



Coaching Healthy Lifestyle Change

AN INTEGRATIVE APPROACH FOR HEALTH PROFESSIONALS

second edition

Matthew J. Garver, Joe D. Bell, Libby E. McCurley

Prochange Behavior Systems, Inc.

Brief Contents



Preface

CHAPTER 1

Well-being and You

An Introduction to Key Concepts and Yourself

CHAPTER 2

Mapping the Journey

Behavior Change and Goal Setting

CHAPTER 3

Heart of the Journey

Cardiorespiratory Fitness

CHAPTER 4

Strength for the Journey

Muscular Health

CHAPTER 5

Flexibility on the Journey

Stretching Your Horizons

CHAPTER 6

Fuel for the Journey

Nutrition and Metabolism

CHAPTER 7

Packing Life

Body Composition and Weight Control

CHAPTER 8

Behavior Change and Motivational Interviewing

Understanding All Dimensions of Your Patient

CHAPTER 9

Coaching Nutrition, Weight Management, and Exercise

Contents

1. Well-being and You: An Introduction to Key Concepts and Yourself

FIND YOUR PATH TO WELL-BEING

How Physically Active are You?

DO YOU MAKE TIME TO EXERCISE?

WHAT IS YOUR CONFIDENCE LEVEL?

HOW MOTIVATED ARE YOU TO EXERCISE?

YOUR PROFILE AND KEY WELL-BEING CONCEPTS

IDENTIFY YOUR DIMENSIONS OF WELL-BEING

Well-being Requires Intentional Action

Well-being Requires Time

Modeling Well-being to Patients

CONSIDER HOW YOUR PERSPECTIVE, ATTITUDES, AND LIFESTYLE IMPACT WELL-BEING

Mental Health Affects Well-being

Lifestyle Choices Affect Well-being

Physical Activity and Food Choices

Stress Management

Drug, Alcohol, and Tobacco Abuse

Economic/Financial Stability

Social Determinants of Well-being

LINK LIFESTYLE TO RISK OF DISEASES

The Leading Causes of Death

Genetics: "Shaper" not Dictator

LIFESTYLE MEDICINE: USE IT AND LIVE IT

THE HEALTHY PEOPLE INITIATIVE

2. Mapping the Journey: Behavior Change and Goal Setting

INDICATIONS OF YOUR JOURNEY'S DIRECTION

THE MANY DESTINATIONS OF FITNESS: DIMENSIONS OF WELLNESS

Physical Wellness: Lower Your Risk to Chronic Disease

Mental and Emotional Wellness: Celebrate Your Self-Image

Intellectual Wellness: Improve Your Academic Performance

Occupational Wellness: Be More Successful on the Job

Social Wellness: Play with Others

Environmental Wellness: Enjoy the World Around

Spiritual Wellness: Find Your Inner Peace

WELLNESS BEHAVIOR ASSESSMENTS

MOTIVES, MOTIVATORS, AND BARRIERS TO CHANGE

The Power of Identifying Your Motives

Motivators for Behavior Change

Amotivation

Extrinsic Motivation

Intrinsic Motivation

Barriers to Change

SELF-REGULATORY TOOLS: SELF-MONITORING AND GOAL SETTING

Self-Monitoring

Goal Setting

Using SMART Goals

BRINGING IT ALL TOGETHER: SUMMARY OF SELF-REGULATORY TOOLS

3. Heart of the Journey: Cardiorespiratory Fitness

THE ROAD TO A HEALTHY HEART

SYNONYMS FOR CARDIORESPIRATORY FITNESS

Improve Your Physical Abilities

Reduce Your Risk of Cardiovascular Diseases

Manage Your Weight

Feel Good

EXERCISE IS MEDICINE®

Healthcare Systems Module

Step 1—Physical Activity Assessment

Step 2—Physical Activity Prescription

Step 3—Physical Activity Referral

Community Resources Module

Step 4—Establishing a Physical Activity Referral Network

Active Health Technology Module

Step 5—Active Health Outcomes

WHAT IS GOING ON INSIDE YOUR CARDIOVASCULAR SYSTEM?

Journey of Blood

Measuring the Health of Your Cardiovascular System

Strengthening Your Cardiorespiratory System

Guidelines for Aerobic Exercise

THE BODY'S RESPONSE TO PHYSICAL ACTIVITY

Metabolic Response to Exercise

Respiratory Response to Exercise

Cardiovascular Response to Exercise

Cardiac Changes

Perfusion Changes

Blood Pressure Changes

Long Term Responses to Exercise

FIND YOUR STARTING POINT: ASSESS YOUR CURRENT LEVEL OF FITNESS

Should You Check with Your Doctor? PAR-Q and You

Determining Your Current Cardiorespiratory Fitness: Maximal and Submaximal Tests

Tests Available To Determine Your Coordinates

1-Mile Rockport Walk Test

Cooper 12-Minute Run Test

Forestry Step Test

Åstrand Cycle Test

TRAVELING THE COURSE: CREATING A FITNESS PLAN

Using the FITT Navigation System

Frequency

Intensity

Time

Type

Self-Monitoring, Goal Setting, and Progression of Aerobic Exercise

4. Strength for the Journey: Muscular Health

SO YOU THINK YOU KNOW MUSCLE?

RESISTANCE VS AEROBIC EXERCISE

JOINT HEALTH MAKES THE JOURNEY POSSIBLE

THE MECHANICS OF BODY MOVEMENT

Isotonic and Isometric Contractions

Lever Systems of the Body

MUSCLE HEALTH IS MORE THAN "GETTING BIG"

MUSCLE PHYSIOLOGY: WHAT IS GOING ON INSIDE?

Whole Muscle, Fascicles, and Muscle Fibers

Connective Tissue

Muscle Fiber Structure

How the Nervous System Controls the Muscle

The Nerve Signal, Neuromuscular Junction, and the Neurotransmitter

Excitation Is "Coupled" with Contraction

Contraction: The Amazing Ability to Recruit Motor Units

Putting It All Together

Getting Stronger but Not Getting Bigger: Neuromuscular Adaptation

Getting Stronger and Bigger: Muscle Hypertrophy

OUR MUSCLE FIBERS MAKE THE JOURNEY DIFFERENT!

Velocity of Contraction: The Speed of the Fibers

Oxidative Ability: Endurance versus Power

What Makes the Difference in Velocity and Oxidative Ability?

YOU GET MANY BENEFITS FROM RESISTANCE EXERCISE...AND NOT JUST THE ONES YOU WANT

Aesthetic Benefits

Functional Benefits

Metabolic Benefits

Health-Related Disease Benefits

THE FITT NAVIGATION SYSTEM AND KEY PRINCIPLES FOR RESISTANCE EXERCISE

Key Principles to Guide the Travels

Frequency

Intensity

Machine and Free Weight "I"

Resistance Bands "I"

Body Weight "I"

Water "I"

Time

Type

Free Weights

Machine Weights

Resistance Bands, Body Weight, Water-Based Exercises, and Other Modes of Resistance

PUTTING IT ALL TOGETHER

RESISTANCE TRAINING ASSESSMENTS

SELF-MONITORING, GOAL SETTING, AND PROGRESSION OF RESISTANCE EXERCISE

5. Flexibility on the Journey: Stretching Your Horizons

FLEXIBILITY ON YOUR JOURNEY

TERMINOLOGY RELATED TO FLEXIBILITY

RANGE OF MOTION: WHAT DETERMINES THE TRAVEL PLANS OF EACH JOINT?

