Pre-Exercise Screening & Test Considerations

IN THIS CHAPTER
- Informed Consent
- Par-Q
- Health Status Questionnaire
- Behavior Questionnaire
- Resting Battery of Physical Tests
- Assessing Heart Rate
- Assessing Blood Pressure
- Physical Exam & Lipid Screening
- Medical Clearance Form
Pre-Exercise Screening

There is a significant quantity of evidence that encourages daily physical activity as a vital part to healthy aging. Data suggests that the absence of routine exercise is far more dangerous than the inherent risks of participating in physical activity (4; 13; 14). Although this may be true, cautious steps can and should be taken by personal trainers when encouraging exercise participation. Pre-exercise health screening is an important part of the health management services a personal trainer should provide. The primary purpose for screening a client before activity participation is to identify possible factors that may increase the risk of injury when performing exercise or a particular activity. Factors may include physical limitations, medical conditions, or behaviors that may put the client at risk for a negative outcome from exercise testing or physical activity participation. Failure to appropriately screen a client that leads to an untoward event can place significant liability on the personal trainer (15). Health screening is a necessary part of fulfilling the duty of care owed to a client paying for professional fitness services.

Exercise screening provides additional benefits beyond simply attempting to reduce risks for injury associated with participation. Secondary purposes for screening clients before activity are listed in the table below.

<table>
<thead>
<tr>
<th>Benefits of Client Screening</th>
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<tbody>
<tr>
<td>1. Educating client about relative health risks associated with their lifestyle, behaviors, and history.</td>
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<td>2. Identifying current health status compared to recommended ranges.</td>
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<td>3. Providing data that will be used to create a needs analysis as the basis for the exercise prescription.</td>
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<tr>
<td>4. Establishing starting points and predictions of performance.</td>
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<td>5. Identifying particular interests, aptitudes, or possible limitations.</td>
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Screening for exercise participation provides valuable information for creating an exercise prescription, as well as identifying client aptitude and interests in different types of activities. It is important to identify the data that is most relevant to the purpose and goal of the screening process so that the prescribed exercise program starts with a high likelihood for success and the client is able to participate with very low inherent risk. Exercise screening should not become an obstacle to participation nor be an unnecessary burden to initiating an exercise program. For these reasons, the screening protocols and depth of evaluation should reflect the individual. In the recent past, criticisms have been made about requiring unnecessary testing and evaluation for clearance in an unrestricted exercise program (23; 26). Some stringent screening protocols required men (>45 years) and women (>55 years) to undergo cardiac stress tests, cardiopulmonary tests, and the completion of blood chemistry tests before being cleared for participation. The primary goal of this type of evaluation is to identify those individuals at risk of a cardiac event (i.e. myocardial infarct) during exercise participation. Although this type of screening generates a thorough evaluation, the requirements were viewed as excessive and costly for participating in activities aimed at improving health (6; 11).

Pre-exercise screening was originally designed to determine if a person could participate in vigorous exercise without risk of serious adverse effects. The reality is that most individuals who engage in activity do so at a moderate level and would not even be capable of vigorous activity until they were acclimated to the intensity over an extended period of time. In addition, most instruments used for the screening have significant limitations and are cost prohibitive for the majority of fitness facilities. Furthermore, cardiovascular events are fairly rare and unpredictable and cardiac stress tests and self-reported screening documents only effectively identify a small subset of individuals at risk (5; 8; 22; 23; 29). Screening should be practical, viable across multiple population segments, and effective at identifying those at risk.

The goals of screening are to help get people to safely participate in activity and identify those individuals who truly need appropriate medical evaluation and clearance. Personal trainers should identify health problems and risks for potential problems, and tailor the exercise based on the specific results and findings. Several documents can be used in conjunction with industry guidelines to help the screening process become more efficient and effective. Some common forms include: Informed Consent, ParQ, Health Risk Appraisal, Health Status Questionnaire and Medical History Questionnaire.

Informed Consent

The informed consent is not necessarily a screening form but requests permission or consent for health screening, fitness evaluations, and/or exercise participation. It is defined as a knowing and willful consent to testing procedures or to participation in physical activity after being properly advised of the relevant facts and the risks involved. Informed consent is a valuable document for personal training services, as it provides powerful legal defense against claims that
suggest a client was not informed about the protocols and the inherent risks associated with the activities they were asked to engage in. By law, clients who are exposed to, or may be subject to, possible physical or psychological injury must give informed consent prior to participation in the described activities (7; 18; 25).

For the document to provide maximal value, it must be clearly explained and contain specific details related to the activities employed by the trainer and the associated risks. The informed consent should contain information that demonstrates the risks, benefits, rationale, and expectations of the program components. For optimal performance during litigation, the document should be administered and explained in easily understood terms, so the client fully understands the written language before signing it. Initials by each paragraph or section are useful in identifying that the client was properly informed of the information contained in the document. Additionally, in order to fulfill full disclosure and informed consent requirements, the reading level of the consent form must be comprehensible by the client, so they fully understand the described conditions, taking into account important differences based on the educational level of the individuals being serviced (10; 18).

The informed consent can serve, in part, as a waiver of liability when implemented properly using the appropriate language and signed in the presence of a witness. Because of its legal implications, it is important to use a document that has been reviewed and approved by a lawyer to ensure the document serves its intended role. It is important to realize that a signed informed consent does not prevent the client from having the right to take legal action. It does, however, provide legal defensibility when the procedures in question have been correctly performed by a qualified practitioner. The informed consent should be the first document completed and added to a client’s file. It serves the permission to move ahead with the personal training services, as it suggests the client is privy to the described procedures and expected outcomes. Once completed, the screening protocols can be initiated.

**Par-Q**

Par-Q stands for physical activity readiness questionnaire. It was designed to be used with the Canadian Fitness Testing program, serving as an assessment of self-reported health information. Its primary objective is to identify those individuals at risk for a cardiac event. The Par-Q includes seven questions which serve as red flag indicators designed to identify individuals who require medical clearance before participating in any physical testing or starting an exercise program. Essentially, a “yes” answer to any of the questions dictates medical clearance requirements. This basic screening instrument is practical for large numbers of individuals and requires little time or expertise to implement.

~**Key Terms**~

**Informed Consent** – Consent from an exercise participant, given prior to engaging in any physical activity, that indicates they are fully aware of the risks, benefits, rationale, and expectations of the program’s components.

**Par-Q** – The physical activity readiness questionnaire is a self-reported assessment of health information consisting of seven questions that serve as red flag indicators for individuals ages 15-69 who may require medical clearance before participating in any physical testing or exercise program.

**Health Risk Appraisal** - A health risk appraisal is a health promotional tool, consisting of a questionnaire, a formula for estimating health risks, an advice database, and a means to generate reports.

**Medical History Questionnaire** – A form that an individual should complete, prior to engaging in any activity, in order to answer any significant questions about their medical history that may restrict certain activities.

