reduction, and current philosophies regarding nutrition, dietary supplements and herbal remedies. The appropriateness of Vegan, Gluten Free, Vegetarian, Paleo, Probiotic, High Fiber, Low Fat, and Low Carbohydrate dietary intake could have been discussed, and the client encouraged to seek professional counseling from a dietician. The Pilot study client reported that she felt her clothes were fitting better and her stomach was a little flatter, and she was trying to eat more protein, but was still drinking her 16 oz. of orange juice for breakfast. Her blood

sugars were better but would fluctuate to moderately high levels, whereas the Case Study client reported that she was beginning to modify her eating habits. The Pilot study client reported putting herself into a number of stressful situations with long work hours, and family issues, and deferring her exercise sessions to her work activities.

A possible solution to her decreased compliance to exercise may have been to have her keep a daily diary of her activities, sleep, what she ate, how she felt throughout the day, and her blood sugars, and BP readings. This may have made her more aware of the effects of lack of exercise and stress. At the time of the Pilot study, I had not yet learned about Decisional Balance, so did not know how to approach her without drawing a lot of resistance, regarding her work and family issues that were causing stress.

The Case Study client reported that she was making an effort to reduce her stress through diaphragmatic breathing exercises and Tai Chi several times per day. The difference between the two clients in regards to health coaching was that the first client received only open-ended questions and reflections, and was provided information through teaching and telling using the more traditional physical therapy methods. The Case Study client received primarily health coaching through mindful listening, and a variety of techniques to elicit the process of self-efficacy, and movement towards healthier lifestyle goals. She did receive information about diaphragmatic breathing, Tai Chi, Visualization, and stress reduction, how to effectively exercise in the gym (with a session in her gym) and a review of her multiple home exercise programs. There was a discussion about her eating habits, after filling out a food intake diary. Recommendations were made to see a psychotherapist to help her with her grief regarding family members

who passed away, and to see a dietician regarding weight loss management, however the client declined. She said “it wasn’t time yet, she just had to get through the next surgery first.”

## **DISCUSSION**

The integration of health coaching during the treatment sessions (Pilot study: Patient one) would be more typically used in a traditional physical therapy setting. The full blown health coaching approach utilized in the Case Study (client two) could be utilized in a post physical therapy cash pay environment, and the techniques utilized require extensive training to implement. Combining the health-coaching model with traditional physical therapy sessions would save money but are limited to the number of visits a client is authorized for. Health coaching could be integrated throughout the evaluation and treatment sessions when the opportunity arises. Transtheoretical Model questionnaires, Wellness Assessment questionnaires, 3 month vision, SMART goal forms could be filled out in advance of the treatment session, or on the clinic’s website, and provided to the therapist ahead of time, just like functional scoring forms are. I think the patient would benefit from additional counseling post rehab, since it takes at least 21 days to change a habit, and several months to make a more permanent change in behavior.

All of my clients potentially could have ended up with catastrophic health events such as stroke, heart attack or premature death as a result of out of control blood pressure, or blood sugars, but were able to avert these events through health coaching. Considering that a hospital stay could cost anywhere from \$10,000 to \$100,000 or more, than 3 to 6 months of health coaching. A minimum of 12 health coaching sessions at \$80-150 per

hour would be \$1000- to \$1800 dollars for 3 months, or \$350 to \$600 per month. Preventative or disease management health coaching could cost between 1 to 10 % of total projected expenditures for hospitalization, if an individual suffered a catastrophic health event. During a lecture at the NEXT APTA conference, Jennifer Gamboa PT DPT OCS, mentioned that health care costs in 2007 were 80 billion, and that 20 billion of those expenses were avoidable through preventative measures and disease management.<sup>41</sup>

Health coaching can be an integral part of a post rehabilitation, and an annual Physical Therapy checkup. The Physical Therapy Checkup may be utilized as base line data for the development of a comprehensive Wellness Plan, along with improving the client's practice of healthy behaviors. David Taylor PT DPT as reported in the APTA webinar: on the Annual Physical Therapy Check Up, October 2014, stated that many of his clients were 60-90 years old, and that 90% of them opted for the physical therapy fitness checkup, 75% elected for further instruction and 60% returned for another checkup a year later, 10 % become regular training clients, and 35% become patients.<sup>42</sup>