THE PHYSIOLOGY OF FLEXIBILITY

WHAT DOES FLEXIBILITY ADD TO YOUR JOURNEY?

THE FITT NAVIGATION SYSTEM FOR FLEXIBILITY TRAINING

Frequency

Intensity

Time

Type

Static Stretching

Dynamic Stretching

Proprioceptive Neuromuscular Facilitation

PUTTING IT ALL TOGETHER

FLEXIBILITY TRAINING ASSESSMENTS

MUSCULAR HEALTH: SELF-MONITORING, GOAL SETTING, AND PROGRESSION OF FLEXIBILITY EXERCISES

6. Fuel for the Journey: Nutrition and Metabolism

WE ARE OBSESSED WITH OUR FOOD . . . FUEL?

Dietary Reference Intakes

"MyPlate" Has Replaced the Food Pyramid

MACRONUTRIENTS: NUTRIENTS THAT PROVIDE ENERGY

Carbohydrates

Fats

Proteins

Where Do Calories Fit in the Discussion of Macronutrients?

BREAKING DOWN THE FOOD LABEL

Serving Size

Total Calories and Calories from Fat

Daily Value %

Updates to the Nutrition Facts Label

MICRONUTRIENTS

Vitamins

Minerals

WATER

METABOLISM AND THE ENERGY PRODUCING PATHWAYS

How Food Fuels You

Cellular Currency: ATP

ATP Producing Pathways

Creatine Phosphate as a Source of Energy

Glucose as an Anaerobic Source of Energy

Glucose as an Aerobic Source of Energy

Fat as an Aerobic Source of Energy

Protein as an Anaerobic or Aerobic Source of Energy

The Smooth Transition Between the Metabolic Pathways

ENZYMES

THE ENDOCRINE SYSTEM AND HORMONES

Endocrine Organs and Key Hormones in Metabolism

How Acute Exercise and Chronic Training Impact Hormone Release

FUEL FOR GENERAL HEALTH

What Are the General Characteristics of a Healthful Diet?

The Fuel Demands of Your Different Tissues

Red Blood Cells and the Brain

The Heart

The Muscles

The Liver

Fuel for Rest and for Light, Moderate, and High Intensity

FUEL FOR FITNESS

Nutrition for the General, Healthful Lifestyle

Fuel for Endurance Exercise

Fuel for Resistance Exercise

FUEL AND THE LINK TO DISEASE

Obesity
 Diabetes
 Cholesterol
 Metabolic Syndrome
 Osteoporosis
 Anemia

WHY PROPER NUTRITION MATTERS: IT'S NOT JUST YOUR FOOD—IT IS YOUR FUEL!

7. Packing Lite: Body Composition and Weight Control

BODY COMPOSITION AND WELLNESS

BODY IMAGE AND WELLNESS

Overweight and Obesity: The Health Burden
 What Does It Mean to Be Overweight or Obese?

OBESITY: HISTORY AND CAUSES

A Generation of Change
 The Current State of Weight
 Causes of Obesity

Increased Caloric Intake
Decreased Physical Activity

NUTRITION AND CHRONIC DISEASE

Cardiovascular Diseases

Fats
Sodium
Alcohol

Cancer
 Diabetes

EATING DISORDERS

Anorexia Nervosa
 Bulimia Nervosa
 Binge-Eating Disorder
 What Is a Healthy Range of Fat?

CHECK YOUR BODY FAT AND RISK TO DISEASE

Methods for Assessing Disease Risk

Body Mass Index
Waist Circumference

Methods for Assessing Body Composition

Dual-Energy X-ray Absorptiometry and Other Clinical Methods
Hydrostatic Weighing
Air Displacement Plethysmography

Bioelectrical Impedance Analysis (BIA)
 Skinfold Measurement

ASSESSING YOUR BODY COMPOSITION

MANAGING YOUR WEIGHT

How Can I Change My Body Composition?

Eat Less, Exercise More

Exercise More, Eat Better

Your Path to Healthy Weight Loss

Monitor the Amount You Eat

Eat Good Foods

Manage Your Weight Loss Over Time

Burn as Many Calories as You Eat

Resistance Training

Monitor Your Eating Habits

Guidelines for Healthy Weight Loss

Determine Your Daily Energy Expenditure

Determining Your Recommended Body Weight

DEVELOPING A WEIGHT MANAGEMENT PLAN

Self-Monitoring

Be Aware of What You Eat and How Much Exercise You Get

Use Goals to Motivate Yourself

Plan Ahead for Success

Setting SMART Weight and Body Composition Goals

8. Behavior Change and Motivational Interviewing: Understanding All Dimensions of Your Patient

BEHAVIOR CHANGE AND MOTIVATIONAL INTERVIEWING

Evidence Shows that a Healthy Living Reduces Risk

Healthy Behaviors May Mitigate Some Genetic Risk

Few Americans Adopt and Adhere to Key Health Behaviors

How Do You Motivate Patients to Change?

USING INTERPERSONAL SKILLS TO GET THE COACHING PROCESS STARTED

HOW READY IS YOUR PATIENT TO ADOPT HEALTHY BEHAVIORS?

The Transtheoretical Model

Stages of Change

Decisional Balance

Self-Efficacy

Processes of Change

STEP-BY-STEP

Step 1: Assess Readiness to Change

Exercise Staging Algorithm

Healthy Eating Staging Algorithm

Step 2: Tailor Interventions to the Patient's Readiness to Change

PAIRING MOTIVATIONAL INTERVIEWING WITH THE TTM

MI Guiding Principles

MI Basic Skills

9. Coaching Nutrition, Weight Management, and Exercise

PRECONTEMPLATION STAGE (NOT READY)

Precontemplation: Key Intervention Strategies

Sample Activities for Precontemplation

CONTEMPLATION STAGE (GETTING READY)

Key Intervention Strategies

After the First Steps, Follow-Up

Sample Activities for Contemplation

PREPARATION STAGE (READY)

Key Intervention Strategies

Sample Activities for Preparation

ACTION STAGE

Key Intervention Strategies

Sample Activities for Action

MAINTENANCE STAGE

Key Intervention Strategies

Sample Activities for Maintenance

RELAPSE PREVENTION

Exercise

Healthy Eating

PRACTICE COACHING SCENARIO

Intervention Suggestions for Exercise (Precontemplation)

Intervention Suggestions for Healthy Eating (Contemplation)

SUMMARY

Self-Assessments and Labs

These online labs and self-assessments are available as online interactive activities. PDF and print versions are also available.

INTRODUCTION TO YOURSELF

- Par-Q: Readiness for Exercise
- Multi-Dimensional Wellness Inventory
- Learning Knowledge and Abilities Survey
- Expected Involvement Survey

BEHAVIOR CHANGE AND GOAL SETTING

- Identify Your Barriers, Motives, and Motivators
- Set Your SMART Goal for Exercise

CARDIORESPIRATORY FITNESS

- 1.5 Mile Run Fitness Test
- Rockport Walk Fitness Test
- YMCA 3-Minute Step Test
- Find Your Target Heart Ranges
- Create an Individualized Fitness Roadmap

MUSCULAR HEALTH

- Resistance to Exercise: Where are You Now

- Body Weight Calculator
- Strength Assessment
- Push Up Test
- Curl Up Test
- Vertical Jump Test

FLEXIBILITY

- Sit and Reach Test
- Trunk Extension Test
- Shoulder Elevation Test

NUTRITION

- Wellness Activity and Diet Tracker
- BearTracks Mobile App

BODY COMPOSITION

- Impact of Healthy Body Composition
- Body Mass Index
- Body Weight Calculator
- Calorie Calculator

MOTIVATE FOR CHANGE

- Practice Crafting Intervention Strategies

COACHING NUTRITION, WEIGHT MANAGEMENT, AND EXERCISE

- Lifestyle Management Health Risk Inventory
- Lifestyle Management for Stress
- Lifestyle Management for Fitness
- Lifestyle Management for Healthy Eating
- Lifestyle Management for Weight Management



Behavior Change and Motivational Interviewing:

UNDERSTANDING ALL DIMENSIONS OF YOUR PATIENT

LEARNING OBJECTIVES

- Define the meaning and purpose of wellness coaching in your job.
- Assess the patient's stage of change for fitness and nutrition.
- Help your patients identify their motives, motivators, and barriers for change.
- Use behavior change theory to help your patients identify strategies for change.
- Apply coaching psychology and positive psychology to help patients achieve their goals.
- Identify useful resources and tools that will help your patients achieve their goals.

