Chapter 5

Integrated Fitness Profile for the Fitness Professional

Objectives

Following the study of this chapter, the reader should be able to:

1. Define the function of an Integrated Fitness Profile.
2. Describe the components of an Integrated Fitness Profile.
3. Provide general and medical questions to gather subjective information.
4. Describe the importance of posture and the postural distortions that exist.
5. Perform a series of comprehensive movement observations to obtain objective information.

Designing an individualized, systematic, integrated fitness program can only be properly accomplished by having an understanding of a client's goals, needs and abilities. This entails knowing what a client wants to gain from a training program, what a client needs from their program to successfully accomplish their goal(s) and how capable they are structurally and functionally of performing the required tasks within an integrated program. The information necessary to create the right program for a specific individual or group of individuals comes through a properly Integrated Fitness Profile. The remainder of this chapter will focus on an Integrated Fitness Profile for the fitness professional. It will specifically illuminate what a fitness profile is, its importance and which observations can be used. Most importantly, it tells the fitness professional how to make proper use of the information.

Integrated Fitness Profile for the Fitness Professional

Integrated Fitness Profile

Definition

An Integrated Fitness Profile is a systematic problem-solving method that provides the fitness professional with a basis for making educated decisions about exercise and acute variable selection. It provides an ongoing gathering of information, allowing the fitness professional to modify and progress a client through their integrated training program. An Integrated Fitness Profile allows the fitness professional to continually monitor a client's needs, functional capabilities and physiological effects of exercise, enabling the client to realize the full benefit of an individualized training program.

It is important that the fitness professional understand that an Integrated Fitness Profile is not designed to *diagnose* any condition but rather to *observe* each client's individual structural and functional status. Furthermore, the Integrated Fitness Profile presented by the National Academy of Sports Medicine (NASM) is not intended to replace a medical examination. If a client exhibits extreme difficulty or pain with any observation or exercise, the fitness professional should refer the client to his or her physician or qualified health-care provider to identify any underlying cause.

PROFICIENCY EXERCISE 5-1

Define the following words and answer the following question.

1. Diagnose: _____

2. Assessment: _____

3. Observation: _____

Q: Which definition best fits the personal-training profession? _____

What Does An Integrated Fitness Profile Tell Us?

An Integrated Fitness Profile provides the fitness professional with a three-dimensional representation of the client. It gives insight into the client's past, present and perhaps even their future. An Integrated Fitness Profile covers information regarding habits, hobbies, movement abilities and past medical history. Essentially, an Integrated Fitness Profile allows the fitness professional to see the structure and function of a client.

By gathering information through the Integrated Fitness Profile, a fundamental representation of a client's goals, needs and status can be created. This enables proper construction of an integrated training program that is individualized specifically for each client. When conducting an Integrated Fitness Profile, it is essential to utilize a

Integrated Fitness Profile for the Fitness Professional

variety of observation methods in order to obtain a balanced overview of a client (Table 5-1). A complete Integrated Fitness Profile is noted in Figure 5-6.

Table 5-1
Components of An Integrated Fitness Profile

COMPONENTS OF AN INTEGRATED FITNESS PROFILE	
SUBJECTIVE INFORMATION	**OBJECTIVE INFORMATION**
General and Medical History	**Personal Data**
■ Occupation	**Gait (General Warm-up)**
■ Lifestyle	**Movement (Specific Warm-up)**
■ Medical	**Movement (Workout)**
■ Personal	■ Core/Balance
	■ Reactive
	■ Strength

Subjective Information

Subjective information is gathered from a prospective client to give the fitness professional feedback regarding personal history such as occupation, lifestyle and medical background.

General and Medical History

Gathering personal background information about a client can be very valuable. It can help a fitness professional understand a client's physical condition and can also provide insight into what types of imbalances may exist. One of the easiest forms of gathering this information is through a questionnaire.[1] The Physical Activity Readiness Questionnaire (PAR-Q)[1] is a questionnaire that has been designed to help qualify a person for low-to-moderate-to-high activity levels.[2] Furthermore, it aids in identifying people for whom certain activities may not be appropriate or who may need further medical attention.

The PAR-Q is directed toward detecting any possible cardiorespiratory dysfunction such as coronary heart disease (CHD). It is a good beginning point for gathering personal background information concerning a prospective client's cardiorespiratory function, however, it is only one component of a thorough Integrated Fitness Profile. While this information is extremely important for a fitness professional, asking other questions can provide alternative information about a client. This includes questions about a client's general and medical history.

GENERAL HISTORY

Asking some very basic questions concerning a client's history and/or personal background can provide a wealth of information. Two important areas to start with are occupation and lifestyle.

Occupation

A client's occupation provides the fitness professional with insight into what their movement capacity is and what movement patterns they perform most of the day. By obtaining this information, the fitness professional can begin to recognize some important clues about the structure and ultimately the function of the client. In turn, this allows the fitness professional to begin designing an appropriate integrated training program.

Example questions include:

Does your occupation require extended periods of sitting?

This is a very important question that provides a lot of information. First, if a client is sitting for a large portion of the day, their hips are flexed for prolonged periods of time. This in turn can lead to tight hip flexors that can cause postural imbalances within the kinetic chain.[3-6] Second, if a client is sitting for prolonged periods of time, especially at a computer, there is a tendency for the shoulders and head to fatigue under the constant influence of gravity. This often leads to a postural imbalance of slumping or rounding of the shoulders and head.[3-5]

Does your occupation require extended periods of repetitive movements?

Repetitive movements can create a pattern overload to muscles and joints and may lead to tissue trauma and eventually kinetic chain dysfunction.[3-5,7-9] This can be seen in jobs that require a lot of overhead work such as construction, painting, etc. Working with the arms overhead for long periods of time may lead to shoulder soreness that could be the result of tightness in the latissimus dorsi and weakness in the rotator cuff. This imbalance does not allow for proper shoulder motion and/or stabilization during activity.