**Health Status Questionnaire** - A structured self-report questionnaire that generates subscale scores for physical functioning, role limitations due to physical problems, bodily pain, general health perceptions, vitality, social functioning, role-limitations due to emotional problems, and mental health.
INFORMED CONSENT

Purpose and Explanation of Service
I understand that the purpose of the exercise program is to develop and maintain cardiorespiratory fitness, body composition, flexibility, muscular strength and endurance. A specific exercise plan will be given to me, based on my needs and abilities. All exercise prescription components will comply with proper exercise program protocols. The programs include, but are not limited to, aerobic exercise, flexibility training, and strength training. All programs are designed to place a gradually increasing workload on the body in order to improve overall fitness.

Risks
I understand, and have been informed, that there exists the possibility of adverse changes when engaging in a physical activity program. I have been informed that these changes could include abnormal blood pressure, fainting, disorders of heart rhythm, stroke and very rare instances of heart attack or even death. I have been told that every effort will be made to minimize these occurrences by proper screening and by precautions and observations taken during the exercise session. I understand that there is a risk of injury, heart attack, or even death as a result of my participation in an exercise program, but knowing those risks, it is my desire to partake in the recommended activities.

Benefits
I understand that participation in an exercise program has many health-related benefits. These may include improvements in body composition, range of motion, musculoskeletal strength and endurance, and cardiorespiratory efficiency. Furthermore, regular exercise can improve blood pressure and lipid profile, metabolic function, and decrease the risk of cardiovascular disease.

Physiological Experience
I have been informed that during my participation in the exercise program I will be asked to complete physical activities that may elicit physiological responses/symptoms that include, but are not limited to, the following: elevated heart rate, elevated blood pressure, sweating, fatigue, increased respiration, muscle soreness, cramping, and nausea.

Confidentiality and Use of Information
I have been informed that the information obtained in this exercise program will be treated as privileged and confidential and will consequently not be released or revealed to any person without my express written consent. Any other information obtained, however, will be used only by the program staff to evaluate my exercise status as needed.

Inquiries and Freedom of Consent
I have been given an opportunity to ask questions about the exercise program. I further understand that there are also other remote health risks. Despite the fact that a complete accounting of all these remote risks has not been provided to me, I still desire to proceed with the exercise program. I acknowledge that I have read this document in its entirety or that it has been read to me if I was unable to read. I consent to the rendition of all services and procedures as explained herein by all program personnel.

Date

Participant’s Signature

Witness’s Signature

Trainer’s signature
Traditionally, health status questionnaires are split into sections which include the following: general client information, current medical information, medical history, self-reported health and physical fitness status, and self-reported psychological considerations. Numerous questionnaires are available for pre-exercise screening, which vary by format, number of questions, degree of thoroughness, and the actual complexity level of each question.

Taking the time to orally administer the questionnaire is very effective for collecting the data. It helps initiate trust and confidence in the client-trainer relationship, enables the use of probing questions to expand on the questionnaire item and helps ensure that the client understands the question so that the response represents the best and most complete answer. Likewise, administering the questionnaires verbally, provides the opportunity for client education as the trainer can explain the relevance of the question’s subject matter and explain why the information is valuable. Trainers should pay particular attention to key risk areas, including family history of cardiovascular and metabolic disease, smoking history, sedentary lifestyle, obesity, high blood pressure, undesirable blood lipid profiles, and impaired glucose tolerance. These areas are most likely associated with heightened disease risk, health complications, and risk of cardiovascular events.

For the personal trainer, the Par-Q offers little value beyond medical referral identification and basic clearance for low to moderate client activity. Investigative instruments including the Health Status Questionnaire, Health Risk Appraisal, and Medical History Questionnaire can provide more significant data identifying individuals at risk of injury from a variety of possible events. Additionally, the screening tools help identify those clients requiring medical clearance and are useful for specific program participation and exercise decision making. The assessment of a person’s overall health profile provides coronary risk analysis, disease risk classification, lifestyle and health evaluation, and general physical activity and behavior risk stratification. Additionally, the implementation process can help facilitate improved client-trainer rapport and help the client realize important health markers, while becoming more educated about his or her current condition.

**Health Status Questionnaire**

Good health screening evaluations have a specific section for identifying diagnosed diseases, such as hypertension or diabetes, that warrant medical clearance, as well as a separate section for symptoms that may represent an undiagnosed disease that requires a medical evaluation prior to exercise participation. Examples of symptoms that are warning signs include any chronic pain, dizziness or breathlessness, heart palpitations, edema, unusual fatigue, frequent thirst, and/or frequent urination. It is important to understand that it is not the role of the personal trainer to diagnose disease within a client but only to identify those clients who require either medical referral or clearance prior to an exercise program initiation.

**Behavior Questionnaire**

In a comprehensive screening, the health status questionnaire should be followed by a behavior questionnaire. The behavior questionnaire provides details about routine lifestyle habits, common behavior trends, and dietary practices. It can also help identify personal preferences and learned behavior traits. The behavior questionnaire can be very useful for several reasons, including:

1. Identifying obstacles to the program goals and needed improvements in health status.
2. Identifying factors correlating to current health status.
3. Providing the opportunity to educate clients of how their behaviors impact their health.
4. Identifying appropriate behavior management strategies.

Unhealthy behaviors can have a significant impact on a person’s physical and mental condition. If unaccounted for, these behaviors can cause barriers to program goal
HEALTH STATUS QUESTIONNAIRE

SECTION ONE - GENERAL INFORMATION

1. Date ____________________

2. Name ________________________________

3. Mailing Address ________________________________ Phone (H) ____________________
   __________________________________________ Phone (W) ____________________
   Email _____________________________________

4. EI Personal Physician __________________________ Phone ________________________
   Physician Address __________________________ Fax _____________________________

5. EI Person to contact in case of emergency __________________________ Phone __________

6. Gender (circle one): Female Male RF

7. RF Date of birth _____________ / ___________ / ____________

8. Height ______________________ Weight __________________________

9. Number of hours worked per week: Less than 20 20-40 41-60 over 60

10. SLA More than 25% of the time at your job is spent (circle all that apply)
   
   Sitting at desk Lifting loads Standing Walking Driving

SECTION TWO - CURRENT MEDICAL INFORMATION

11. Date of last medical physical exam: _____________

12. Circle all medicine taken or prescribed in last 6 months:
   
   Blood thinner MC   Epilepsy medication SEP   Nitroglycerin MC
   Diabetic MC   Heart rhythm medication MC   Other __________________________
   Digitalis MC   High blood pressure medication MC
   Diuretic MC   Insulin MC

13. Please list any orthopedic conditions. Include any injuries in the last six months.
14. Any of the following health symptoms that occur frequently (two or more times/month) requires medical attention. Please check any that apply.

a. ___ Cough up blood MC  
   g. ___ Swollen joints MC  

b. ___ Abdominal pain MC  
   h. ___ Feel faint MC  

c. ___ Low-back pain MC  
   i. ___ Dizziness MC  

d. ___ Leg pain MC  
   j. ___ Breathlessness with slight exertion MC  

e. ___ Arm or shoulder pain MC  
   k. ___ Palpitation or fast heart beat MC  

f. ___ Chest pain RF MC  
   l. ___ Unusual fatigue with normal activity MC  

Other ____________________________________________________________________

SECTION THREE - MEDICAL HISTORY

15. Please circle any of the following for which you have been diagnosed or treated by a physician or health professional:

- Alcoholism SEP
- Anemia, sickle cell SEP
- Anemia, other SEP
- Asthma SEP
- Back strain SLA
- Bleeding trait SEP
- Bronchitis, chronic SEP
- Stroke MC
- Thyroid problem SEP
- Ulcer SEP
- Congenital defect SEP
- Diabetes SEP
- Emphysema SEP
- Epilepsy SEP
- Eye problems SLA
- Gout SLA
- Hearing loss SLA
- Heart problems MC
- Cancer SEP
- Cirrhosis MC
- Concussion MC
- Hyperlipidemia RF
- Kidney problem MC
- Mental illness SEP
- Neck strain SLA
- Obesity RF
- Phlebitis MC
- Rheumatoid arthritis SLA
- Stress RF
- High blood pressure MC
- HIV SEP
- Hypoglycemia SEP
- Other____________________

16. Circle any operations that you have had:

- Back SLA
- Heart MC
- Kidney SLA
- Eyes SLA
- Joint SLA
- Neck SLA
- Ears SLA
- Hernia SLA
- Lung SLA
- Other____________________

17. RF Circle any who died of heart attack before age 55:

   Grandfather    Father    Brother

18. RF Circle any who died of heart attack before age 65:

   Grandmother    Mother    Sister
SECTION FOUR - HEALTH-RELATED BEHAVIORS

19. Have you ever smoked?   Yes   No

20. *RF* Do you now smoke?  Yes   No

21. *RF* If you are a smoker, indicate the number smoked per day:
   Cigarettes:  40 or more  20-39  10-19  1-9
   Cigars or pipes only:  5 or more or any inhaled less than 5

22. *RF* Do you exercise regularly?  Yes   No

23. Last physical fitness test:__________________ 

How many days a week do you accumulate 30 minutes of moderate activity?

   0  1  2  3  4  5  6  7  days per week

24. How many days per week do you normally spend engaging in at least 20 minutes in vigorous exercise?

   0  1  2  3  4  5  6  7  days per week

What activities do you engage in a least 1x per week?

______________________________________________________________________________

25. Weight now:___________  One year ago:___________  Age 21:__________

SECTION FIVE - HEALTH-RELATED ATTITUDES

26. These are traits that have been associated with CAD-prone behavior. Circle the number that corresponds to how you feel toward the following statement:

   I am an impatient, time-conscious, hard-driving individual.

   Circle the number that best describes how you feel:

   6= Strongly agree  5= Moderately agree  4= Slightly agree
   3= Slightly disagree  2= Moderately disagree  1= Strongly disagree
27. How often do you experience “negative” stress from each of the following:

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Usually</th>
<th>Frequently</th>
<th>Rarely</th>
<th>Never</th>
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<tbody>
<tr>
<td>Work</td>
<td>_____</td>
<td>_____</td>
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<tr>
<td>Home or family</td>
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<tr>
<td>Financial pressure</td>
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<td>Social pressure</td>
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<tr>
<td>Personal health</td>
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</tbody>
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28. List everything not included on this questionnaire that may cause you problems in a fitness test or fitness program:

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Action Codes

EI = Emergency Information- must be readily available
MC = Medical Clearance needed-do not allow exercise without physician’s permission.
SEP = Special Emergency Procedures needed- do not let participant exercise alone; make sure the person’s exercise partner knows what to do in case of an emergency
RF = Risk Factor of CHD (educational materials and workshops needed).
SLA = Special or Limited Activities may be needed- you may need to include or exclude specific exercises.
Other (not marked) = Personal information that may be helpful for files or research.
Obesity – An abnormal accumulation of body fat, usually 20% or more over an individual’s ideal body weight.

Heart palpitations – A sensation in which a person is aware of an irregular, hard, or rapid heartbeat.

Edema – An excessive accumulation of fluid in tissue spaces or a body cavity.

Hypertension – Arterial disease in which high blood pressure is the primary symptom.

Dyslipidemia – An abnormality in the amount of lipids in the blood.

Coronary Artery Disease (CAD) – A narrowing or blockage of the arteries and vessels that provide oxygen and nutrients to the heart.

Metabolic Disease – Any disorder that involves an alteration in the normal metabolism of carbohydrates, lipids, proteins, water, and nucleic acids evidenced by various syndromes and diseases, such as hypertension, hyperlipidemia, obesity, and diabetes.

Asthma – A chronic respiratory disease, often arising from allergies, characterized by sudden recurring attacks of difficult breathing, chest constriction, and coughing.

Compiling the Data
The health behavior questionnaire should complement the Health Status Questionnaire to correlate findings. For instance, if a client has been diagnosed with hypertension and their diet consists of high salt or fatty foods, it becomes evident that their lifestyle habits promote the disease, rather than work to prevent it. Additionally, if a client’s weight measurements over time indicate a propensity for creeping obesity, and their normal lifestyle habits show a preference for nonphysical activities, it should be identified and explained that they are creating barriers to improved health and increasing their susceptibility to additional weight gain. Most behavior questionnaires provide supportive causes for the problems found on the HSQ. Rarely will someone live a very healthy lifestyle and suffer the consequences of Western culture diseases.

Upon review of the HSQ and behavior questionnaire, personal trainers should attempt to identify and list all the health problems and risks associated with the client. Once a list has been constructed, it should be ranked by order of health risk significance. Immediate and primary risks should be listed first. These risks can cause direct damage to a person’s health and include smoking, physical inactivity, obesity, CVD, metabolic disease, and other major health problems like asthma, leg pain, chronic low back pain, and orthopedic injuries. The next group of risks should include those factors that worsen these conditions or increase the potential adverse effects of current conditions. Some examples are a high-fat diet, unmanaged stress, excessive alcohol consumption, and high sugar intake. These risks and any important information should be evaluated for relevance and used to correlate related factors. This model will allow for a more complete strategy to address the conditions. Jointly employed, the two forms can provide relevant details for effective risk stratification and program decision making.