Addressing a patient's lifestyle will be a critical component of your clinical practice because the leading causes of death for Americans are lifestyle-related: tobacco use, poor diet, physical inactivity, and excessive alcohol consumption.¹ Consider, for example, that in a recent prospective study that followed over 88,000 young women for 20 years, approximately 73% of coronary heart disease cases could be attributed to poor adherence to a healthy lifestyle, which was defined as having a normal body mass index (BMI), being physically active, eating a healthy diet, drinking alcohol in moderation, limiting TV viewing, and not smoking.² Similarly, nearly half (46%) of the clinical cardiovascular disease risk factor cases (i.e., diabetes, hypertension, and hyperlipidemia) were attributable to an unhealthy lifestyle. Among a sample of 434 primary care patients with hypertension or diabetes, over 96% had three or more health behavior risks,³ which is an all too common finding among overweight primary care patients.⁴



Figure 8.1: Most coronary heart disease is caused by lifestyle, such physical inactivity, poor diet, and smoking.

Evidence Shows that a Healthy Living Reduces Risk

In contrast, a healthy lifestyle can reduce the risk of disease and extend life expectancy. The results of an 11-year prospective study of over 20,000 male participants indicated that as many as 4 out of 5 myocardial infarctions in men are preventable if patients consume a healthy diet, consume alcohol moderately, are smoke-free, maintain a healthy weight, and engage in adequate physical activity.⁵ In another large longitudinal study involving 23,153 adults ages 35-65, the risk of type 2 diabetes, myocardial infarction, stroke, or cancer decreased progressively as the number of healthy lifestyle

factors increased.⁶ Other studies have replicated the finding that abstinence from smoking, eating five servings of fruits and vegetables each day, adequate physical activity, and striving to maintain a BMI of less than 25 can increase life expectancy up to 14 years.⁷⁻⁹ Not surprisingly, Tsai et al. (2010) found that the number of healthy behaviors was also linked to optimal self-reported health.¹⁰

Renowned Yale University physician, David Katz, M.D., contends that the current knowledge we have about health promotion and lifestyle as medicine could prevent 80% of all chronic disease and premature death.

Healthy Behaviors May Mitigate Some Genetic Risk

The influence of managing lifestyle on chronic disease risk may even extend to the expression of genetic risk for various conditions. Preliminary studies¹¹ (e.g., Ornish et al., 2008) indicate that intensive lifestyle modification among men with prostate cancer can in fact significantly modulate gene expression in the prostate. Several processes implicated in tumorigenesis were affected, including protein metabolism, modification, and phosphorylation. Findings from a more recent study demonstrated that engaging in multiple healthy behaviors (i.e. regular exercise, healthy diet, and adequate sleep) may be protective against stress-induced acceleration of cellular aging.¹² The investigators followed 239 healthy, post-menopausal, non-smokers for one year. The primary outcome of stress was shortening of telomeres, the protective caps at the ends of chromosomes that determine how

quickly cells age. Shorter telomeres have been associated with several diseases including cardiovascular disease, stroke, vascular dementia, obesity, osteoporosis, diabetes, and cancer. The results revealed that while each major life stressor resulted in shortening of telomeres, the effect was moderated by engaging in multiple healthy behaviors.

Few Americans Adopt and Adhere to Key Health Behaviors

But despite these compelling data about the role of lifestyle in the prevention of chronic disease and premature death, Americans routinely fail to adopt life-saving healthy behaviors. This is true among asymptomatic adults as well as among those with chronic illnesses.¹³ Ford et al. (2012),¹⁴ for example, examined the co-occurrence of three healthy behaviors (regular exercise, healthy diet, and smoke-free living) among 9,471 adults. They reported that 12.6% were engaging in none of the healthy behaviors; 34.8% were engaging in only one; and only 15.9% were engaging in all three. When Tsai et al. (2010)¹⁰ added not drinking excessively to the mix of behaviors, a mere 6.5% of adults were engaging in all four behaviors, and almost 25% were engaging in just 1 of the 4. Among adults with diabetes or cardiovascular disease, the picture was even more grim: The proportion engaging in all four behaviors was under 4%, and the proportion engaging in just a single health behavior was about 33%.

Given the huge divide between the critical need to influence lifestyle and the current state of American health, there is an urgent need for health care providers to become proponents for and models of healthy lifestyles. To help address this need, the American College of LifeStyle Medicine has emerged in recent years to disseminate and publicize the rapidly expanding evidence that lifestyle intervention, including diet and exercise, is an essential component in the treatment of the majority of chronic diseases and can be as effective as medication. One added benefit is that lifestyle interventions do not confer the risks and unwanted side-effects that medications can have.

“Lifestyle Medicine (LM) is the evidence-based practice of helping individuals and families adopt and sustain healthy behaviors that affect health and quality of life.”

—Lianov & Johnson, 2010



Figure 8.2: Evidence shows that a healthy lifestyle can reduce the risk of disease and extend life expectancy.

How Do You Motivate Patients to Change?

The question, then, is how to effectively motivate a patient to change behavior. Decades of research on health promotion has consistently demonstrated that providing information may be adequate to initiate the behavior change process, but not to sustain it. A more systematic and collaborative approach is required to facilitate behavior change. In fact, a number of lifestyle medicine competencies have been identified, including knowledge, assessment skills, and management skills.¹³ Physicians, however, often report that they lack

the confidence and knowledge to intervene on lifestyle. The remainder of this chapter will outline a leading theoretical model of health behavior change (i.e., The Transtheoretical Model of Change) and a set of general clinical techniques (interpersonal skills and Motivational Interviewing) that will be instrumental in building your confidence that you can effectively address lifestyle components of health in your clinical practice.



Figure 8.3: A more systematic and collaborative approach is required to facilitate behavior change.

USING INTERPERSONAL SKILLS TO START THE COACHING PROCESS

Whether you are working with a patient in the diagnostic phase or helping a person cope with the complications of a condition, it is essential that you and the patient have an effective relationship. This relationship signifies a unique bond that is based on mutual understanding and respect. Interpersonal skills are necessary not only for developing this bond, but also for alleviating the personal anxiety that can interfere with the change process.

One of the best known professionals in the counseling field, Dr. Robert Carkhuff, has identified five major sets of interpersonal skills:¹⁵

1. **Empathy** – the ability to share in another person’s emotions.
2. **Concreteness** – the ability to translate the person’s generalized feelings into specific examples and problems.
3. **Genuineness** – willingness to step out of the detached professional role and to disclose personal feelings.
4. **Immediacy** – the ability to identify and elicit the person’s current feelings.
5. **Confrontation** – the ability to tactfully confront inconsistencies in the person’s statements or between their verbal and non-verbal communications.