Integrated Fitness Profile for the Fitness Professional

Does your occupation require you to wear shoes with a heel (dress shoes)?

Wearing shoes with a heel or those that are elevated puts the ankle complex in a plantar-flexed position for extended periods of time. In turn, this can lead to tightness in the gastrocnemius and soleus causing postural imbalance such as overpronation at the foot and ankle complex.[3-5]

Is your occupation mentally stressful (causes anxiety)?

Mental stress or anxiety can lead to a dysfunctional breathing pattern that can further lead to postural distortion and kinetic chain dysfunction.[10-11] Please refer to *"Dysfunctional Breathing"* in Chapter three for details.

While these questions are presented in this particular section, their pertinence is not restricted to a client's occupation. Regardless of whether a client wears heeled shoes, sits a lot or experiences anxiety at work or anywhere else for extended periods of time, the outcome is the same. All of these scenarios will be discussed in relation to their postural distortion pattern later in this chapter.

PROFICIENCY EXERCISE 5-2

Review the four questions explained above and apply to someone you know by asking the questions and observing. Use the space provided below to log your findings.

NAME	ANSWER TO QUESTION (FINDINGS)
	1.
	2.
	3.
	4.

Lifestyle

Questions pertaining to a client's lifestyle reflect what a client does in their free time or time away from work. This is generally known as their recreation and/or hobbies.

Recreation

Recreation in this context refers to a client's physical activities outside of their work environment. By finding out what recreational activities a client performs, a fitness professional can better design a program to fit these needs. For example, many clients like to golf, ski, play tennis or a variety of other sporting activities in their spare time. Proper forms of training must be incorporated to ensure that the client is trained in a manner that optimizes the efficiency of the kinetic chain without predisposing it to injury.[3]

Hobbies

Hobbies in this context refer to activities that a client may partake in regularly, but may not necessarily be athletic in nature. Examples include gardening, working on cars, playing cards, reading, watching television, spending time on the Internet, etc. In many of these cases, the client does not receive a lot of physical stimulation (with exception to gardening and working on cars). In these instances, it is necessary to take into account the increased demand for a properly planned integrated training program, but that may not be at the same level as someone who plays a lot of tennis.

MEDICAL HISTORY

Finding out a client's medical history is absolutely crucial. Most importantly, it provides the fitness professional with information about any life-threatening chronic diseases (CHD, high blood pressure, etc.).[1] Furthermore, it provides information about the structure and function of the client as well. Some important areas to cover include past injuries, surgeries and chronic conditions.

Past Injuries

Inquiring about a client's past injuries can illuminate some possible structural and functional dysfunctions. There is a vast array of research that has demonstrated that past injuries effect the functioning of the kinetic chain.

Specifically, this has been shown following:

1. Ankle sprains[12-21]

Ankle sprains have been shown to decrease neural control to the gluteus medius and gluteus maximus muscles. This in turn can lead to poor control of the lower extremities during many functional activities, which can eventually lead to injury.[3-4]

2. Knee injuries involving ligaments[22-37]

Knee injury can cause a decrease in the neural control to muscles that stabilize the patella (kneecap) and lead to further injury. Knee injuries that are not the result of contact (non-contact injury) are often the result of ankle and/or hip dysfunctions such as the result of an ankle sprain.[3-4] The knee is caught between the ankle and the hip. If the ankle or hip joint begins to function improperly, altered movement and force distribution of the knee results. Over time, this can lead to injury.

3. Low-back injuries[7,38-48]

Low-back injuries can cause decreased neural control to stabilizing muscles of the core resulting in poor stabilization of the spine. This can further lead to dysfunction in upper- and lower-extremities.[3-4]

4. Shoulder injuries[49-53]

Shoulder injuries cause altered neural control of the rotator-cuff muscles, which can lead to instability of the shoulder joint during functional activities.[3-4]

Other injuries that result from kinetic chain imbalances include repetitive hamstring strains, groin strains, patellar tendonitis (jumper's knee), plantar fascitis (pain in the arch of the foot), posterior tibialis tendonitis (shin splints) biceps tendonitis (shoulder pain) and headaches.[3-4]

Past Surgeries

Surgical procedures represent trauma to the body and may have similar effects to those of an injury (refer to the *Past Injuries* section of this chapter). They can create dysfunction unless properly rehabilitated. Some common surgical procedures include:

- Foot and ankle surgery
- Knee surgery
- Back surgery
- Shoulder surgery
- Cesarean section (C-section) births (cutting through the abdominal wall to deliver a baby)
- Appendicitis surgery (cutting through the abdominal wall to remove the appendix)

In each case, surgery will cause pain and inflammation that can alter neural control to the affected muscles and joints if not rehabilitated properly.[54-55]

Chronic Conditions

It is estimated that more than 75 percent of the American adult population do not partake in 30 minutes of low-to-moderate physical activity per day.[56] The risk of chronic disease goes up significantly by not being physically active at this minimal standard.[57-58] By asking questions that pertain to a client's occupation, recreation and hobbies combined with a Physical Activity Readiness Questionnaire (PAR-Q), a fitness professional can gather essential information that will help illuminate a client's daily physical activity. Some chronic diseases include:[56]

- Cardiovascular disease (CVD), coronary heart disease (CHD), coronary artery disease (CAD) or congestive heart failure (CHF)
- Hypertension (high blood pressure)
- High cholesterol
- Stroke
- Lung or breathing problems
- Obesity (overweight)
- Diabetes mellitus

Integrated Fitness Profile for the Fitness Professional

For further information regarding chronic diseases, their control, assessment and exercise administration, NASM recommends that the reader review information from the American College of Sports Medicine (ACSM).[1,59]

Medications

Many clients coming into the fitness industry are under the care of a medical professional and may be required to use any one of a variety of medications. It is not the role of a fitness professional to administer, prescribe or educate about the usage and effects of any of these medications. A fitness professional should always refer to the primary medical professional for information concerning a potential client and any medication they may be using. The purpose of this section is to briefly outline some of the primary classes of drugs and their proposed physiological effects (Table 5-2). For more complete information regarding medications, NASM suggests contacting a local medical professional; refer to the ACSM *Health Fitness Instructor's Handbook*[60] and/or a *Physician's Desk Reference (PDR)*.