Resting Battery of Physical Tests
To further enhance the screening process, personal trainers should implement a resting battery of physical testing. These tests do not require physical activity and therefore can be used before participation status has been determined. The purpose of the resting battery is to use physical measures that predict potential risk. These measures include resting heart rate and blood pressure, body composition assessment, height and weight measures, waist girth, and BMI. In addition, it may be worthwhile to have a client’s blood chemistry evaluated to aid in the needs analysis and subsequent program decision-making process. This collection of data provides physical information about the body’s current condition at rest.
BEHAVIOR QUESTIONNAIRE

1. How many servings of fruits and vegetables do you eat per day?
   0  1  2  3+

2. How many caffeinated drinks (coffee, tea, cocoa, soft drinks) do you drink per day?
   0  1-2  3-4  5+

3. How many glasses (8 ounces) of water do you drink per day?
   0-3  4-5  6-7  8+

4. How many meals do you consume per day?
   1-2  3-4  5-6  7+

5. I cook with and eat fats:
   ___Nearly always cook/eat high fat foods (fried foods, shortening, butter, creams)
   ___Cook/eat mostly high fat
   ___Cook/eat both high and low fat foods
   ___Cook/eat mostly low fat
   ___Cook/eat only low fat

6. My bread/grain eating habit is:
   ___Nearly always eat refined (white bread, grains, rolls, crackers, cereal)
   ___Eat mostly refined grain products
   ___Eat a mixture of refined and whole grain products
   ___Eat primarily whole grain products
   ___Eat only whole grain products

7. How often do you eat out:
   ___I eat out nearly every day
   ___I eat out several times each week
   ___I eat out a few times each month
   ___I seldom or never eat out

8. My salty food habit is: (check all that apply)
   ___I rarely eat salty foods (chips, pickles, soups, added salt)
   ___Occasionally I eat salty foods
   ___I regularly eat salty food
   ___I add salt to the foods I eat

9. During the past 30 days, did you diet to lose weight or to keep from gaining weight?
   Yes  No
   If Yes, Explain: _____________________________________________________________

10. My high fat snack eating habit is:
    ___I eat high fat snack foods (potato chips) 3 or more times daily
    ___I eat high fat snacks once or twice daily
    ___I eat high fat snacks a few times each week
    ___I rarely or never eat high fat snacks
11. How often do you eat red meat:
   ___ I eat red meat nearly every day
   ___ I eat red meat several times each week
   ___ I eat red meat a few times each month
   ___ I seldom or never eat red meat

12. How often do you eat cookies, cakes, sweets:
   ___ I eat cookies, cakes, sweets nearly every day
   ___ I eat cookies, cakes, sweets several times each week
   ___ I eat cookies, cakes, sweets a few times each month
   ___ I seldom or never eat cookies, cakes, sweets

13. How many alcoholic beverages do you consume per week?
   0-3   4-5   6-7   8+

14. On average, I sleep ____ hours a night.
   3-4   5-6   7-8   8+

15. Outside of work, what physical and/or social activities do you engage in?
**Resting Heart Rate**

Resting heart rate indicates the functional efficiency of the heart under non-stressed conditions. Due to the fact that the resting heart rate increases based upon stress factors, it indicates internal dynamics that the heart must contend with on a daily basis. The efficiency of the heart is the first variable. When the heart expels appropriate amounts of blood and the tissues can easily extract the oxygen, the resting heart rate remains low. To run a healthy, lean body, the heart requires a rate of about 30 beats per minute, as evidenced by marathon runners. The combination of high stroke volume with efficient oxygen extraction capabilities and low body mass causes the heart to run optimally. When the heart is detrained, it is not efficient and works harder to pump blood. Low stroke volumes, poor oxygen extraction capabilities, added fat mass, lower hemoglobin levels, and unregulated stress hormones cause resting heart rates to elevate. Deconditioned individuals often have heart rates in the eighties. Interestingly, factors that cause an elevated resting heart rate eventually lead to its dysfunction. By contrast, aerobic exercise, weight management, and physical activity reduce resting measures and consequently lead to a healthier heart. Chapter 12 identified that mortality was related to oxygen efficiency, with the heart playing a key role in this effect.

**Assessing the Radial Pulse**

1. Assessing resting heart rates requires a calm and relaxed physiological environment. Any stimulus, perceived stress, or anxiety will cause the heart rate to accelerate beyond its resting requirements.

2. Personal trainers should instruct clients to avoid stimulants, such as caffeine and tobacco products, prior to assessing the pulse.

3. During the assessment, the client should not talk, as this can also elevate the heart rate. Have clients sit or lie down and place the arm to be assessed on a supportive structure. Have them maintain the position for two to five minutes to ease the postural shift and talk to them to reduce the anxiety of being tested.

4. Next, identify the site for measurement. Keep the arm supported at approximately heart height and palpate the radial pulse using the index and middle fingers.

5. For resting heart rate, the assessment should be for 60 seconds. Exercise heart rate can use a 15 second pulse count multiplied by four. Multiple recordings on subsequent visits will help predict an average waking resting heart rate.

6. If the value is consistently above 100 beats·min⁻¹ the client should be referred to a physician before engaging in any physical testing or activity above walking.
Blood Pressure

Blood pressure is another cardiovascular measure that illustrates the internal environmental condition of the body during resting metabolism. It has been well documented that high blood pressure leads to numerous deleterious consequences for the body (9; 17). Vascular damage, stroke, kidney damage, and congestive heart failure all can occur in the presence of high blood pressure. The latest recommendations are to maintain a resting blood pressure at or below 115/75 mg/dl (24). Diagnostic criteria for hypertension include a diastolic value of 90 mmHg and systolic value of 140 mmHg. Pre-hypertension values include diastolic ranges between 80 and 89 mmHg and systolic ranges between 120 and 139 mmHg. High normal ranges are those that occur between 85 and 89 mmHg for diastolic measures, and 130 and 139 mmHg for systolic measures. These values have gained attention recently, as they are considered predictors for the later development of hypertension (1; 9). Blood pressure measurements above acceptable levels should be taken seriously and addressed as a key component in the exercise prescription and as part of the behavior management strategy. It is important to inform clients of the threat blood pressure presents because its development and the damage it causes occur without pain or discomfort. According to the US Department of Health and Human Services between 50 to 60 million Americans are hypertensive, which represents a large sample of the population hiring personal trainers.

Assessing Blood Pressure

1. Have the subject sit in a chair with feet flat on the floor and arm supported by a desk or table.
2. Place the appropriate sized cuff around the right arm so that the bottom of the cuff is two fingers from the flexion crease of the elbow.
3. The arm used for the assessment should be at the same elevation as the heart. If using an electronic device, be sure the sensor is over the brachial artery.
4. A cuff that is too small will falsely increase the reading, whereas a cuff that is too large will have the opposite effect.
5. Inflate the cuff to 165 mmHg for females and 185 mmHg for males or 20 mmHg above the previous systolic reading. Let the client know you will take the measurement twice to validate the initial measure. This will prevent anxiety if the client suspects the second measure is being taken because something was wrong with the first reading.

Note
Hypertension cannot be diagnosed by a personal trainer even though it seems obvious given elevated measures on 3 different days. Clients with blood pressure above 140/90 mmHg should be referred to their physician for proper diagnosis. If the measures are above 100 mmHg diastolic or 160 mmHg systolic, medical referral should be required before any activity participation.
Body Composition and Anthropometrics

Obesity is well known to be a comorbid disorder. As defined previously, comorbidity consists of one or more disorders or diseases in addition to a primary disease or disorder. Individuals who become obese dramatically increase their risk for other diseases and orthopedic problems (27; 28). Measuring relative body fat is important, as body fat compositions above specific values associate with higher rates of other diseases. Individuals with body fat compositions that are measured above 25% (males) and 32% (females) are at an elevated risk for having or developing diseases, including hypertension, diabetes, hyperlipidemia, CAD, and some cancers. Individuals who reach measures of 30% (males) and 40% (females) are considered morbidly obese and require a physician’s referral before exercise testing can be performed. For visibly obese clients, skinfold assessments are not recommended. Instead select girth measures or a similar non-invasive technique. The reason for this choice is that skinfold measures are much less accurate when performed on individuals with excessive subcutaneous fat mass, and the experience unsettles the client.