Within these broad categories of interpersonal skills are a variety of specific techniques to help establish an effective relationship:

- Maintain eye contact (if culturally appropriate) – Maintain “friendly” pupil-to-pupil contact; do not stare the person down.
- Assume proper body distance and lean; sitting directly across from the person appears confrontational. Sitting across the corner of a desk is more appropriate; if the person moves his/her chair away, you are sitting too close. Your body’s lean needs to mirror that of the patient. Avoid crossing legs or arms because it “shuts out” the person.
- Remember that everyone’s personal space is different. Many variables such as cultural beliefs and practices will affect an individual’s personal space.



Figure 8.4: Connecting and establishing a relationship with your patient is important if you are going to be an effective wellness coach.

- Use of touch (if culturally appropriate) – Touch the person’s hand, arm, or shoulder to show that you really care. Pay attention to body language. Some people may be more comfortable with touch than others.
- Allow silence – Caregivers typically are uncomfortable with silence, but silence can be therapeutic.
- Reflect feelings and content – This involves “echoing back” feelings or statements by the person, which helps to communicate that you are really listening and understanding the person’s concerns. It helps the individual gain perspective on the problem. For example, “You’re saying that since your husband passed away, you’ve found it harder to be motivated to manage your diet.”
- Provide reassurance – Give reassurance that is specific and appropriate to the individual’s situation, such as: “Being seriously overweight is difficult; it’s normal to feel the way you do.” Do not give stereotyped reassurance, such as: “Don’t worry” or, “You’ll be OK.”
- Elicit the meaning behind the statement or question – Probe the real basis of the problem, for example: “I don’t think I understand what you mean by...”; “Can you tell me more about...”; “How strongly do you feel about that?”
- Self-disclosure – Share your own feelings, such as: “I share your frustration that you keep hitting this snag with your exercise plan”.

This trust-building process generally takes only a few minutes. Once rapport is established and anxiety is reduced, it is possible to proceed with further education and lifestyle interventions.

HOW READY IS YOUR PATIENT TO ADOPT HEALTHY BEHAVIORS?

Promoting the adoption and maintenance of regular exercise, healthy eating, or a healthy weight is undoubtedly a significant behavior change challenge. A mere 30% of adults are exercising in accordance with the current American College of Sports Medicine (ACSM) guidelines,¹⁶ and nearly 40% engage in no leisure-time physical activity.¹⁷ An even smaller percentage of the population eat 4½ cups of fruit and vegetables a day. Perhaps as a result, over 67% of Americans are overweight or obese.

The most efficacious strategies for motivating individuals to exercise or eat healthy depends in part on where they are in the process of adopting healthy behaviors: Often, what motivates people to begin thinking about starting to exercise and/or eat healthy is different than what motivates them to actually begin, which in turn differs from what motivates them to continue. For these reasons, effective behavior change interventions need to be individually tailored on constructs from a health behavior change theory and incorporate behavioral strategies such as goal setting, social support, and relapse prevention.

The Transtheoretical Model

The Transtheoretical Model of Behavior Change (TTM), also known as the Stages of Change model, is one of the most commonly employed health behavior change theories. Reviews of interventions matched to individuals’ readiness to change have demonstrated that tailoring messages is an extremely effective way to change behavior.^{18, 19} Furthermore,

multiple studies have revealed that tailored, TTM-based interventions, including those delivered by coaches,²⁰ increase the adoption and maintenance of healthy behaviors.²⁰⁻²⁵ The success of those interventions underscores an important lesson for health care providers: It is crucial to assess each patient's readiness to engage in regular exercise and healthy eating and then tailor your interventions to his or her stage of change. Recognizing the unique needs of individuals in the early stages and re-conceptualizing progress as they move to the next stage can significantly increase the impact of your work with a patient. Given the utility of the TTM for assisting a patient in adopting and maintaining regular exercise and healthy eating, this chapter will provide an overview of the TTM and illustrate its practical application to assisting individuals in adopting and maintaining regular exercise and healthy eating.

The TTM conceptualizes change as a process that unfolds over time in a series of five stages of readiness to change (see Figure 8.6).



Figure 8.5: Knowing if your patient is ready for change will help you set your coaching strategy.

Stages of Change

Precontemplation (not ready) is the stage of change in which individuals are not intending to adopt a health behavior in the foreseeable future (typically defined as the next six months). Individuals in this stage are often unaware or under-aware of the benefits of adopting exercise or eating healthy and are overestimating the costs of changing. They are often characterized by one or more of the three D's: defensiveness, denial, or demoralization. Often they are described as non-adherent, unmotivated, or difficult. It is important, however, not to confuse lack of readiness with lack of desire: Individuals in Precontemplation may want to begin exercising regularly and eating healthy or wish they would, but are not ready to do so because of perceived barriers, low self-efficacy (i.e., confidence, or the belief that they can engage in regular exercise and eat healthy), or lack of information on how to get started.



Figure 8.6: Stages of Change

Individuals in **Precontemplation** may want to begin exercising regularly and eating healthy or wish they would, but are not ready to do so because of perceived barriers, low self-efficacy (i.e., confidence, or the belief that they can engage in regular exercise and eat healthy), or lack of information on how to get started.

Individuals in **Contemplation** are intending to adopt a behavior within the next six months. They are more aware of the numerous benefits, but are also acutely aware of the

cons, or drawbacks. As a result, they may be ambivalent. At times, the ambivalence is so profound that individuals get “stuck” in Contemplation, which is referred to as “chronic Contemplation.” These individuals often lack the confidence and commitment they need to adopt the healthy behavior.

Individuals in **Preparation** are ready to exercise regularly or eat healthy in the next 30 days and have often taken some steps toward their goal, such as exercising on some days or increasing the fruits and vegetables they currently consume. They are creating a plan for how to move forward and are the perfect candidates for traditional messaging and programs that encourage people to take action (e.g., Just Do It!, My Plate). They are also more committed and confident about their ability to do so.

Individuals in **Action** have adopted regular exercise or healthy eating within the past 6 months and are actively using behavioral strategies to create a new habit. They are likely to experience a setback when they experience a challenge (e.g., bad weather, travel, schedule conflicts) unless they have planned ahead.

Individuals in **Maintenance** have been exercising regularly or eating healthy for quite some time (typically defined as more than 6 months) and are significantly more confident about their ability to maintain the behavior change.

An individual’s stage of change has important implications for selecting intervention strategies and messaging. Equally important, though, are the implications the stage paradigm has for re-conceptualizing what “success” means in working with a patient to help them adopt or maintain a healthy behavior. A reasonable goal for each patient is to help them move forward one stage of change, as forward stage movement is an important predictor of later success. In fact, assisting individuals in moving forward at least one stage of change (e.g., from Precontemplation to Contemplation) can as much as double the probability that they will take effective action in the following six months. Helping them move two stages can triple their chances of taking action.²⁶ How can you help patients achieve that goal? By encouraging them to use behavior change strategies matched to their stage of change.

Behavioral change strategies are derived from other behavior change constructs included in the TTM, such as decisional balance, self-efficacy, and the 10 processes of change.