Jennifer Gamboa PT. DPT. OCS lectured at the NEXT APTA conference 2014 "Implementing the Annual Physical Therapy Examination Into Your Practice", provided information about the payment distribution in her practice, consisting of health promotion and fitness 41% of clients, and 21% of revenues, long term clients 22% and 48% of revenues, and rehabilitation clients through insurance reimbursement 37% and 31% of revenue.<sup>41</sup> Jennifer reports her long-term clients use both rehabilitation and wellness programs. Health coaching options may increase the number of clients continuing with the fitness training and with annual checkups. Health coaching would be a direct means

of providing disease management programs for Diabetes, and Heart Disease for example. Increased self-efficacy and setting SMART goals may increase the compliance rate to life long behavior, and prevent relapses. Jennifer Gamboa also suggested “collaboration with physicians, accountable care organizations and medical homes” for Wellness and Fitness Programming.<sup>41</sup> Health Coaching services could be integrated through employers, and health insurance organizations in order to reduce employee health costs, rate of injury, and lower time lost from work due to illness. The APTA Guide to PT Practice states, “Intervention, prevention, and the promotion of health, wellness, and fitness are a vital part of the practice of physical therapists (for primary, secondary, tertiary prevention services, and for further examination and referral)” (APTA Webinar). The APTA now has information available through member web services on how to implement an annual physical therapy checkup.<sup>42</sup> Behavioral counseling, which has been proven to be effective, was cited as an important element of the process.<sup>42</sup>

Many physical therapists in the clinical setting do not have time to utilize the health coaching approach unless it can be reduced to 7 minutes or less, with prior training on how to implement the technique. Utilizing the technique may increase the compliance of the client, reducing his/her resistance to change when told what to do. Learning and utilizing a streamlined version of the behavioral approach may improve patient outcomes as sited earlier in this paper. Currently the traditional physical therapy method of teaching and telling, results in 30% patient compliance with the home exercise program. Adding behavioral approaches to the treatment approach, increases the compliance level to 80%.<sup>13</sup> Although learning the 7-minute approach to behavioral counseling may take some



time and practice, it may also reduce the stress load on the therapist. With the requirement of functional reporting, it is essential that the patient show significant improvement as quickly as possible. The therapist works as a coach empowering the patient to move towards self-efficacy and self-responsibility and decreases the therapist's inclination to be a fixer or rescuer. Therapists have enough burdens such as time constraints, high volume, significant electronic documentation, and supervision of PTA's, and overall case management requirements. It would be beneficial for all staff PT's, PTA's and fitness trainers to be educated in the technique so that everyone could be on the same page.

The 7-minute approach to behavioral counseling is outlined in M. V. Pantalon's book "Instant Influence."<sup>43</sup> Also health-coaching methods have been reduced from 45 min to 7 min for smoking cessation.<sup>44, 45</sup> The first step is to position the client to visualize oneself in a desired situation, focusing on desirable behavior." Why are you doing blank?" Instead of "Why don't you, why haven't you?" The second step is to reflect back. "How ready are you to change on 0-10 scale" to gauge motivation. The process of discussing what number they picked on the scale of readiness helps the client to think of why they want to make a change. Ask next "Why didn't you pick a lower number on the scale?" The client discovers his or her reasons for change. Other questions are "Imagine you have changed and what would the positive outcome be?" "What would be different?" "When do you think you can meet these goals?" "Why are those outcomes important to you?" "Ask for 5 answers, and then ask an additional why? "What is the next step if any?"The client feels the inclination to act when looking at how to take the action. Ask

permission to meet again to review progress and to recommit to change. You can use this technique on yourself by writing it all down. Start with small goals that can be visualized, focus on action not decisions as seen in Pantaloni's "Instant Influence, How to Influence Anyone in Less than 7 Minutes Video."<sup>43</sup>