Height and weight measurements should also be included in the resting battery, as the data is needed for BMI calculation, body fat and lean mass weight determination, and resting metabolic rate predictions. As previously stated, height and weight measures may also serve some purpose in mortality prediction, but generally serve as raw data and are not major criteria for exclusion in program participation. BMI is more commonly used by health care professionals than height and weight charts for prediction of disease and related consequences. A BMI value above 27 is considered high risk, while a calculated value of 30 is considered a predictor of obesity and a very high risk indicator. Keep in mind that BMI risk predictions are less meaningful in muscular clients; in this case, body composition is a better predictor of risk.

Waist circumference also strongly predicts risk of developing metabolic disease and CVD. Waist girth helps identify both central storage of subcutaneous and visceral fat. Individuals with high BMI values and large centralized girth are at a notably elevated risk, compared to someone who has low measures in both (3; 19-21). Males who exceed 40 inches and females who exceed 35 inches in circumference are considered to be at high risk. When both values are high, personal trainers should recommend the client see a physician for blood lipid profiling and fasting glucose measures to ensure they do not already suffer from pre-diabetes and/or hyperlipidemia.

Physical Exams and Lipid Screening

Only a qualified health care professional can perform a blood chemistry profile. Information gained from a complete blood analysis helps in making program and behavior modification decisions. Fasting blood glucose and blood lipid profiles are of particular importance due to their use in identifying certain diseases (2). Medical clearance is recommended for clients who present with the following values:

<table>
<thead>
<tr>
<th>Blood Lipid Profiles for Medical Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL-C</td>
</tr>
<tr>
<td>HDL-C</td>
</tr>
<tr>
<td>Total Cholesterol</td>
</tr>
<tr>
<td>Cholesterol Ratio</td>
</tr>
<tr>
<td>Triglycerides</td>
</tr>
<tr>
<td>Blood Glucose (fasting)</td>
</tr>
</tbody>
</table>
Regular exercise participation will result in positive adaptations for these blood elements. Therefore, elevated measured values should not be viewed as an impediment to participation in aerobic exercise, but as a risk factor that warrants physician review. For adults over 20 years of age, the National Cholesterol Education Program recommends that blood lipid profiles be evaluated every five years. Additionally, other risk factors compound the detriment these blood metabolites may cause, so tracking risk factors becomes even more important for individuals with multi-factorial risk.

Physical examinations by a physician are not required for the majority of clients prior to exercise participation, but personal trainers should encourage their clients to visit their physician for an annual physical and check-up. When physiological problems are identified early, it makes them much easier to manage, and in most cases the consequential effects can be minimized. Individuals who go long periods of time without any physical assessment may place themselves at an unnecessarily high risk for disease or related complications. Pre-disease states respond much more positively to intervention compared to when they reach diagnostic criteria levels.

**Exercise Participation Clearance**

The findings from the resting battery should be added to the needs analysis and thoroughly reviewed for added risk for activity participation. The quantity of data collected using the aforementioned screening tools should provide a fairly clear picture as to someone’s risk for potential adverse problems from engagement in physical activity. At this point, activity participation status must be determined before exercise testing can occur. Individuals who do not present any significant risk are cleared for unrestricted activity and tested for physical fitness. Individuals who possess a concerning level of risk factors or any signs and symptoms of disease should be medically cleared before exercise. A personal trainer may be acting negligently if they identify criteria that necessitate a medical referral but allow the client to engage in activities that place them at possible risk. In some cases, findings by a physician may require a medically supervised program, but these cases are rare among the general population.

No one wants medical clearance to be a barrier to participation, particularly when the participation is likely to improve the client’s condition. However, sticking with generally accepted protocol does reduce liability. If the client has been to the physician in the past year, the standard method for efficiently clearing a client for exercise is to attain a physician contact form and have the client fax it to their general practitioner for clearance. The form indicates that the client willingly requests to engage in activity and allows the physician to make recommendations and restrictions for participation. The advantage to this process is that the client can simply fax the document to his or her
MEDICAL CLEARANCE FORM

Name of Patient________________________________________ Date _______________

Your patient wishes to take part in an exercise program and/or fitness assessment at or with __________________________________. After initial screening it has been determined that this individual requires physician consent prior to engaging in the exercise program and/or fitness assessments due to __________________________.

The participant will engage in the following exercise programming and/or fitness assessments:

<table>
<thead>
<tr>
<th>Exercise Programming</th>
<th>Fitness Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular Strength</td>
<td>Muscular Strength</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Muscular Endurance</td>
</tr>
<tr>
<td>Muscular Endurance</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Cardiorespiratory Fitness</td>
<td>Body Composition</td>
</tr>
<tr>
<td>Other*</td>
<td>Cardiorespiratory Fitness</td>
</tr>
</tbody>
</table>

*Explain: __________________________________________________________

_____________________________________________________________________

Physician’s Recommendations

Please indicate below for which of the following your patient is cleared to participate

Muscular Strength & Endurance Training and Assessment

___ Yes, with no limitations  ___ Yes, with limitations below  ___ No, cannot participate

Limitations/recommendations: ____________________________________________

_____________________________________________________________________

Cardiorespiratory Fitness and Assessment

___ Yes, with no limitations  ___ Yes, with limitations below  ___ No, cannot participate

Limitations/recommendations: ____________________________________________

_____________________________________________________________________

Flexibility Training and Assessment

___ Yes, with no limitations  ___ Yes, with limitations below  ___ No, cannot participate

Limitations/recommendations: ____________________________________________

_____________________________________________________________________

Signature of Physician/Primary Care Provider __________________________ Date __________

Printed Name of Physician/Medical Group __________________________

Street Address ______________________________________________________

City __________________ State __________ Zip __________________

Please return this form to: __________________________
Disease Risk Classifications

Low risk - asymptomatic with one or fewer risk factors.
Moderate risk - asymptomatic with two or more risk factors.
High risk - multiple risk factors and/or signs and symptoms of disease.

physician and attain clearance without going through the process of a complete physical examination. Trainers should comply with any recommendations or restrictions, and in some cases, a physician may require a face-to-face visit. Due to the transfer of liability attained from the medical clearance document, trainers must adhere to any requirements outlined by the physician.

If the client needs to see his or her physician for clearance, the personal trainer should provide the client with the appropriate documents. A person acknowledging clearance without written documentation does not count as sufficient means for reducing trainer liability. Personal trainers must keep a written history of all activities and clearance documentation for proper risk management. In addition, this information assists in the development of an exercise prescription and the subsequent tracking of health changes.