Decisional Balance

Decisional balance represents an individual’s relative weighting of the **Pros** (i.e. benefits) and **Cons** (i.e. hassles, barriers, or drawbacks) of change.²⁷ An extensive review of the pros and cons for 48 health behaviors revealed a consistent pattern of the pros and cons across the stages.²⁸ The cons are higher than the pros in the Precontemplation stage, while the pros outweigh the cons in the Action stage. The relationship between the pros and cons across the stages has important implications for intervention strategies. The key take away messages for health care providers are that: 1) Raising the pros is twice as important as reducing the cons; 2) it is crucial to raise the pros for individuals in the early stages; and 3) Contemplation is the time to begin addressing the barriers to change.



Figure 8.7: The stage paradigm is important for helping your patients re-conceptualize their goal. Moving from one stage to the next is an important predictor for later success.



Figure 8.8: The stage paradigm is important for helping your patients re-conceptualize their goal. Moving from one stage to the next is an important predictor for later success.

Self-Efficacy

Self-efficacy is defined as an individual’s belief about his or her ability to do or achieve a specific behavior²⁹. Within TTM-based interventions, it is operationalized as confidence to make and sustain changes even under stressful situations. Confidence is low in the Precontemplation stage and increases across the stages.³⁰ Given the importance of self-efficacy, it needs to be raised early by assisting individuals in setting and achieving small goals that will build their confidence for taking on increasingly difficult challenges. If, for example, someone is not exercising at all but is intending to do so in the next six months, it would be helpful to have them set a reasonable and achievable goal to begin exercising slowly (e.g., 10 minutes 3 times a week) and increase the frequency and intensity once that goal has been mastered. For healthy eating, a small step would be to make one healthy food substitution (such as fruit for a snack instead of chips; adding one serving of vegetables per day).

Processes of Change

The **processes of change** (see Table 8.1) represent both the covert and overt behavior-change strategies that individuals use to progress through the stages of change.³¹ Research demonstrates that experiential (i.e., cognitive, affective, and evaluative) processes of change, which are shown in Table 8.1, are typically emphasized by individuals in the earlier stages of change. Individuals in later stages rely more on the behavioral processes described in Table 8.2 (i.e., social support, commitments, and behavior management techniques).³²

Additional research demonstrates that process use differs significantly across the stages of change.³³⁻³⁵ Each process can be activated by various techniques. Consciousness raising, for example, can be accomplished by reading articles or listening to news stories about

Processes of Change	Description	Strategy Examples
Consciousness Raising (Get the Facts)	Learning new facts, ideas, and tips that support exercise and healthy eating	Read books, magazines, or websites that focus on exercise and healthy eating.
Dramatic Relief (Pay Attention to Feelings)	Experiencing negative emotions (fear, anxiety) that go along with the health consequences of not exercising and eating healthy, or the positive emotions (inspiration) that go along with regular exercise and healthy eating	Think about somebody close to you that has had severe health problems that may have been prevented by regularly exercising and eating healthy. Does their inactivity, poor diet, and subsequent health problems upset you?
Environmental Reevaluation (Notice your Effect on Others)	Realizing the negative impact that poor health habits have on others and our society, and the positive impact that exercising and healthy eating could have	Consider the example your inactivity and unhealthy eating sets for your children, family, friends, and coworkers.
Self-Reevaluation (Create a New Self-Image)	Realizing that being healthy is an important part of one’s identity	Ask yourself, “How do I think and feel about myself as someone who is not taking care of my health? How might I feel differently if I was exercising regularly and eating healthy?”
Social Liberation (Notice Social Trends)	Realizing that social norms are changing to support healthy habits	Name some social changes that support good health (e.g., walking paths, healthy food choices).

Processes of Change	Description	Strategy Examples
Self-Liberation (Make a Commitment)	Believing in one's ability to exercise regularly and eat healthy, and making a commitment to change based on that belief	Set a date to start exercising regularly and eating healthy, and tell your friends, family, and coworkers your plan.
Helping Relationships (Get Support)	Seeking and using social support to start and/or continue exercising and eating healthy	Join an adult sports league or ask a friend to walk around the neighborhood with you every evening after dinner. Ask a friend for healthy food ideas.
Counter Conditioning (Use Substitutes)	Substituting healthy alternative behaviors and thoughts for unhealthy ones	Ride your bike to work instead of driving your car. Take healthy snacks with you when away from home.
Reinforcement Management (Use Rewards)	Increasing the intrinsic and extrinsic rewards for healthy behaviors and decreasing the rewards for being sedentary and making poor food choices	Buy a new set of workout clothes after you have met an exercise goal. Congratulate yourself for the ways you incorporate fruits and vegetables in your meals.
Stimulus Control (Manage your Environment)	Removing reminders or cues to be sedentary and using cues to exercise and eating healthy	Leave your running shoes and clothes in a bag by the door to remind you to run during your lunch break. Place cut up fruits and vegetables center-front in your refrigerator.

the importance of healthy eating, talking with a health care provider about what modes of exercise best suit a person given their health history and physical limitations (if any), asking friends what types of healthy recipes they enjoy, checking out the website of a local gym or fitness facility to see what types of programs they offer, or keeping a diary (paper or digital) of how many fruits and vegetables a person is eating during the week. The first column of Table 8.1 and Table 8.2 include both the official and (parenthetically) a more informal name of each process of change, as well as examples of each.

Table 8.3 illustrates the stages in which various principles and processes of change are most relevant.

Principles and Processes of Change	Precontemplation	Contemplation	Preparation	Action	Maintenance
	Consciousness Raising Dramatic Relief Environmental Reevaluation Social Liberation	Self-Reevaluation	Self-liberation	Helping Relationships	Reinforcement Management
	Pros Increasing	Cons Decreasing	Self-Efficacy Increasing	Counter Conditioning Stimulus Control	

STEP-BY-STEP

The basic assumption of traditional action-oriented interventions is that everyone is ready to change. The stage paradigm, however, operates under a fundamentally different assumption—that the majority of individuals are not ready to change. This difference in perspective allows health care providers to assist patients in employing the most effective strategies at the right time to help them get ready to initiate and maintain lifestyle changes. From this perspective, encouraging the use of specific principles and processes at the appropriate time facilitates forward stage movement.



Figure 8.9: A core competency is assessing if your patient is ready for exercise.

Step 1: Assess Readiness to Change

One of the core competencies for lifestyle medicine is assessing the patient’s readiness to make a behavior change.¹³ For example, you can assess how ready each patient is to exercise and eat healthy at public health criteria levels (e.g., in accordance with the ACSM guidelines for an accumulated weekly total of at least 150 minutes of moderate exercise, 75 minutes of vigorous exercise, or some combination of these; eating at least 4½ cups of fruit and vegetables a day). It is crucial to know how ready your patient is to meet the rigorous gold-standard public health recommendation, which is the ultimate goal. If a patient has physical limitations that prevent him or her from achieving that level of exercise, you can assess their readiness to engage in whatever level of physical activity is safe for them based on your recommendations.

Exercise Staging Algorithm

For exercise, ask the patient’s readiness to participate in regular exercise defined as:

- Moderate-intensity aerobic or “cardio” activity that increases your breathing rate and causes you to break a light sweat (such as brisk walking) for at least 150 minutes (2 hours and 30 minutes) each week.

OR

- Vigorous-intensity aerobic or “cardio” activity that causes big increases in your breathing and heart rate and makes conversation difficult (such as jogging or running) for at least 75 minutes (1 hour and 15 minutes) each week.

OR

- A mix of moderate and vigorous aerobic activity that is equal to at least 150 minutes of moderate activity, such as 90 minutes of moderate activity and 30 minutes of vigorous activity each week. (Keep in mind that 1 minute of vigorous activity equals 2 minutes of moderate activity.)