The initial 7 minutes during the evaluation may take away some of the time needed for the diagnostic testing, so I recommend that some of the work be done prior to the initial meeting. Many patients fill out the functional score sheets prior to the exam; they may also fill out a Transtheoretical Model of Readiness to Change form, thus shortening up the process. According to a personal interview with Dr. Rose Pignataro PhD, faculty member in the department of Physical Therapy and Human Performance at Florida Gulf Coast University, in October 2014, the therapist can use the verbal techniques of behavioral modification through the treatment sessions for optimal results, and spread out the 7-minute approach through several treatment sessions. Other brief methods that are utilized for smoking cessation would be the 5 A's "1. Ask about use, 2. Advise to quit, 3. Assess willingness to quit, 4 assist in quit attempt, and 5 arrange follow up."<sup>46</sup> For health coaching the 5 A's could be applied to any number of health habits which could include drinking too much soda or alcohol, or not exercising enough. So for not exercising enough you might ask 1. How often are you exercising? 2. Advise about the benefits of exercise, 3. Assess willingness to start exercising, 4. Assist in methods to increase exercise, 5. Arrange for a follow up to check progress on exercising.

A shorter method taken from smoking cessation programs is 1) Ask, 2) Advise, and) Refer, which can be applied to any number of health behavior changes.<sup>47</sup> Adding

health coaching to one's practice along with annual checkups and fitness training may also augment reimbursement through cash pay, and significantly improve the overall lifelong health of one's clients, and develop customer loyalty, promoting word of mouth referrals. Whether a 7-minute approach or a 45 -60 minute counseling approach is utilized the physical therapist will need to go through additional training, and practice sessions in order to master the skill. The technique requires more mindful listening, compassion and empathy.

Therapists may also learn to utilize the behavioral approach to their own personal health issues to break the barrier to personal resistance to achieving one's aspirations to Wellness. It is also important that the therapist exercise self-care, in order to effectively be able to help a client energize him or herself to action. If the therapist is tired, "burnt out", feeling overwhelmed, and stretched thin, it will be very difficult to add an additional skill or activity onto an already very busy schedule, even if it enhances patient outcome. Design theory might be utilized by therapists and health care organizations to analyze the workload and activities the therapist is responsible for. Staff and management may take a group approach, brainstorming ideas together to find ways to improve the work environment, work flow, efficiency and quality of care, with a focus on making things easier, so that therapists can improve their health and wellness lifestyle too.

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Appendix A: Pilot Study - Health Coaching with Physical Therapy and Personal Training: Additional Questions using Motivational Interviewing Techniques

1. **Therapist question** “What do you remember about the Diabetes education classes that you attended regarding dietary intake?”

**Patient response:** “I know what I am supposed to eat, I took the classes. I suppose I am not getting enough protein, and that I shouldn’t skip meals”

**Teaching opportunity:** The importance of keeping blood sugars level throughout the day by eating regular meals and snacks throughout the day. Missing meals makes the body think it is starving, and the body retains fat. Eating regular meals increases the metabolism actually helping to burn fat.

2. **Therapist question:** What did you eat today, how much, and when did you eat?

**Patient response:**” I had a bowl of cereal this morning, and a cup of coffee, I haven’t had any lunch yet. I like to go out in the evening and have a nice salad, sometimes a fruit smoothie, or a piece of salmon.”

**Teaching opportunity:** You may want to keep a journal for a few days to see what you are actually eating, how much and when. You could learn a lot about what it is you are actually doing, and relate that to what you learned in your Diabetes education class regarding dietary intake. Yes, a high protein, low carbohydrate diet is beneficial

3. **Therapist question:** “Do you think skipping meals has been helpful in losing weight, and keeping your blood sugars normal?”