Creating a client file should be a part of the first step to providing appropriate client services. Throughout the screening process, all documentation should be recorded and filed appropriately. Documents that are recommended for effective risk management include the informed consent, health status and behavior questionnaires, documentation of any resting battery assessments, any medical referral documents, physical testing records and all subsequent program documents. Trainers should implement an organized filing and tracking system to ensure a consistent and ongoing paper trail of the client’s history while receiving personal training services. Although this adds responsibilities to the requirements of the job, it is beneficial for successful business activity. Taking the time to document and track services allows for insight into what is working and what may require modification within the program or behavior management strategies, while simultaneously reducing the risk of liability. Additionally, tracking and reviewing files can help to identify compliance with recommendations and ascertain obstacles to goal attainment.

Exercise Testing

One of the purposes for screening clients is to ensure a client will not be injured or suffer from a cardiovascular event during fitness testing. Fitness testing is a fundamental part of designing an exercise prescription. Results and findings from physical fitness tests allow personal trainers to create a health-fitness profile of each client and make educated decisions for addressing his or her current condition.

The rationale for testing is well justified and fairly extensive; however, each individual test should have a specific purpose. Test selection decision making is not arbitrary. Quite a bit of thought should go into test selecting to ensure its validity, reliability, and appropriateness for the client. The tests need to be chosen based on specific criteria.

Test Rationale

Identifying baseline data of physical measures
Identifying strengths and weaknesses
Assessing capabilities
Identifying starting points
Determining readiness for training activities
Establishing program and progress tracking criteria
Determining goal setting data
Evaluating psychological considerations
Educating clients
Establishing program activities and evaluating their effectiveness

Test Selection Criteria

What is the purpose of the test?
Is the test valid, reliable, and objective?
What does the data provide and how will it be used?
How will improvements in subsequent test measures affect the goals of the training?
What does it predict?
Does it match the goals of the training?
Is it consistent with important program components?
Is it appropriate for the specific individual being tested?
Will the client be able to effectively perform the test?
Is it safe for the client?
Does the test present psychological barriers or anxiety?
Is the client comfortable performing the test?
After reviewing the two scenarios, it should be evident that the second situation would provide a much better experience for the client and would likely have a much higher validity of testing for cardiorespiratory fitness. The trainer has provided the client with a test consistent with his capabilities and experience, provided exposure to the specific factors of the test, assessed the distance for accuracy, accounted for environmental factors, and properly planned the event. Conversely, scenario one may actually place the client at risk. The trainer did not match the test to the client, did not mentally prepare her for the event, failed to account for environmental influences, and did not provide pretest information that would increase the accuracy of the assessment. It is the personal trainer’s job to account for all the factors that may invalidate a test and ensure that they have been removed before implementing a test for physical fitness.

Validity is also affected if the methodology deviates in any way from the proper protocol. This is commonly seen when subjects incorrectly perform the techniques used in the assessment. Incorrect body position, poor biomechanics, and using momentum or other compensatory action for improved scoring all serve to invalidate the assessment. Validity may also be compromised when the testing equipment or the evaluation instrument performs poorly. This can occur from using inferior equipment, not calibrating the equipment before employing it, or having depleted batteries in the device. Poor assessment instrument performance wastes everyone’s time and effort.

When the proper steps have been taken to ensure only minimal error exists, the measure can provide high test validity. A personal trainer should document the testing environment and the specific details related to the client preparation and protocol implementation. In doing so, he or she can increase the opportunity for effective reliability in follow-up testing. Reliability suggests reproducibility, or a test’s ability to provide valid measures in subsequent retesting. Any change in the testing activities or environment may decrease predictive reliability and invalidate the data for comparative purposes. Consistency is the key to reliability. With subsequent testing, everything should be the same in order to maximize the accuracy of the data for comparison to previous trials. This means using the same methods, instruments, testing environment and pretest protocols for each subsequent retest. Reproducibility affects retest validity, but the two are not synonymous. Something can be invalid and reproducible. For instance, the sit-and-reach test has been used for years and has demonstrated consistent reproducible measures but investigations have shown the test is not necessarily valid due to the large number of variables that can affect it (12; 16).

Scenario 1. A personal trainer asks a previously sedentary 37-year-old female to run a mile on a high school track. The trainer assumes that the track distance is 1,320 ft because when he ran the mile in High School, four laps was a mile. The test takes place on the third meeting, but the trainer did not inform the client what exercises or tests she would be performing that day. The client has worn designer athletic shoes, but they are not ideal for running. In addition, the environment is somewhat hot and humid because the client trains at lunch time, and the season of the year is summer.

Scenario 2. A personal trainer researches the distance of an indoor track before deciding to use it with her 28-year-old male client. He has routinely jogged between 6-9 miles per week for the past six months to stay fit. She asks him to bring his running shoes with him for the training session because she wants to test his performance in a maximal one-mile run. In the previous two meetings, she used the track for some cardio interval training with the client, and he is familiar with the surface and running distance. She instructs him not to run any significant distance the two days before the test and gives him a pretest checklist to follow.

Answering these questions will help to individualize the battery of tests for the client. Individualizing the test selection for the client maximizes the effectiveness and experience of the testing, and ensures the best outcome for his or her well-being. Recognizing the client’s experience, capabilities, training status, age, and gender will be relevant for deciding on the most appropriate tests and selecting the assessments that will provide the best data. Personal trainers must remain conscious of any health risks or safety issues when selecting tests to avoid a negative experience or outcome associated with the testing protocol or testing environment.

When deciding on the test or protocol to be used for a particular client, it is important to evaluate each test’s validity, reliability, and objectivity. A test is considered valid when it accurately measures what it is designed to measure. The goal is to identify assessment protocols that have been proven valid through appropriate research methodology and will best match the client’s particular characteristics. When tests are validated by clinical trials and are appropriate for the population being tested, the personal trainer has an excellent opportunity to collect valid data by performing the protocols consistent with the intended methodology. This suggests understanding the assessment protocol and being proficient at implementing it in the correct environment. It is easy to illustrate how validity can be gained or lost by considering the following scenarios:
Validity and reliability errors may be impossible to completely remove because test participants are human and subject to an innumerable amount of physiological and psychological variables which may affect a test’s outcome. The one person who can enhance the validity and reliability of the testing is the test administrator. Objectivity is the same as inter-tester reliability. When personal trainers are highly trained and well versed in the testing protocols, they add to the validity and reliability of the tests. Applying meticulous detail to all the test factors adds to the success of the program.

Testing Environment
The testing environment can either add to, or detract from, validity and reliability. Obvious environmental factors include ambient air temperature, altitude, humidity, and pollution, including gases, noise, and toxins. However, most variables that affect the testing environment are not as obvious. Recalling that the human factor is the hardest to account for, it must also be the one emphasized for control. If the testing environment is around, or in the sight of others, it is likely the client will be distracted and possibly self-conscious, thereby affecting the testing. For this reason, private testing may help the client to focus on the task, rather than experience test-related anxiety due to the environment. Safety is another factor that should be thoroughly accounted for when creating the test environment. Making sure the client has a safe area in which to work, the equipment has been tested and deemed safe, and the client has the appropriate clothing and footwear, are all key factors to assess before testing should begin.