Table 5-2
Effects of Medication on Heart Rate, Blood Pressure and Exercise Capacity

EFFECTS OF MEDICATION ON HEART RATE, BLOOD PRESSURE AND EXERCISE CAPACITY

MEDICATION	HEART RATE	BLOOD PRESSURE	EXERCISE CAPACITY
Beta-Blockers (ß-Blockers)	↑	↓	↑ in people with angina; ↓ or ↔ in people without angina
Calcium Channel Blockers	↑ or ↔ or ↓	↓	↑ in people with angina; ↔ in people without angina
Nitrates	↑ or ↔	↔ or ↓	↑ in people with angina; ↔ in people without angina; ↑ or ↔ in people with congestive heart failure (CHF)
Diuretics	↔	↔ or ↓	↔, except people with congestive heart failure
Bronchodilators	↔	↔	↑ in people with brochospasm
Vasodilators	↑ or ↔ or ↓	↓	↔, except ↑ in people with congestive heart failure
Antidepressants	↑ or ↔	↔ or ↓	Variable

Key: ↑ = Increase; ↔ = No effect; ↓ = Decrease

Please note that this table is merely intended to present a simplistic overview of medications. It is not intended to provide a fitness professional with any conclusive evidence regarding the medications and/or their effects.

Objective Information

Objective information is gathered to provide the fitness professional with forms of measurable information. This information can be used to compare beginning numbers to those measured weeks, months or years later, denoting improvements in the client as well as the effectiveness of the training program. Categories include personal data (body-fat and circumference measurements), posture, core and movements.

Personal Data

Gathering personal data on a client provides the fitness professional with measurable information specifically related to the client's own body. Using body-fat and circumference measurements to reassess a client is often a very motivating piece of information as well as a good indication of how productive the training program has been.

BODY FAT

One of the most important pieces of information that can be obtained by a fitness professional is the client's starting body-fat percentage. Body-fat reduction is often the primary goal of a fitness client and this analysis can be a powerful tool to use when discussing a client's progress. Other methods include asking your client how their clothes are fitting, before and after circumference measurements, before and after pictures as well as something as simple as comments from friends.

Body composition can be measured in a variety of ways. Depending on your tools available, the most common methods are:

- Skin-fold calipers
- Bioelectrical impedance
- Underwater weighing

Most fitness professionals do not have an exercise physiology laboratory at their disposal, so we will discuss the skin-fold caliper

method in this text. There are many different formulas that can be used when attempting to calculate a client's percentage of body fat. NASM has selected the Durnin formula, sometimes known as the Durnin/Womersley formula.[61] This formula was chosen for its simple four-site, upper-body measurement process. When using caliper measurements, the fitness professional must be consistent with the exact areas of skin-fold measurement as well as the conditions of administering assessment. For example, if the fitness professional takes a skin-fold measurement before the client's workout, they should remain consistent with that agenda.

The Durnin formula's four sites of skin-fold measurement are as follows:

- Biceps
- Triceps
- Inferior angle of scapula
- Iliac crest

For simple calculation, Table 5-3 (see next page) will assist the fitness professional when measuring a client's body composition. First, take each measurement with calipers and add the totals of the four sites (this should be done in millimeters). Then find the appropriate gender and age categories for their body composition.

CIRCUMFERENCE MEASUREMENTS

Circumference measurements can also be another source of feedback used with clients with the goal of altering body composition. The most important factor to consider when taking circumference measurements is consistency. Measurements that can be landmarked are shown in Table 5-4.

Remember, when taking measurements make sure the tape measure is taut and level around the area being measured.

Table 5-4

Circumference Measurements

CIRCUMFERENCE MEASUREMENTS

LANDMARK	MEASUREMENT
Neck	Across the Adam's Apple
Chest	Across the nipple line
Arm	Halfway between the acromion process and the olecranon process
Waist	Across the naval
Hips	Across the greater trochanter
Thigh	Six inches above the patella
Calf	Portion of the greatest girth, then landmark the amount of inches from the malleolus of the ankle