**Patient response:** “no skipping meals does not help my blood sugars, and it doesn’t seem to be helping me to lose weight”

Appendix A: Pilot Study - Health Coaching with Physical Therapy and Personal Training: Additional Questions using Motivational Interviewing Techniques. (Continued)

**Teaching opportunity:** Eating regular meals and snacks throughout the day that are within the diabetic diet categories will allow you to keep your blood sugars steady, and actually help you to lose weight.

4. **Therapist question:** “Do you see any correlation between missing meals, and how you feel?”

**Patient response:** “I suppose I shouldn’t skip meals” I know you said I should have a small snack before and after exercise, and to eat regular meals”

**Teaching opportunity:** That is correct, having a small snack before and after exercise, and eating regular meals will make you feel better, less tired, and anxious about the chances of having a negative health event, such as passing out.

5. **Therapist question:** What happens to your blood sugars when you miss meals?

**Patient response:** “I know that it makes my blood sugars go out of whack.”

**Teaching opportunity:** It is important to eat on a regular basis to keep your blood sugar levels stable. You may find, based on the table that the doctor gave you, that you may need lower dosages of Humira over time.

6. **Therapist Question:** “Do you know what a normal blood pressure range should be?”

**Patient response:** “Well I know that 140/90 is high blood pressure”

**Teaching opportunity:** It is important to know what high and low BP is, and to monitor your blood pressure daily,

Appendix A: Pilot Study - Health Coaching with Physical Therapy and Personal Training: Additional Questions using Motivational Interviewing Techniques. (Continued)

**7. Therapist question** “How often are you weighing yourself?”

**Patient response:** “I am weighing myself every day, and I am frustrated because I am not losing any weight, and I know why, it is the Humira injections that are preventing me from losing weight”.

**Teaching opportunity:** Weighing yourself daily can be frustrating due to fluctuations up or down. It is better to weigh yourself once per week, to get more consistent readings, and to avoid frustration, which could be counterproductive to reaching your goals.

**8. Therapist question:** “Do you know how many days per week and how many hours per week are beneficial for weight reduction?”

**Patient response:** “I know you are supposed to exercise 3 days per week”

**Teaching opportunity:** The most recent research indicates that one has to do at least 40 minutes of aerobic training 6 days per week for weight reduction. It does not mean that you have to do that right away but you can work up to it. You can also break up the exercise throughout the day and still get the same results.

## Appendix B: Case Study Interview Sessions – Health Coaching Alone.

The following is a copy of the Trans theoretical Model for Health Behavior Changes Questionnaire utilized to set the client's vision, and goals.

**Trans theoretical Model for Health Behavior Changes Questionnaire**

1. Have you thought about making health habit changes in the past? When and what kind of changes? Yes, losing weight and exercising, ongoing for several years.
2. Are you thinking about making health habit changes now? Why? And what kinds of changes? She says she started losing weight and she would like to continue. She needs to exercise but is not doing it. She doesn't know why she is not exercising. She wants to start exercising but has not yet started to do so.
3. What kinds of things are you prepared to do to initiate health habit changes now? She says she could exercise in the home, go on the treadmill at the fitness center, using ear buds for music, and TV. She likes social activities, likes reading and Mahjong, but is reluctant to cook, and eats out a lot.
4. List several Items that you would like to take action on right now. I would like to be able to:
  - a. Walk a long distance in order to go on a trip by Jan 15, 2015
  - b. She would like to be able to travel more, completing a trip Jan 15 successfully.

Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

c. She would like to lose more weight, but after her surgery scheduled for November 26, 2014. Client has already lost 24 pounds from undergoing surgical procedure for Colostomy and Colon resection.

d. She would like to get off of some of her medications.

She would like to reduce stress levels especially prior to the surgery in November.

5. What things will you need to do to be able to continue with your new health habits on a long-term basis? She said she needs to eat at home more, needs to stop sitting in recliner, needs to sleep better, continue the Home Health exercise protocol, needs to get out of the house more, drive somewhere, and do some things alone.