Test Administration
Test administration is a crucial factor in the outcome of the client assessments. Properly organized and administered testing procedures provide quality data for the exercise program. Acquiring the technical skills and mastering the test protocols is vital to being a successful personal trainer. A test administrator’s proficiency in implementing and managing the assessment is easily enhanced by gaining expertise and experience in the protocols being employed. Performing the tests and practicing the protocols on others helps to identify problems and circumstances that may reduce the accuracy of client testing. Test invalidation due to administrator error or incompetence related to the procedure can be avoided by practice and using a premeditated, organized plan. Making a checklist and complying with it can be a valuable step in efficient test management.

Test Economy
Another variable, test economy often compromises test validity. Test economy describes the proficiency of the subject in performing the test and his or her compliance with the test instructions. When personal trainers do not properly instruct their clients in the test techniques or fail to point out pitfalls and common errors, the test is likely to provide poor data. Personal trainers should have clients practice the testing techniques and allow for adequate skill acquisition before implementing the protocol. When the client is proficient at the techniques required of the test the validity increases dramatically. By practicing the skills required by a specific test prior to the actual test implementation, the client’s confidence increases and the exposure to the test reduces the anxiety that often comes from testing and new experiences.

The psychological component of testing should not be underestimated. In addition to the physical requirements asked of a client, some psychological aspect to testing is always present. People experience different levels of test anxiety. In some cases, the anxiety stems from the pressure to perform well, internal questioning of one’s capability to perform the test, or concerns that they may perform poorly on the tests and become embarrassed. In other...
cases, they may have had a negative experience or have not performed well on similar tests in the past. These feelings are often brought to the forefront of consciousness when individuals are faced with a similar situation.

Test preparation checklists and practice work well to help contend with many of these factors. There are two types of pretest checklists: one for the administrator and one for the client. For the test administrator, the checklist should include factors that will ensure the test is performed safely and efficiently. It will contain items such as having the right equipment, ensuring it is calibrated and functioning properly, having the appropriate forms and using a properly prepared environment. The client’s pretest instructions will include test day preparations such as appropriate clothing, adequate rest and hydration, and the avoidance of stimulants or other ingested items that may affect the outcome of the test. The best test administrators are organized and detail-oriented. When everything is properly accounted for, the likelihood of success is very high. On the other hand, with a lack of preparation, the chance for error increases significantly.

### Testing Format

When more than one test is to be administered on a given day, it is necessary to establish a well-organized test format. The two primary components to the format decisions are time and validation. Some tests take more time than others to set up and administer. Others have minimal time requirements but can invalidate subsequent tests by causing fatigue. Identifying an appropriate sequence can help ensure the test session’s efficiency and accuracy. Attempting to perform all the tests in one day may be better from a time perspective, but if this process dilutes the data, then the time saved was of little value.

Knowledge is the key to proper decision making when determining the test sequence or what tests should be administered together. Tests that are demanding of the nervous system and/or the immediate energy system should be performed first in a sequence of testing. Tests that produce fatigue should be placed later in the test sequence. When deciding on a logical progression, the following guidelines can assist in the sequencing decision.

#### Test Order

1. Resting test or test of minimal fatigue: body composition, flexibility, balance and coordination.

2. Strength and power tests: maximal repetition tests, anaerobic power tests.

3. Endurance tests: push-ups, curl-ups.

4. Anaerobic capacity tests: one minute squat, 400m run.

5. Aerobic tests: 12-min run, step tests.

For maximum effectiveness, tests should be split up and implemented on different days. Aerobic tests, anaerobic capacity tests, and strength tests are generally most valid when performed independently of other tests. If several tests are being performed on a single day, non-fatigue tests may occur between tests of more intense activity to provide a rest period for the client. Specific decisions will be relative to the tests employed, the capabilities of the client, and other relevant factors. A good strategy is to implement a particular test and then practice the other physical fitness tests to be performed on subsequent test days.

### Pretest Checklists

#### Client Pretest Instructions

- I have read and understand any pretest procedures.
- I am familiar with the tests I will perform.
- I have acquired adequate rest the night before testing.
- I have consumed adequate fluid.
- I have consumed a moderate dietary intake.
- I have abstained from tobacco, stimulants, and nonprescription medications.
- I have the proper clothing and footwear for the activity.
- I am not ill or injured.

#### Administrator Checklist for Testing

- Equipment is available, in working condition, and calibrated.
- All records and scoring sheets are prepared.
- Protocol is clearly understood.
- Subject has practiced the test.
- Subject has been properly instructed for the test.
- Testing environment has been defined and is prepared.
- External conditions are appropriate for testing.
- Test termination criteria.
- Warm-up and cool-down procedures defined.
Health and Safety Considerations
Safety must be a fundamental concern in the delivery of services by personal trainers. As with any trainer-supervised environment, the testing conditions must be controlled and managed in a way that will ensure the best possible outcome for the client. Using the aforementioned strategies will certainly assist in helping to prevent any incidents from occurring, but a premeditated safety and emergency plan should always be in place. Even though clients have gone through a proper screening process before being cleared for exercise testing, problems may still arise, as injury is an inherent element of physical activity. In addition to establishing a safe environment and implementing a pretest checklist, trainers should also explain stop test protocols, communicate methods to help reduce injury during testing, visually survey the area before and during the test for external hazards, and ensure the client is adequately prepared in mind and body for the assessment. Likewise, trainers should have the emergency plan in order to efficiently address any situation that may arise. Some prudent considerations include having ice available (bagged in a portable cooler) in case of a musculoskeletal injury, having juice or sugar-based fluids to address a hypoglycemic reaction, and an EMS action plan in the event of a more serious situation.

Test Interpretation
Once the data has been collected from exercise testing, it needs to be analyzed and interpreted for the client. Clients are often very interested in how they perform compared to others in their population group. To help clients understand their level of fitness, it is necessary to compare the test scores to established age and gender norms. In some cases, the scoring system uses ranges that the client’s scores will fall into for the purposes of identifying the current fitness level. Other test norms use percentile ranking to classify how the client performed on a given test. Explaining scores and the respective classification in understandable terms and context helps clients recognize where they fall on the fitness continuum. A goal of an effective personal training service is to always maintain a positive outlook on the situation. Some clients may fall into categories that define their current fitness level as low. This can often lead to feelings of embarrassment and worthlessness. These feelings must be avoided. Poor results should be explained in positive terms. Personal trainers should emphasize that these are starting points and the training program is designed specifically to enhance the scores attained during assessment. Avoid using negative terms, such as “poor” or “low,” by applying action words that will be viewed as something possible to accomplish. Letting the client know that the deficient area can be improved upon and that it will be emphasized during the exercise program is often helpful. Additionally, help them realize that many of their peers fall into these categories and that improvement in fitness is the reason that they are there in the first place.