After reviewing these recommendations with the patient, ask them: “*Do you engage in regular exercise according to any of these definitions?*” Record their response according to the following indicators:

- Yes, I have been for more than 6 months.
- Yes, I have been, but for less than 6 months.
- No, but I intend to in the next 30 days.
- No, but I intend to in the next 6 months.
- No, and I do not intend to in the next 6 months.

Healthy Eating Staging Algorithm

Fruit and vegetable consumption is a marker behavior for healthy eating. For healthy eating staging, we recommend asking the patient’s readiness to eat 4½ cups of fruits and vegetables per day. (A cup is equal to 1 cup 100% fruit or vegetable juice, 1 cup cooked vegetables, 2 cups raw leafy vegetables, 1 piece of fruit, 1 cup of sliced or diced fruit, or ½ cup dried fruit.)

After reviewing these recommendations with the patient, ask them: “*Do you eat at least 4½ cups of fruits and vegetables per day?*” Record their response according to the following indicators:

- Yes, I have been for more than 6 months.
- Yes, I have been, but for less than 6 months.
- No, but I intend to in the next 30 days.
- No, but I intend to in the next 6 months.
- No, and I do not intend to in the next 6 months.

Step 2: Tailor Interventions to the Patient’s Readiness to Change

Once you have assessed a patient’s readiness to exercise regularly or eat healthy, you can employ the strategies in Chapter 9 to assist them in moving to the next stage. Matching the intervention program or message to the needs of your patient increases the likelihood that they will successfully adopt and maintain the healthy behavior.

If, for example, your patient is in the Contemplation stage, you will want to work with them to identify and create a plan for overcoming barriers that could interfere with their behavior change efforts. You can then encourage them to shrink the cons by

- comparing them to the long list of the benefits of physical activity.
- re-framing them by asking how important they are relative to the potential pay-offs. For example, asking “How does finding the time to exercise compare to the time you could be adding to your life by doing it?”
- countering them with practical alternatives or challenges, such as trying different classes if they are easily bored, watching a favorite show or listening to good music while doing cardio to make the time pass more quickly, joining a class for beginners or going to the gym when it is not crowded if they are self-conscious, or taking advantage of low-cost or free forms of exercise if money is tight.

Patients in Contemplation also benefit from committing to small steps they could take to increase their self-efficacy. You could share success stories of other patients to inspire your patient and/or discuss how their behaviors impact their health, their family's health, and others in their social network. For additional suggestions about how to effectively intervene with patients in Contemplation, please review the intervention strategies described in the Contemplation section in Chapter 9.

As you work with your patients, they will hopefully move forward through the stages, becoming more ready to adopt and maintain regular exercise or eat healthy. Re-ask the stage of change assessment questions periodically so you can continue to use behavior change strategies that will be most effective as they progress through the stages of change.

PAIRING MOTIVATIONAL INTERVIEWING WITH THE TTM



Figure 8.10: Identify your patient's barriers to change and then help them come up with a plan to overcome those barriers.

Motivational Interviewing (MI) is a set of general clinical techniques aimed at addressing ambivalence toward change, overcoming resistance to change, and building a patient's motivation. Rather than using more directive or coercive approaches, MI works from the perspective of the patient by aligning behavior change goals with the patient's broader goals and values. Although it originally emerged out of addiction treatment, MI has since been used to modify a range of health behaviors relevant to chronic disease prevention and management, including healthy eating, physical activity, and weight management. MI is a "way of being" that uses strategies such as reflective listening, shared decision making, and eliciting change talk.

MI was developed by clinical psychologists William Miller and Stephen Rollnick. They viewed low motivation for change as a "state" that fluctuates over time and that can be influenced rather than as a stable, negative personality trait. They turned to the TTM and the stages of change to understand and describe the different states of motivational readiness.

They proposed that the health care provider's primary job is to elicit motivation to change by helping the patient explore and resolve ambivalence about change, which can lead to progress through the stages and to positive changes in behavior.

MI concepts, techniques, and skills complement the TTM principles and processes of change and provide additional tools that health care providers using TTM may find helpful. MI and TTM both provide strategies for meeting patients where they are in their readiness to change without pressuring, confronting, or coercing. Collaboration is a key component of MI. Providers using MI avoid an authoritative stance and instead seek to foster a partner-like relationship. The MI approach involves exploration and support rather than persuasion and argument. It is more like dancing than wrestling.

There are four broad guiding principles, four basic skills, and four processes for health care providers to use with MI. Each of these is discussed in the following sections. Table 8.2, presented after the discussion, depicts how MI and TTM can be integrated and complement each other in patient care.

MI Guiding Principles

The four guiding principles of MI are:

- Express empathy
- Develop discrepancy
- Roll with resistance
- Support self-efficacy

The first principle of MI is **Expressing Empathy**. Empathy is critical to the MI approach. The health care provider seeks to accept, understand, and support the patient's feelings and perspectives without judging, criticizing, or blaming. It is important to note that acceptance is not the same as agreement or approval. It is possible to accept and understand an individual's perspective while not endorsing it. When they feel understood and accepted, patients may be less likely to deny, defend, or minimize their behavior; they may be more open to exploring their thoughts and experiences and the possibility of change. It is important to be able to empathize with people at each stage of change. Asking yourself questions such as the following will help you understand and empathize with your patients:

- How does it feel to be in Precontemplation if you are demoralized and are giving up on your ability to change? Or if you feel pressured to take action?
- How does it feel to be in Contemplation and be plagued with doubt?
- Is change worth it? Is it not? Should I put it off?

The second principle of MI, **Develop Discrepancy**, involves creating and amplifying a discrepancy between present behavior and important personal goals or values. Discrepancy is often triggered by an awareness of and discontent with the costs of present behavior and the perceived advantages to change. Once a discrepancy is recognized, the patient, rather than the health care provider, should present arguments or reasons for change. People are more often persuaded by what they hear themselves saying than what others tell them to do. Remember, people in Precontemplation are often unaware that they underestimate the Pros of changing and overestimate the Cons. People in Contemplation have an equal balance of Pros and Cons; increasing the Pros and decreasing the Cons produces a potential discrepancy.

The third principle of MI is **Roll with Resistance**. There are many types of resistance that can emerge in a therapeutic relationship. Some of the more common types include arguing, challenging, negating, blaming, excusing, and minimizing. Research shows that increased resistance leads to worse treatment outcomes. In MI, the health care provider's challenge is to roll with resistance when it arises, while maintaining a collaborative environment. Resistance is not directly opposed or confronted. Rather the provider works alongside the resistance by using techniques like:

- Reframing—providing a different perspective.
- Normalizing ambivalence—acknowledging that change has its negatives and can be difficult.
- Emphasizing personal control—ensuring that the patient knows that they ultimately make the decision about whether, and under what conditions, they will change their



Figure 8.11: MI works from the perspective of the patient by aligning behavior change goals with the patient's broader goals and values.



Figure 8.12: Empathy is critical to the MI approach.



Figure 8.13: Your patient must recognize the discrepancy.

behavior.

People in Precontemplation often perceive coercion even when it is not present. Helping them appreciate that you respect where they are and can work with them can reduce resistance. Pressuring people to take action when they are not ready creates resistance due to perceived or real coercion. Reframing change from taking action to *making progress* also reduces resistance.

The fourth principle of MI is **Support Self-Efficacy**. Increasing self-efficacy is essential in the change process. It's important to remember that the patient, and not the health care provider, is responsible for choosing and carrying out change. However, the health care provider's own belief in the patient's ability to change is critical. People can have adequate self-efficacy in their ability to progress from one stage to the next, even if their self-efficacy is low for taking immediate action.