**The following is a summary of the last 6 health coaching sessions: Each meeting was 45-60 minutes long. See the body of the paper for Meetings 1-4.**

**Meeting five:**

The client reported that over the previous week she met the diaphragmatic breathing goal (practices it several times per day), her intention goal (thinking about what she wants instead of what she doesn't want), and she was able to keep a food diary. Her intentions for next week are: to start exercising more, preferring walking, she wants to eat less carbohydrates such as pasta, cookies and candy (for both herself and her husband) and eat more protein, such as fish and lean meat

## Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

During the counseling session she reported that she has been grieving about a family member who passed away two years ago. The therapist listened with empathy, and utilized Non-Violent communication, and Appreciative Inquiry. Non Violent Communication means that statements are without pity, criticism, or sarcasm: they are nonjudgmental.

**Meeting six:**

She reports that she has been grieving about her grandson who passed away two years ago. She is having difficulty sleeping, and has been sleeping in her lounge chair (because of the colostomy bag), and waking up thinking about her grandson. We discussed grieving and utilized empathy statements. The client advised that counseling might be beneficial. The client said that she was not able to see her previous counselor since he had left town, and she was not receptive to counseling right now. She said that maybe after her surgery she would pursue counseling. She expressed concerns and anxiety about various problems, such as having to do paper work prior to her surgery, she is uneasy about her colostomy, which interferes with her social life, and impatient and concerned about her upcoming surgery.

After listening with Empathy, Non-violent Communication, and Appreciative Inquiry the client was ready to move on to her actions over the last week. Non Violent Communication means that statements are without pity, criticism, or sarcasm: they are nonjudgmental.

## Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

She says she is getting her walking shoes out today and is going to go to the gym. She purchased a wig, and went out to a social event wearing it, she has been exercising in the home almost every day, and she is doing her diaphragmatic breathing/stress reduction exercises several times a day. She has not eaten out the last 4 nights, and is changing her cooking mode, cutting back on everything. She decided to cut down her portions, and to decrease the amount of pasta she was eating. She also said that she would try to reduce the amount of candy and sweets she was eating. She has already lost 25 pounds since the colostomy. She reports she knows she will be losing more weight after the next surgery. She is working with the doctor to evaluate her blood pressure since it has been running high.

**Meeting seven:**

Client reports that she saw her doctor and her medications were adjusted. She has been taking Prozac for anxiety reduction, which she feels calms her, even though she knows the surgery will be coming up soon. She now has two wigs, and is going out socially more frequently. She says that the left knee hurts when she walks due to osteoarthritis, which limits her ability to walk and exercise. She has an appointment with the orthopedic doctor for a cortisone shot this week. She went to the gym and was on the bike x 20 minutes and treadmill 10 minutes at a regular walking pace, but her left knee became inflamed a few days later. The client's vision for best self was discussed: She reported that her vision for herself is: tall, skinny, with good eyes and good hair.

## Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

It might be hard to be tall because she is short, but she could accomplish the other items. She has had a biopsy of the scalp and is learning about what her problem is.

She continues with the diaphragmatic breathing, which she feels is helpful, and is interested in Tai Chi, since it might be less stressful than treadmill walking. BP 145/65 after progressive breathing (prior BP 158/66) Patient was able to see the direct effects of diaphragmatic breathing reducing blood pressure within a few minutes. She is watching what she is eating, and eating at home more, and she is thinking about what she wants (not what she doesn't want).

**Meeting eight:**

The client is exercising more, than initially. She reports she was doing a few exercises at the kitchen counter top, but not much. We discussed ways she can fit exercise in throughout the day, in small amounts. The client reports that she is more active, and more social, and actually had fun with friends over the weekend, ordering a Pizza. The patient did a Tai Chi class with the therapist, and was given additional information about community classes. O2 98%, H R 47 b/m, BP 122/57.

**Meeting nine:**

Client reports her blood pressure has been fluctuating, and she is wondering if she is stressed out, due to worrying about a potential negative outcome to the impending surgery. She just had a cortisone injection into the left knee and is not exercising after the injection. She wants to try the treadmill again, after having the injection. The patient says she is also thinking about her deceased family members, again. Empathy statements were



## Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

made to acknowledge her loss. The client reports she tried to do some exercising at 5, and 10-minute intervals. She reports she went on an errand and walked 30 minutes without stopping for the first time, and she filled her day with errands. She is becoming more active, entertaining people in her home for dinner. The patient was advised to try some journaling regarding her grief for her grandson and daughter in-law. O2 98%, HR 49 b/m, BP 131/77.