It is also helpful to focus on the end result, rather than on current deficiencies. Let the client know that, in a reasonable period of time, his or her scores can improve to the level they would like to attain. This is also an appropriate time to initiate motivational strategies. Focus on the steps to success and reinforce your confidence in their ability to reach those goals. Let them know that their progress will be tracked, and if they comply with the program recommendations, they will see improvement by the next evaluation.

When interpreting the scores for program decision making purposes, personal trainers should evaluate each area of fitness and decide on the greatest areas of need. For individuals with low scores in most or all the categories of fitness, cardiorespiratory fitness (CRF) should be the initial emphasis, due to its role in health and disease prevention. This does not suggest that the other areas should be overlooked, but low CRF is the most detrimental on health of the fitness measures. All of the values ascertained from fitness testing should be added to the needs list so they can be appropriately emphasized in the exercise program. Each area will warrant appropriate attention, which will help to define the program matrix.

Needs Analysis
The long list of data collected will have relevant findings that will dictate the appropriate response from the exercise prescription. Reviewing the information and identifying the specific issues to address in the exercise program is referred to as the needs analysis. This process requires personal trainers to determine the goals of the exercise prescription, based on the data collected and the relationship of the findings to positive and negative health outcomes. The initial review should single out negative factors as they present the greatest consequence and may be barriers to improvements in the health status of the client. The negative factors should be evaluated and addressed in an attempt to come up with plausible solutions to the problems they present. For instance, if flexibility scores are low, the personal trainer should identify effective solutions that will improve upon the identified limitations. Using the listing system, the identified needs will each reflect a suitable remedy. The remedies will provide the trainer with appropriate options to use within the exercise program. The combination of the need and remedy can
then be used to determine short- and long-term goals and the daily objectives that will lead to successful attainment of the goals.

**Goal Setting**

Nearly all new personal trainers find goal setting initially difficult. It is an area where common errors frequently occur. Most individuals set goals that are too difficult to attain in the designated period of time, which sets the client up for failure. When goals are not attained, clients lose momentum, and this failure negatively affects their motivation and compliance to the program due to feelings of inadequacy and apathy. When goals are set appropriately they are reinforcing, and increase adherence, compliance, and effort, further accelerating improvements. The two most common errors made when defining goals are setting unrealistic goals and not creating an appropriate system of objectives and short-term goals to attain the requirements of the long-term goal.

To effectively set goals, personal trainers should analyze the capabilities of the client, the time defined to reach the goals, and the effort necessary to attain them. Effective goal setting starts with understanding the characteristics that separate quality goals from those that may be unrealistic or ineffective. Goals should reflect controllable behaviors, be specific and measurable, and be challenging but realistic, and meaningful and rewarding to the client. They should have a designated time frame that matches the client’s individual characteristics, motivations, and capabilities.

Goal setting is essentially outlining an action plan. In most cases, a reverse approach is most effective in defining the planned items that will make up the measurable components within the goal continuum. The first step is defining a timeline in which reasonable adaptations will occur. Long-term goals in personal training should be split into two categories: 1) the ultimate goal to be achieved by the program, and 2) a goal that is of a lesser degree that can be accomplished in three to six months. Losing thirty pounds, for instance, would reflect an ultimate long-term goal, whereas losing twelve pounds would reflect a long-term goal that falls within a 12-week training cycle. Defining the term is ultimately going to be on a case-by-case basis due to relative differences among individual clients. A person new to exercise who is fairly deconditioned and previously sedentary may

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### Needs Analysis Examples

<table>
<thead>
<tr>
<th>Identified Need</th>
<th>Remedies</th>
<th>Long-term goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Increase daily physical work</td>
<td>200 kcal increase in energy expenditure per day</td>
</tr>
<tr>
<td>High stress</td>
<td>Identify stressors and environments</td>
<td>Reduce perception</td>
</tr>
<tr>
<td>Low back pain</td>
<td>Abdominal strength, Hip flexor/ext. flexibility, Improve posture stability</td>
<td>Reduce daily occurrence</td>
</tr>
<tr>
<td><strong>Resting Battery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBP: 138/88 mmHg</td>
<td>Increase aerobic activity, Decrease body weight, Modify diet</td>
<td>Reduce to 120/80 mmHg</td>
</tr>
<tr>
<td>RHR: 82 bpm</td>
<td>Improve stroke volume</td>
<td>Reduce to 75 bpm</td>
</tr>
<tr>
<td>Body fat: 23%</td>
<td>Increase caloric expenditure, Increase metabolism, Caloric restriction, Reduce sugar &amp; fat intake</td>
<td>Reduce to 18%</td>
</tr>
<tr>
<td>Waist girth: 39 inches</td>
<td>Increase exercise output, Same as above</td>
<td>34 inches</td>
</tr>
<tr>
<td><strong>Exercise Testing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility: Tight hip extensors, Poor spinal extension, Poor spinal rotation</td>
<td>Dynamic &amp; static stretching</td>
<td>Improve ROM</td>
</tr>
<tr>
<td>Upper body strength: Average</td>
<td>Resistance training</td>
<td>Above average measures</td>
</tr>
<tr>
<td>Lower body strength: Average</td>
<td>Resistance training</td>
<td>Above average measures</td>
</tr>
<tr>
<td>Cardiovascular fitness: Fair</td>
<td>Aerobic training</td>
<td>Improve to average</td>
</tr>
</tbody>
</table>
require more time to accomplish a goal than a well-conditioned client.

The long-term goal helps to establish the short-term goals. In the same example, a weight loss of twelve pounds in a twelve-week period suggests that the short-term goal would be one pound of weight loss a week or four pounds of weight loss per month. Short-term goals are generally accomplishable in less than a month and can be broken down further into weekly goals. The short-term goals must be attainable because they are a valuable asset in motivation. The weekly short-term goals can further be broken down into daily objectives. If the long-term goal is twelve pounds in three months and the short-term goal is a pound a week of weight loss, than the daily objective would be defined as a negative caloric balance of 500 calories. If a client focuses on the daily effort of caloric restriction and physical activity in an attempt to expend 500 calories and is able to meet the objective, then the short-term goal will be reached at the end of the week and the long-term goal will be reached at the end of the training cycle. Keeping the focus on daily objectives is conceptually the same as taking one step at a time. The inability to attain goals is most often traced back to unrealistic expectations. Behavior change and adaptations are fairly slow, progressive elements. Therefore, attempting to force the rate of change beyond the typical human process will most often result in failure.

~Key Terms~

**Stroke** – The sudden death of brain cells in a localized area due to inadequate blood flow.

**Hypotension** – Abnormally low blood pressure.

**Dyspnea** – Difficulty in breathing, often associated with lung or heart disease, resulting in shortness of breath.

**Hemoptysis** – The coughing up of blood or bloody sputum from the lungs or airway.

**Amenorrhea** – A menstrual irregularity, seen especially in women who are involved in regular, high-intensity exercise.

**Insomnia** – Chronic inability to fall asleep or remain asleep for an adequate length of time.

**Emergency Medical Service (EMS)** – Responsible for providing pre-hospital care by paramedics, emergency medical technicians, and medical first responders.

## Chapter Thirteen References