MI Basic Skills

The four basic MI skills for health care providers to use when interacting with a patient are summarized with the acronym OARS:

- **O**pen-ended questions
- **A**ffirmation
- **R**eflective listening
- **S**ummaries

Open-ended questions facilitate dialog and invite the patient to give more than simple one-word answers. Here are examples of open- and closed-ended questions:

- “What possible long-term consequences of an unhealthy diet concern you the most?” This is an example of an open-ended question. Open-ended questions are door-openers that encourage deeper exploration of the issue and encourage the patient to do most of the talking.
- “Are you concerned about your lack of physical activity?” This is a closed-ended question. Questions that allow a yes or no response can impede further discussion and exploration.



Figure 8.14: Negating is a common form of resistance.

Affirmations are statements of recognition and appreciation that focus on the patient's efforts and strengths. They help build confidence and can strengthen rapport. Affirmations help the patient to believe that change is possible and that they are capable of implementing that change. Statements such as "That's a good suggestion," "It's good that you are taking the time to work on this," and "You're clearly a resourceful person, to cope with such difficulties for so long" are examples of affirmations.

Reflective listening involves using statements that acknowledge and validate what the patient is trying to get across. Reflective statements often begin with phrases such as "It sounds like you..." "You're feeling..." "It seems to you that..." A general rule of thumb is to give three reflective statements for every question asked. Reflective statements

tend to keep the momentum moving forward, while questions tend to cause a shift, or stop the momentum entirely. One caution to keep in mind: restating verbatim what the patient said makes it sound like an echo rather than a thoughtful response. Often, health care providers will rephrase what the patient said to make sure they really understand, or will add on a new idea to move the discussion forward.

Summaries are used to bring information together at various points. They are a form of reflective listening and an effective way to communicate the health care provider's interest in the patient and build rapport. Summaries also highlight important elements, such as concerns of the patient or ambivalence about change. Summaries can also be used to shift attention if the interaction is going in an unproductive direction. For example, one might say, "Let me stop and summarize what we've been talking about..."

MI Processes for Providers

The four MI processes for health care providers to use are engaging, focusing, evolving, and planning.

- **Engaging** to establish a helpful connection and working relationship
- **Focusing** to develop and maintain a specific direction in the conversation about change
- **Evolving** to elicit the patient's own motivation for change
- **Planning** to develop commitment to change and formulate a concrete plan of action

The style and spirit of MI can remain useful while many other clinical skills and tools are being used to facilitate the person's progress through the change process. It is adapted from Tomlin & Richardson (2004).³⁶

See Table 8.2 to see how the four MI processes are applied to each stage of change.



Figure 8.15: Don't forget to recognize your patient's efforts and their strengths. Your support will help build their confidence.

The MI style is best used to enhance readiness for change by helping the patient explore and resolve ambivalence. Thus, it is used best in the early stages of change—Precontemplation and Contemplation. Miller and Rollnick's (2012) 3rd edition of *Interviewing* goes a step further and offers planning guidance to those in Preparation.³⁷ In a meta-analysis of 72 clinical trials spanning a range of target problems, MI by itself led to significant change at 6 months but not at 12 months.³⁸ Thus, MI is best when paired with a behavior change model like the TTM that can help facilitate lasting effects on behavior change. Doing so makes more sense to Miller and Rollnick (2012) than regarding MI as an alternative stand-alone treatment to compete with other approaches.³⁷

The targeted behavior change strategies and techniques outlined by the TTM and MI will enable health care providers to more effectively practice lifestyle medicine. Traditionally, patients who resisted pressure to adopt health behaviors were written off as unmotivated. But in reality, they were just not ready.

The bottom line is that wishing you could change or wanting to change are not necessarily the same thing as intending to change. And, as you may have seen firsthand, the strategies and recommendations you typically use with patients who are ready to change simply don't work with those who are not yet ready or who are getting ready. The good news is that you can help those patients who aren't ready yet, or who are on the fence, make progress by using the right messages at the right time. Given the epidemic of chronic diseases resulting from unhealthy lifestyles, becoming a change agent may well be one of your most important clinical skills.

PRECONTEMPLATION STAGE (Not Ready) Patient is resistant to change, demoralized, or uninformed	
TTM PRINCIPLES AND PROCESSES OF CHANGE	MI PRINCIPLES, SKILLS, AND PROCESSES
Raise the Pros	Express Empathy
Consciousness Raising	Roll with Resistance
Learning new facts, ideas, and tips	Use OARS
Dramatic Relief	Engaging
Emotional experiences that lead patients to experience the negative emotions that go along with unhealthy behavior and the positive ones that go along with healthy ones	
Social Liberation	
Identifying and utilizing the supports society offers to change	

CONTEMPLATION STAGE (Getting Ready) Patient is ambivalent about making a change	
TTM PRINCIPLES AND PROCESSES OF CHANGE	MI PRINCIPLES, SKILLS, AND PROCESSES
Reduce the Cons and Raise the Pros	Express Empathy
Environmental Reevaluation Realizing the negative impact their unhealthy behavior has on others	Develop Discrepancies
Social Liberation Identifying and utilizing the supports society offers to change	Roll with Resistance
Self-Reevaluation Realizing that being healthy is an important part of one's identity	Use OARS
	Focusing and Evoking to Elicit Change Talk

PREPARATION STAGE (Ready) Patient decides to make a change but doesn't have a plan for it	
TTM PRINCIPLES AND PROCESSES OF CHANGE	MI PRINCIPLES, SKILLS, AND PROCESSES
Increase Self-Efficacy	Express Empathy
Self-Liberation	Develop Discrepancies
Making a commitment to change	Roll with Resistance
Social Liberation Identifying and utilizing the supports society offers to change	Planning to Elicit Change Talk
Helping Relationships	Use OARS
Establishing supportive relationships while changing	Offer Summary
	Support Self-Efficacy

ACTION STAGE Patient engages in the new health behavior	
TTM PRINCIPLES AND PROCESSES OF CHANGE	MI PRINCIPLES, SKILLS, AND PROCESSES
<i>Increase Self-Efficacy for Relapse Prevention</i>	<i>Express Empathy</i>
<i>Relapse Prevention</i>	<i>Support Self-Efficacy</i>
<i>Counter Conditioning</i>	<i>Planning to support persistence</i>
Creating alternatives to the unhealthy behavior	<i>Use Treatment Summary to highlight old vs. new behaviors</i>
<i>Reinforcement Management</i>	
Using rewards and celebrating self for changing	
<i>Stimulus Control</i>	
Managing one's environment to support the healthy behavior	
<i>Social Liberation</i>	
Identifying and utilizing the supports society offers to change	
<i>Helping Relationships</i>	
Establishing supportive relationships while changing	

MAINTENANCE STAGE Patient has been engaging in the health behavior for six months or more	
TTM PRINCIPLES AND PROCESSES OF CHANGE	MI PRINCIPLES, SKILLS, AND PROCESSES
<i>Relapse Prevention</i>	<i>Express Empathy</i>
<i>Reinforcement Management</i>	<i>Use OARS</i>
Using rewards and celebrating self for changing	<i>Planning to Support Persistence</i>
<i>Stimulus Control</i>	
Managing urges and triggers to do unhealthy behavior	
<i>Social Liberation</i>	
Identifying and utilizing the supports society offers to change	
<i>Helping Relationships</i>	
Establishing supportive relationships while changing	