Table 5-3
Durnin/Wormsley Body-Fat Percentage Calculation

DURNIN/WORMSLEY BODY-FAT PERCENTAGE CALCULATION

SUM OF FOLDS	MALES 19<	MALES 20-29	MALES 30-39	MALES 40-49	MALES 50+	FEMALES 19<	FEMALES 20-29	FEMALES 30-39	FEMALES 40-49	FEMALES 50+
5	-7.23	-7.61	-1.70	-5.28	-6.87	-2.69	-3.97	0.77	3.91	4.84
10	0.41	0.04	5.05	3.30	2.63	5.72	4.88	8.72	11.71	13.10
15	5.00	4.64	9.09	8.47	8.38	10.78	10.22	13.50	16.40	18.07
20	8.32	7.96	12.00	12.22	12.55	14.44	14.08	16.95	19.78	21.67
25	10.92	10.57	14.29	15.16	15.84	17.33	17.13	19.66	22.44	24.49
30	13.07	12.73	16.17	17.60	18.56	19.71	19.64	21.90	24.64	26.83
35	14.91	14.56	17.77	19.68	20.88	21.74	21.79	23.81	26.51	28.82
40	16.51	16.17	19.17	21.49	22.92	23.51	23.67	25.48	28.14	30.56
45	17.93	17.59	20.41	23.11	24.72	25.09	25.34	26.96	29.59	32.10
50	19.21	18.87	21.53	24.56	26.35	26.51	26.84	28.30	30.90	33.49
55	20.37	20.04	22.54	25.88	27.83	27.80	28.21	29.51	32.09	34.75
60	21.44	21.11	23.47	27.09	29.20	28.98	29.46	30.62	33.17	35.91
65	22.42	22.09	24.33	28.22	30.45	30.08	30.62	31.65	34.18	36.99
70	23.34	23.01	25.13	29.26	31.63	31.10	31.70	32.60	35.11	37.98
75	24.20	23.87	25.87	30.23	32.72	32.05	32.71	33.49	35.99	38.91
80	25.00	24.67	26.57	31.15	33.75	32.94	33.66	34.33	36.81	39.79
85	25.76	25.43	27.23	32.01	34.72	33.78	34.55	35.12	37.58	40.61
90	26.47	26.15	27.85	32.83	35.64	34.58	35.40	35.87	38.31	41.39
95	27.15	26.83	28.44	33.61	36.52	35.34	36.20	36.58	39.00	42.13
100	27.80	27.48	29.00	34.34	37.35	36.06	36.97	37.25	39.66	42.84
105	28.42	28.09	29.54	35.05	38.14	36.74	37.69	37.90	40.29	43.51
110	29.00	28.68	30.05	35.72	38.90	37.40	38.39	38.51	40.89	44.15
115	29.57	29.25	30.54	36.37	39.63	38.03	39.06	39.10	41.47	44.76
120	30.11	29.79	31.01	36.99	40.33	38.63	39.70	39.66	42.02	45.36
125	30.63	30.31	31.46	37.58	41.00	39.21	40.32	40.21	42.55	45.92
130	31.13	30.82	31.89	38.15	41.65	39.77	40.91	40.73	43.06	46.47
135	31.62	31.30	32.31	38.71	42.27	40.31	41.48	41.24	43.56	47.00
140	32.08	31.77	32.71	39.24	42.87	40.83	42.04	41.72	44.03	47.51
145	32.53	32.22	33.11	39.76	43.46	41.34	42.57	42.19	44.49	48.00
150	32.97	32.66	33.48	40.26	44.02	41.82	43.09	42.65	44.94	48.47
155	33.39	33.08	33.85	40.74	44.57	42.29	43.59	43.09	45.37	48.93
160	33.80	33.49	34.20	41.21	45.10	42.75	44.08	43.52	45.79	49.38
165	34.20	33.89	34.55	41.67	45.62	43.20	44.55	43.94	46.20	49.82
170	34.59	34.28	34.88	42.11	46.12	43.63	45.01	44.34	46.59	50.24
175	34.97	34.66	35.21	42.54	46.61	44.05	45.46	44.73	46.97	50.65
180	35.33	35.02	35.53	42.96	47.08	44.46	45.89	45.12	47.35	51.05
185	35.69	35.38	35.83	43.37	47.54	44.86	46.32	45.49	47.71	51.44
190	36.04	35.73	36.13	43.77	48.00	45.25	46.73	45.85	48.07	51.82
195	36.38	36.07	36.43	44.16	48.44	45.63	47.14	46.21	48.41	52.19
200	36.71	36.40	36.71	44.54	48.87	46.00	47.53	46.55	48.75	52.55

Integrated Fitness Profile for the Fitness Professional

PROFICIENCY EXERCISE 5-3

Using the circumference-measurement chart, take measurements of at least two people. Be sure to review your anatomy for reassessment accuracy. Use the spaces provided to record your observations.

NAME:	**NAME:**
NECK:	**NECK:**
CHEST:	**CHEST:**
ARM:	**ARM:**
WAIST:	**WAIST:**
HIPS:	**HIPS:**
THIGH:	**THIGH:**
CALF:	**CALF:**

Posture

Every movement we produce must have a starting point or a structural base from which to generate and accept force. This is better known as posture. ***Posture*** is the independent and interdependent alignment (static posture) and function (transitional and dynamic posture) of all components of the kinetic chain at any given moment and is under the control of the central nervous system (Figure 5-1).[3-4,62-64]

Posture is often viewed as being static. However, posture in everyday function is a dynamic quality that is constantly changing to meet the demands placed upon the kinetic chain. A primary purpose of proper posture is to maintain structural efficiency that enables us to overcome the constant forces placed upon the body (i.e. gravity).[3-4,63,65] Any deviation from proper postural alignment can cause a change in the body's center of gravity ***(structural efficiency)***, which in turn affects the ***functional efficiency*** of the kinetic chain.[3-4,62,66] The ability to efficiently maintain balance throughout the body segments is termed ***postural equilibrium***.[3-4,67] The kinetic chain exhibits some type of posture and requires maintenance of that posture at all times. Therefore, it can be said that posture is the position from which all movement begins and ends.[68]

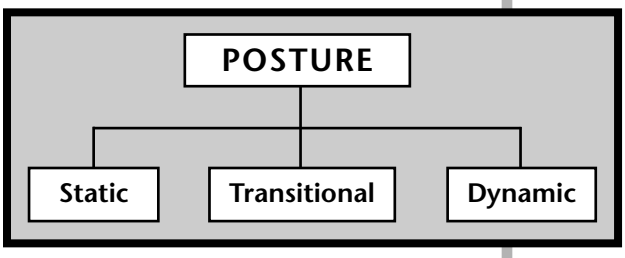


Figure 5-1
The Components of Posture

IMPORTANCE OF POSTURE

Proper postural alignment puts the body in a state of optimum neuromuscular efficiency (Figure 5-2).[3-4,7,9,38,62,69-72] This is particularly true with respect to the musculoskeletal system. Proper posture ensures that the muscles of the body are optimally aligned at the proper length-tension relationships necessary for efficient functioning of force couples.[3-4,9,38,62,69-72] This allows for proper joint mechanics (arthrokinematics) and effective absorption and distribution of forces throughout the kinetic chain, alleviating excess stress on joints.[3-4,7,9,62,69-72] Proper postural alignment also dictates efficient neuromuscular (nervous system and muscles) communication.[3-4,7,9,62,69-72]