**Meeting ten:**

The patient met the therapist at the clubhouse gym. The client was given instructions regarding aerobic equipment appropriate to her needs, and asked which piece of equipment she would follow through on. The client completed one to three minutes on the elliptical, and was fatigued afterwards. Through Appreciative Inquiry and reflection statements it was determined that she plans to go to the gym in the mid-morning. The client was instructed in the use of one to two pound dumb bells for upper extremity strengthening, and advised that the elliptical may be more beneficial for aerobic exercise, or the stationary bike, versus the treadmill due to less stress on the left knee. Vital signs were: O2 saturation 98%, HR 49 b/m, BP 131/77. HR 51 b/m after sitting down. The heart rate varied from 60-115 to 132 during and after elliptical and at rest after the session the heart rate returned to 48 b/m

## Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

**Meeting eleven:** The client was asked find her old home exercise folder, and the exercises were reviewed with recommendations to follow some of the exercises, and to continue with the gym activities that were recommended at the previous session.

**Meeting twelve:**

The client was seen for last visit prior to surgical procedure scheduled for November 26, 2014. The client says she is feeling nervous about the upcoming surgery. The progress related to initial goals was reviewed. The discharge evaluation was completed including functional tests, manual muscle tests, waist circumference, and Timed Up and Go test. The progress was discussed, and recommendations made for continuation of her program pre and post operatively. The client may have home health services post operatively, and is considering continuation of outpatient services, and health coaching when appropriate. The client says she doesn't think she has lost weight, but knows she will after her surgery, due to post op dietary restrictions. The client is utilizing deep diaphragmatic breathing for relaxation several times per day, eating in, and consuming more fruits and vegetables, increasing her exercise sessions up to 30-40 minutes per day, walking one mile about four times a week, doing some Tai Chi, and participating as much as she can in activities outside of the home (limited by colostomy bag) including Bocce Ball, women's luncheons, Ma Jong, and doing errands and driving the car to go shopping. The patient reports she does not want to answer her phone, sometimes. Her friends are calling her to see how she is doing but for some reason she does not want to call them back. The client looks teary eyed when discussing this, and

Appendix B: Case Study Interview Sessions – Health Coaching Alone. (Continued)

says she is wondering if she is depressed before the surgery? She is complaining of some light-headedness due to the new medication amlodipine that was given to her several weeks ago to control her blood pressure. The medication is causing her to have a low heart rate, but she says the doctors are going to leave things as they are until after the surgery

Appendix C: A Comparison of Initial and Discharge Optimal Score Functional Test Results for Pilot (Physical Therapy, Personal Training and Health Coaching) and Case Study ( Health Coaching Alone).

**Optimal Score Guidelines**

0= Not Applicable (N/A)

1=Performed without Difficulty

2= With Little Difficulty

3= With Moderate Difficulty

4= Very Difficult

5= Unable to Do

Confidence Score

Rate the Patient's overall level of confidence in performing daily functional tasks

0 = Not at all Confident 10= Very Confident

Appendix C: A Comparison of Initial and Discharge Optimal Score Functional Test Results for Pilot (Physical Therapy, Personal Training and Health Coaching) and Case Study ( Health Coaching Alone). (Continued)

<b>Table 3. Results of Pilot Study Optimal Scores: Health Coaching, PT and Personal Training</b>		
Date	2-20-14	4- 14-14
Difficulty Score		
1. Lying Flat	1	1
2. Rolling Over	2	1
3. Moving-Lying to Sitting	3	2
4. Sitting	2	1
5. Squatting	3	2
6. Bending/Stooping	4	2
7. Balancing	2	1
8. Kneeling	4	3
9. Walking Short Distance	3	1
10. Walking Outdoors	4	2
11. Climbing Stairs	4	3
12. Pushing	3	2
13. Pulling	3	3
14. Lifting	4	3
15. Carrying	4	2
<b>Totals:</b>	46/75	28/75
<b>Disability</b>	61%	37%
<b>Confidence Score</b>	40%	70%