Table 8.4. Integrating Motivational Interviewing Techniques with the TTM Stages, Principles, and Processes of Change

REFERENCES

1. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *Jama*. 2004;291(10):1238-1245.
2. Chomistek AK, Chiuvè SE, Eliassen AH, Mukamal KJ, Willett WC, Rimm EB. Healthy lifestyle in the primordial prevention of cardiovascular disease among young women. *Journal of the American College of Cardiology*. 2015;65(1):43-51.
3. Lawler SP, Winkler E, Reeves MM, Owen N, Graves N, Eakin EG. Multiple health behavior changes and co-variation in a telephone counseling trial. *Annals of behavioral medicine*. 2010;39(3):250-257.
4. Sanchez A, Norman GJ, Sallis JF, Calfas KJ, Rock C, Patrick K. Patterns and correlates of multiple risk behaviors in overweight women. *Preventive medicine*. 2008;46(3):196-202.
5. Åkesson A, Larsson SC, Discacciati A, Wolk A. Low-risk diet and lifestyle habits in the primary prevention of myocardial infarction in men: a population-based prospective cohort study. *Journal of the American College of Cardiology*. 2014;64(13):1299-1306.
6. Ford ES, Bergmann MM, Kroger J, Schienkiewitz A, Weikert C, Boeing H. Healthy living is the best revenge: findings from the European Prospective Investigation Into Cancer and Nutrition-Potsdam study. *Archives of internal medicine*. 2009;169(15):1355.
7. Khaw K-T, Wareham N, Bingham S, Welch A, Luben R, Day N. Combined impact of health behaviours and mortality in men and women: the EPIC-Norfolk prospective population study. *Obstetrical and Gynecological Survey*. 2008;63(6):376-377.
8. van den Brandt PA. The impact of a Mediterranean diet and healthy lifestyle on premature mortality in men and women. *The American journal of clinical nutrition*. 2011;ajcn. 008250.
9. Pronk NP, Lowry M, Kottke TE, Austin E, Gallagher J, Katz A. The association between optimal lifestyle adherence and short-term incidence of chronic conditions among employees. *Population health management*. 2010;13(6):289-295.
10. Tsai J, Ford ES, Li C, Zhao G, Pearson WS, Balluz LS. Multiple healthy behaviors and optimal self-rated health: findings from the 2007 Behavioral Risk Factor Surveillance System Survey. *Preventive medicine*. 2010;51(3):268-274.
11. Ornish D, Magbanua MJM, Weidner G, et al. Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention. *Proceedings of the National Academy of Sciences*. 2008;105(24):8369-8374.
12. Puterman E, Lin J, Krauss J, Blackburn EH, Epel ES. Determinants of telomere attrition over 1 year in healthy older women: stress and health behaviors matter. *Mol Psychiatry*. 04/print 2015;20(4):529-535.
13. Lianov L, Johnson M. Physician competencies for prescribing lifestyle medicine. *JAMA*. 2010;304(2):202-203.
14. Ford ES, Bergmann MM, Boeing H, Li C, Capewell S. Healthy lifestyle behaviors and all-cause mortality among adults in the United States. *Preventive medicine*. 2012;55(1):23-27.
15. Carkhuff RR. *The art of helping in the 21st century*. Vol 8: Human Resource Development; 2000.
16. Garber CE, Blissmer B, Deschenes MR, et al. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Medicine and science in sports and exercise*. 2011;43(7):1334-1359.
17. Schoenborn C, Adams P. Health behaviors of adults: United States, 2005-2007. *Vital and Health Statistics*. Series 10, Data from the National Health Survey. 2010(245):1-132.
18. Noar SM, Benac CN, Harris MS. Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychological bulletin*. 2007;133(4):673.

19. Krebs P, Prochaska JO, Rossi JS. A meta-analysis of computer-tailored interventions for health behavior change. *Preventive medicine*. 2010;51(3):214-221.
20. Prochaska JO, Evers KE, Castle PH, et al. Enhancing multiple domains of well-being by decreasing multiple health risk behaviors: a randomized clinical trial. *Population health management*. 2012;15(5):276-286.
21. Johnson SS, Paiva AL, Cummins CO, et al. Transtheoretical model-based multiple behavior intervention for weight management: effectiveness on a population basis. *Preventive medicine*. 2008;46(3):238-246.
22. Butterworth SW. Influencing patient adherence to treatment guidelines. *J Manag Care Pharm*. 2008;14(6 Suppl B):21-24.
23. Marcus BH, Lewis BA, Williams DM, et al. Step into Motion: A randomized trial examining the relative efficacy of Internet vs. print-based physical activity interventions. *Contemporary Clinical Trials*. 2007;28(6):737-747.
24. Marcus BH, Napolitano MA, King AC, et al. Telephone versus print delivery of an individualized motivationally tailored physical activity intervention: Project STRIDE. *Health Psychology*. 2007;26(4):401.
25. Williams DM, Papandonatos GD, Jennings EG, et al. Does tailoring on additional theoretical constructs enhance the efficacy of a print-based physical activity promotion intervention? *Health Psychology*. 2011;30(4):432.
26. Prochaska JO, Velicer WF, Fava JL, Rossi JS, Tsoh JY. Evaluating a population-based recruitment approach and a stage-based expert system intervention for smoking cessation. *Addictive behaviors*. 2001;26(4):583-602.
27. Velicer WF, DiClemente CC, Prochaska JO, Brandenburg N. Decisional balance measure for assessing and predicting smoking status. *Journal of personality and social psychology*. 1985;48(5):1279.
28. Hall KL, Rossi JS. Meta-analytic examination of the strong and weak principles across 48 health behaviors. *Preventive medicine*. 2008;46(3):266-274.
29. Bandura A. Self-efficacy. In, VS Ramachaudran (Ed.) *Encyclopedia of human behavior* (Vol. 4, pp. 71-81); New York: Academic Press.(Trykt i H. Friedman (Ed.) *Encyclopedia of mental health*. SAN Diego: Academic Press, 1998); 1994.
30. DiClemente CC, Prochaska JO, Fairhurst SK, Velicer WF, Velasquez MM, Rossi JS. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *Journal of consulting and clinical psychology*. 1991;59(2):295.
31. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: applications to addictive behaviors. *American psychologist*. 1992;47(9):1102.
32. Prochaska JO, Velicer WF, DiClemente CC, Fava J. Measuring processes of change: applications to the cessation of smoking. *Journal of consulting and clinical psychology*. 1988;56(4):520.
33. Marcus BH, Rossi JS, Selby VC, Niaura RS, Abrams DB. The stages and processes of exercise adoption and maintenance in a worksite sample. *Health Psychology*. 1992;11(6):386.
34. Blaney C, Robbins A, Paiva C, et al. Validation of the TTM processes of change measure for exercise in an adult African American sample. *Ann Behav Med*. 2010;39:62.
35. Tseng Y-H, Jaw S-P, Lin T-L, Ho C-C. Exercise motivation and processes of change in community-dwelling older persons. *Journal of Nursing Research*. 2003;11(4):269-276.
36. Tomlin KM, Richardson H. *Motivational interviewing and stages of change: Integrating best practices for substance abuse professionals*: Hazelden Publishing; 2004.
37. Miller WR, Rollnick S. *Motivational interviewing: Helping people change*. 3rd ed. New York, New York: Guilford press; 2012.
38. Hettema J, Steele J, Miller WR. Motivational interviewing. *Annu. Rev. Clin. Psychol*. 2005;1:91-111.