Integrated Fitness Profile for the Fitness Professional

Proper postural alignment allows the kinetic chain to produce high levels of functional strength with optimal neuromuscular efficiency (Figure 5-2). ***Functional strength*** is the ability of the neuromuscular system to perform dynamic eccentric, isometric and concentric muscle actions in all planes of motion.[3-4] ***Neuromuscular efficiency*** is the ability of the neuromuscular system to properly recruit agonists, synergists, stabilizers, neutralizers and antagonists to produce force (concentrically), reduce force (eccentrically) and dynamically stabilize (isometrically) the entire kinetic chain in all three planes of motion.[3-4]

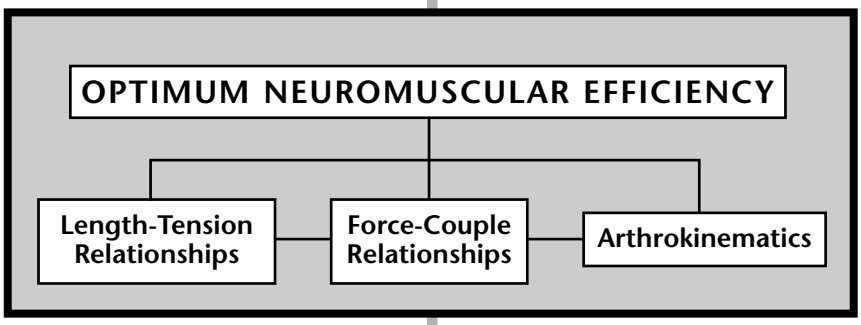


Figure 5-2
Proper Postural Alignment

All muscles must be activated with precise timing to work in complete synergy. Think of the muscles in the body as an orchestra. The conductor (nervous system) must bring the horn, percussion and string sections into the musical piece at the right time in order for the music to have a perfect melody. The same holds true for the kinetic chain.

Without proper postural alignment we set the body up for degeneration.[3-4,9,62,70-73] This is realized by altered movement patterns resulting from muscle imbalances that place unaccustomed stresses on the joints.[62,70] In turn, this will affect other joints and muscles in the kinetic chain causing a series a traumas throughout the body known as ***postural distortion patterns***.[3-4,7,9,62,70-74] Postural distortion patterns are simply predictable patterns of muscle imbalance.[3-4,7,9,62,70-74]

EVERYDAY CAUSES OF MUSCLE IMBALANCES

It is essential for the fitness professional to have an understanding of posture and the importance it has in our daily lives. It is even more important to realize what affects posture on a daily basis. By knowing what can cause improper postural habits, the fitness professional can begin to properly address the client's needs. Improper posture usually results from muscle imbalances.[3-4,7,9-10,38-39,69,70-75] It is necessary to review what muscle imbalances are and how they occur.

Muscle imbalance is a condition in which there is a lack of balance between certain types of muscles. This tendency appears to be fairly systematic. It seems that certain muscles are prone to shortening (tightness) while other muscles are susceptible to lengthening and weakness (inhibition).[71,75] The combination of tight and weak muscles can alter normal movement patterns.[69,76] This results in an alteration of the biomechanics of joints, leading to degeneration. Table 5-5 lists the muscles prone to shortening and lengthening.

Table 5-5
Muscles Prone to Shortening and Lengthening

MUSCLES PRONE TO SHORTENING AND LENGTHENING

SHORTENED MUSCLES	LENGTHENED MUSCLES
Gastrocnemius	Anterior Tibialis
Soleus	Posterior Tibialis
Adductors	Vastus Medialis Oblique (VMO)
Hamstrings	Gluteus Maximus/Medius
Psoas	Transversus Abdominis
Tensor Fascia Latae	Internal Oblique
Rectus Femoris	Multifidus
Piriformis	Serratus Anterior
Quadratus Lumborum	Middle/Lower Trapezius
Erector Spinae	Rhomboids
Pectoralis Major/Minor	Teres Minor
Latissimus Dorsi	Infraspinatus
Teres Major	Posterior Deltoid
Upper Trapezius	Deep Cervical Flexors
Levator Scapulae	
Sternocleidomastoid	
Scalenes	

Integrated Fitness Profile for the Fitness Professional

PROFICIENCY EXERCISE 5-4

Review the list of shortened muscles and correlate to your anatomy section and/or book to identify their location on your body. Using the space provided, describe their location.

Examples listed: Gastrocnemius, Soleus

MUSCLE NAME	LOCATION
Gastrocnemius	*Superficial muscle of the lower leg*
Soleus	*Lies beneath the gastrocnemius*
Adductors	
Hamstrings	
Psoas	
Tensor Fascia Latae	
Rectus Femoris	
Piriformis	
Quadratus Lumborum	
Erector Spinae	
Pectoralis Major	
Pectoralis Minor	
Latissimus Dorsi	
Teres Major	
Upper Trapezius	
Levator Scapulae	
Sternocleidomastoid	
Scalenes	

Repetition of movement as is found in chronic overuse or injury can lead to a change in the elasticity of the muscle.[77] Poor posture and a lack of daily movement are also considered a contributing factor.[78] Muscle that is repeatedly placed in a shortened position, such as the iliopsoas during sitting, will eventually adapt and tend to remain short.[69,74] Stress and chronic fatigue may also result in muscle imbalances.[10-11]

Muscle imbalances can have a profound effect on the nervous system's ability to effectively communicate with the muscles of the body.[70-76] This accentuates the imbalances by producing altered recruitment patterns and altered movement patterns. In turn, the forces placed upon a joint are altered and as a result of impaired function/movement from a joint, muscles become short and tight or lengthened and inhibited.

A shortened muscle may cause a joint to appear as if in an abnormal position at rest and exhibiting an altered movement pattern during motion. A prime example of this is the person with protracted shoulders due to tight pectoral muscles caused by repetitive "bench pressing." Short, tight muscles also display a lower activation threshold and will activate at times that they should normally be less active.[69-76] They tend to override the muscle that would normally function during an activity.[69,74] This is due to altered reciprocal inhibition.