Appendix C: A Comparison of Initial and Discharge Optimal Score Functional Test Results for Pilot (Physical Therapy, Personal Training and Health Coaching) and Case Study ( Health Coaching Alone). (Continued)

<b>Table 4. A Comparison of Initial and DC Evaluations: Case Study Optimal Scores: Health Coaching Alone</b>		
<b>Date</b>	<b>9-14-14</b>	<b>11-12-2014</b>
<b>Difficulty Score</b>		
1. Lying Flat	2	1
2. Rolling Over	2	1
3. Moving-Lying to Sitting	2	1
4. Sitting	1	1
5. Squatting	2	1
6. Bending/Stooping	2	1
7. Balancing	3	2
8. Kneeling	4	4
9. Walking Short Distance	2	1
10. Walking Outdoors	3	1
11. Climbing Stairs	3	2
12. Pushing	2	1
13. Pulling	2	1
14. Lifting	3	1
15. Carrying	2	1
<b>Totals:</b>	<b>35/75</b>	<b>20/75</b>
<b>Disability</b>	<b>47%</b>	<b>27%</b>
<b>Confidence Score</b>	<b>50%</b>	<b>90%</b>

Appendix D: Initial and Discharge Data for Pilot Study ( Physical Therapy, Personal Training and Health Coaching), and Case Study ( Health Coaching Alone)

<b>Table 5. Pilot Study: Health Coaching , Physical Therapy; Personal training</b>							
<b>Vital Signs Before exercise</b>				<b>Vital signs after exercise</b>			
<b>Date</b>	<b>HR</b>	<b>BP</b>	<b>Blood Sugar</b>	<b>HR</b>	<b>BP</b>	<b>Weight</b>	<b>Optimal Borg Score pain</b>
2/20	64 b/m	137/79		94 b/m	143/84	177lb	46/75 6/10 to knee
2/25	64	135/88		88	137/55		1/10 to thigh
2/27	84	147/53	281	72	146/57		
3/11	71	157/70	301	67	160/58		
3/13	89	148/68	358	96	147/59		less numb
3/17	72	146/58	265	79	163/57		
3/24	74	134/59	266	82	146/61		0/10
3/27	84	145/53	234	76	141/68		
3/31	86	144/90	313	88	154/71		fatigued
4/03	77	133/53	173	82	143/55		
4/07		139/59	213	90	158/70		
4/15	78	140/60	303	78	156/78		no fatigue
4/17		143/60					
4/24		150/70					
5/15		160/90	350				
5/22		147/70					
6/02		135/65					
6/16		130/65	230				
6/23		125/65	180				
7/07		131/69	330			170lbs	28/75

Appendix D: Initial and Discharge Data for Pilot Study ( Physical Therapy, Personal Training and Health Coaching), and Case Study ( Health Coaching Alone) (Continued)

<b>Table 6. A Comparison of Initial and DC Evaluations: Case Study Results (Health Coaching Alone)</b>		
	<b>9-14</b>	<b>11-14</b>
<b>TUG TEST:</b>	<b>14 sec</b>	<b>10.40 sec</b>
<b>Normal is 14 sec or less</b>		
	<b>9-14</b>	<b>11-14</b>
<b>BERG TEST:</b>	48/56	54/56
	14% disability	3 % disability
<b>Waist circumference</b>	108 cm	108 cm
<b>Strength:</b>		
<b>Hip flexion</b> <b>L</b>	4	4
<b>R</b>	4-	4-/4
<b>Gluteal</b> <b>L</b>	4-	4
<b>R</b>	4-	4
Quads, Hamstrings, and ankle DF, Planter flexors generally 4, except R PF 4-.		



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