Reciprocal Inhibition

It is important to note that reciprocal inhibition is a normally occurring phenomenon in the human body. For example, normal reciprocal inhibition can be seen while performing a dumbbell arm curl. When biceps are contracted to lift the weight, the triceps become less active (reciprocal inhibition), allowing proper movement at the elbow joint. The same scenario should take place with all agonists and antagonists moving at a joint. One side contracts while the other allows the movement to occur. However, when dysfunctional, both sides will tend to activate. Think of what it would be like to contract both your biceps and triceps while performing a dumbbell arm curl.

Together, tight and inhibited muscles create biomechanical and neurological alterations in muscle/joint performance that can be seen in what are known as postural dysfunctions.[3-4,7,10,38-39,62,69-75]

When altered, ***reciprocal inhibition*** is the neuromuscular phenomenon that represents a tight, overactive muscle causing decreased neural control to its functional antagonist.[3-4,7,69,74-75] For example, if a muscle such as the iliopsoas becomes shortened and tight it will:

1. Mechanically limit the range of motion of its functional antagonist, the gluteus maximus, decreasing the range of motion at the hip and
2. Neurologically decrease the neural control of the gluteus maximus because it has a lowered activation threshold and will fire abnormally. When the iliopsoas fires, it will neurologically rob the gluteus maximus of its proper firing pattern.

REMEMBER! 5-1

Reciprocal inhibition is a normally occurring phenomenon in the human body. For example, normal reciprocal inhibition can be seen while performing a dumbbell arm curl. When biceps are contracted to lift the weight, the triceps become less active and this allows proper movement at the elbow joint.

Synergistic Dominance

If a prime mover is functioning at a limited capacity due to reciprocal inhibition, joint motion will be altered. However, in order to produce movement, all joints must move in a predictable manner. If a prime mover is unable to produce the necessary force to create the proper movement, the nervous system will increase the recruitment of a synergist. This increased activation of a synergist muscle is termed ***synergistic dominance***. [3-4,7,69,75-76] Synergistic dominance is the body's way of getting the "next best thing" to produce movement. Synergistic muscles are called upon to play the role of a prime mover. However, they do not have the proper characteristics mechanically or neurologically to sustain this performance.[3-4,69,75] More stress is now placed upon them and thus increases the chance for postural distortion and injury.[3-4,7,10,38-39,62,69-76]

Postural Distortions

As mentioned above, certain muscles are prone to shortening and tightness, while other muscles are susceptible to lengthening and decreased neural control. There exists an imbalance between the

agonist and antagonist muscles, which can lead to a *postural distortion*. There are three major postural distortions — lumbo-pelvic-hip, upper-extremity and lower-extremity postural distortion.

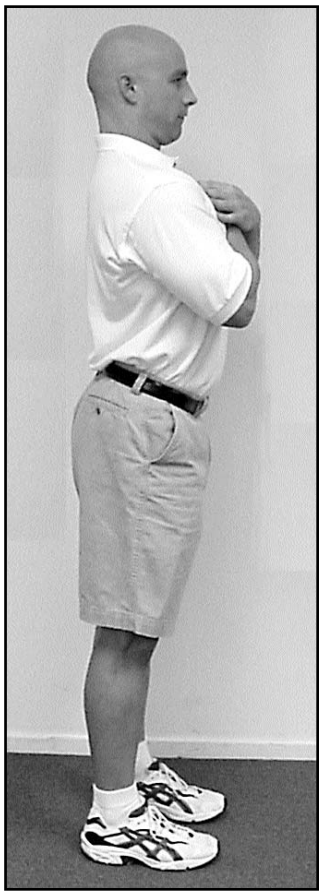


Figure 5-3
Lumbo-Pelvic-Hip Postural Distortion

LUMBO-PELVIC-HIP COMPLEX POSTURAL DISTORTION

The ***lumbo-pelvic-hip postural distortion*** is characterized by short and tight hip flexors and lumbar erectors (erector spinae) crossed with lengthened and inhibited gluteus maximus and lumbo-pelvic-hip stabilizing mechanism (transversus abdominis, internal oblique, multifidi, pelvic-floor muscles and diaphragm). The tight hip flexors create slight flexion of the hip, pulling the pelvis into an anterior pelvic tilt (rotation of the pelvis forward/anteriorly as if pouring water out of the front of a bucket) (Figure 5-3). In order to remain in an upright position, the spine must compensate for this hip flexion by increasing the lumbar lordosis (extension of the lumbar spine). Table 5-6 summarizes the kinetic chain dysfunctions associated with a lumbo-pelvic-hip postural distortion.[3-4,69-70,74]

Degeneration in the spine can result from the increased compressive forces placed on the facet joints of the vertebrae and increased pressure on the posterior portion of the discs.[3-4,69-70,74] During movement, the tight hip flexors and lumbar erectors neurologically override the gluteus maximus/medius and lumbo-pelvic-hip stabilizing mechanism (transversus abdominis, internal oblique, multifidi, pelvic-floor muscles and diaphragm). This is evident from research that investigated the muscle activation of the abdominals and lumbar erectors during a regular crunch sit-up exercise. It was shown that during a crunch, individuals with tight erector spinae muscles exhibited muscle activation of both the abdominals and the erector spinae.[79] The same holds true for the abdominals and the hip flexors. The hip flexors, being the tight musculature, override the abdominals, making it very difficult to properly and effectively strengthen the abdominals. The hamstrings are often tight in this postural distortion in order to lessen the pelvic tilt and are compensating for a weak gluteus maximus.[3-4]

This increased lordosis and pelvic tilt can be seen statically or during functional activities such as walking, squatting and/or overhead movements. This is often evident by a lack of proper hip extension caused by a tight iliopsoas (hip flexor).[69-70,74] Weakness of the gluteus maximus/ medius can also lead to lateral instability often characterized by a lateral shifting (hips or trunk moving side-to-side) during walking.

Table 5-6
Lumbo-Pelvic-Hip Complex

LUMBO-PELVIC-HIP COMPLEX POSTURAL DISTORTION SUMMARY CHART

Short Muscles	Lengthened Muscles	Altered Joint Mechanics	Possible Injuries	Corrective Strategy
Iliopsoas Rectus Femoris Adductors Latissimus Dorsi Erector Spinae	Gluteus Maximus Biceps Femoris Gluteus Medius Transversus Abdominis Internal Oblique Multifidi Pelvic Floor Muscles	**Increased:** Lumbar extension **Decreased:** Hip extension	Hamstring strain Groin strain Low-back pain	**Flexibility:** Foam Roll/Stretch: Iliopsoas Rectus Femoris Adductors Latissimus Dorsi Erector Spinae **Core Stabilization:** Tube Walking Bridging Iso-ab progression Ball Crunches **Balance:** Single-leg balance progression

PROFICIENCY EXERCISE 5-5

1. In your own words, define *optimal posture*.

2. Define *postural distortion*.

3. List and describe a common *example* of a *postural distortion*.

Figure 5-4
Upper-Extremity Postural Distortion

UPPER-EXTREMITY POSTURAL DISTORTION

The ***upper-extremity postural distortion*** is characterized by short and tight latissimus dorsi, pectoralis major and minor, upper trapezius, levator scapulae and sternocleidomastoid (SCM) crossed with lengthened, weak stabilizers of the scapula (serratus anterior, rhomboids, middle and lower trapezius) and deep neck flexors (Table 5-7). Tight latissimus dorsi and pectoralis muscles create a distinctive protraction of the shoulder girdle. A forward-protruding head often accompanies protraction. As the shoulders protract forward, the head tends to tilt downward. In order to keep the head in an upright posture, the cervical spine compensates with exaggerated extension (lordosis), much like the lumbar spine in a lumbo-pelvic-hip postural distortion. This heightens the activation of the upper trapezius and levator scapulae, causing them to become short and tight. A predominant posture develops in which there is elevation and protraction of the shoulders with a forward head (Figure 5-4).[3-4,69-70,74]

LOWER-EXTREMITY POSTURAL DISTORTION

The ***lower-extremity postural distortion*** is characterized by short and tight gastrocnemius, soleus, peroneals, adductors, iliotibial band (IT band) and hip flexors crossed with lengthened, weak anterior and posterior tibialis, vastus medialis (VMO), gluteus medius and hip external rotators (Table 5-8). People with a lower-extremity postural distortion often exhibit flat feet (excessive pronation) as well as adducted and internally rotated knees (knock-knee) (Figure 5-5).

Table 5-7
Upper-Extremity Postural Distortion Summary Chart

UPPER-EXTREMITY POSTURAL DISTORTION SUMMARY CHART

Short Muscles	Lengthened Muscles	Joint Mechanics	Possible Injuries	Corrective Strategy
Upper Trapezius Levator Scapulae Sternocleido-mastoid Latissimus Dorsi Pectoralis Major/Minor	Deep Cervical Flexors Serratus Anterior Rhomboids Mid-Trapezius Lower Trapezius	**Increased:** Cervical extension Scapular elevation **Decreased:** Shoulder extension Shoulder external rotation	Headaches Biceps tendonitis Shoulder injuries	**Flexibility:** Foam Roll/Stretch: Upper Trapezius Levator Scapulae Sternocleido-mastoid Latissimus Dorsi Pectoralis Major/Minor **Core Stabilization:** Cervical Retraction Prone Cobras Scaption PNF Patterns **Balance:** Single-leg balance progression

Integrated Fitness Profile for the Fitness Professional

During functional movements such as a squatting, lunging and stepping up or down this becomes more apparent. They will appear to almost "cave-in" at the foot, ankle and knees. People who exhibit a lumbo-pelvic-hip postural distortion often show a lower-extremity postural distortion as well.[3-4]

The main factors that cause postural imbalance include:[3-4]

- Postural stress
- Repetition of movement and pattern overload
- Lack of movement (sedentary)
- Lack of core stability and neuromuscular efficiency

Repetitive movements can cause imbalances by placing demands on certain muscle groups more predominantly. This is evident when looking at many athletes such as swimmers, runners and tennis players. Swimmers often exhibit overemphasized pectoral muscles in relation to the scapular retractors, giving them a slumped or protracted posture.[80]

Repetitive movement also affects everyday people such as a construction worker who is bent over and hammering with the same hand day-in and day-out. Waiters and waitresses often carry large trays with the same arm much the same as a mother carries her child on the same hip.

Postural imbalances are also seen in the gym with people who focus on certain muscles groups more than others. This is evident in individuals who overemphasize chest, shoulder and biceps work. This often results in protracted shoulders, a forward head and internal rotation at the shoulder joint.

Figure 5-5
Lower-Extremity Postural Distortion

Table 5-8
Lower-Extremity Postural Distortion Summary Chart

LOWER-EXTREMITY POSTURAL DISTORTION SUMMARY CHART

Short Muscles	Lengthened Muscles	Joint Mechanics	Possible Injuries	Corrective Strategy
Gastrocnemius Soleus Peroneals Adductors Iliotibial Band Iliopsoas Rectus Femoris	Anterior Tibialis Posterior Tibialis Vastus Medialis Gluteus Medius/ Maximus Hip External rotators	**Increased:** Knee adduction Knee internal rotation Foot pronation Foot external rotation **Decreased:** Ankle dorsiflexion	Ankle inversion Plantar fascitis Posterior tibialis tendonitis (shin splints) Patellar tendonitis (jumper's knee)	**Flexibility:** Gastrocnemius Soleus Peroneals Adductors Iliotibial Band Iliopsoas Rectus Femoris **Core Stabilization:** Tube Walking Bridging Iso-ab progression Ball Crunches **Balance:** Single-leg balance progression

Just as repetitious movement can create postural imbalances, lack of movement (or simply being sedentary) places increased postural stress on the kinetic chain and affects posture.[74] People who spend much of their day in a seated posture place their musculoskeletal system in a position that the body will adapt to, much like it adapts to a particular movement. People who sit at a desk or computer terminal often exhibit a forward head and protracted shoulders. Many people will also demonstrate either an anterior pelvic tilt or a posterior pelvic tilt from repetitive sitting, depending on the seated position and their structure.[64,81]

Observing Posture

A quick postural observation can give general information regarding the state of the muscles and joints of the client's structure.[74] The postural observation discussed here is a very simplified version of an ideal assessment performed by physicians and physical therapists. We will term it a "snapshot" postural observation because the fitness professional will be looking in general at the client's natural appearance, much like taking a picture of them. Only the fitness professional looking for gross deviations in their posture, wants to note deviations that are obvious in an everyday position and in clothing that may not be conducive to a detailed observation. The observation process also becomes very time efficient and easy to administer.

In a "snapshot" postural observation, the fitness professional is primarily looking for five major deviations. These include a forward head, protracted shoulders, anterior pelvic tilt, adducted and internally rotated knees and flattened feet (excessively pronated). The observation itself can be performed in a couple of minutes at most and may be done while talking to the client or as they are walking toward the fitness professional for the first workout.

WHAT TO LOOK FOR

Flattened and externally rotated (excessively pronated) feet

- The feet appear flat or the client says they have flat feet.
- They stand/walk with their feet externally rotated.
- The inside (medial) portion of the foot/ankle protrudes outward in their shoe.

Adducted and internally rotated knees

- The knees have a "knock-kneed" appearance where the knees converge toward each other and are not aligned over the middle of the foot.

Anterior pelvic tilt

- Often, the belt line will be a good indicator. If the belt line is higher in the back and lower in the front, this may indicate an anterior tilt.
- A client with an anterior tilt often has fully extended or hyperextended knees.

Protracted shoulders

- Protracted shoulders are detectable by the roundness across the upper back and the concavity of the chest region.
- The shoulders may also appear to point in an anterior direction.
- The palm of the hand may face posteriorly or away from a front view of the client.

Forward head

- A forward head sits anterior (forward) to the shoulder and often exhibits a protruding chin.

If you have a difficult time seeing anything right away, don't worry. Later in this chapter, we will discuss dynamic postural observations (Figure 5-6) that makes this process much easier. Figure 5-6 provides a clear understanding of what may lead to these postural deviations as well as how to address them.

PROFICIENCY EXERCISE 5-6

Utilizing the postural snapshot checklist below, perform a postural "snapshot" on three different people using the form provided.

WHAT TO LOOK FOR

1. Flattened and externally rotated (excessively pronated) feet
   - The feet appear flat or the client says they have flat feet.
   - They stand/walk with their feet externally rotated.
   - The inside (medial) portion of the foot/ankle protrudes outward on their shoe.

2. Adducted and internally rotated knees
   - The knees have a "knock-kneed" appearance where the knees converge toward each other and are not aligned over the middle of the foot.

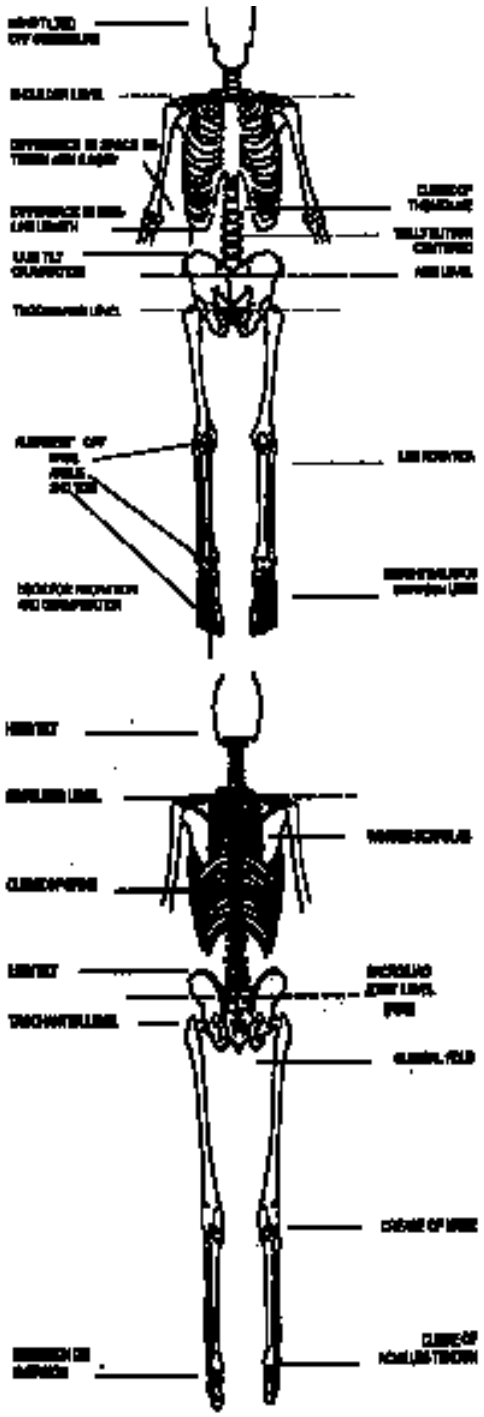
3. Anterior pelvic tilt
   - Often, the belt line is a good indicator. If the belt line is higher in the back and lower in the front, this may indicate an anterior tilt.
   - A client with an anterior tilt often has fully extended or hyperextended knees.

4. Protracted shoulders
   - Protracted shoulders are detectable by the roundness across the upper back and the concavity of the chest region.
   - The shoulders may also appear to point in an anterior direction.
   - The palm of the hand may face posteriorly or away from a front view of the client.

5. Forward head
   - A forward head sits anterior (forward) to the shoulder and often exhibits a protruding chin.

Integrated Fitness Profile for the Fitness Professional

PROFICIENCY EXERCISE 5-6



INTEGRATED FITNESS PROFILE

CLIENT NAME _____

DATE _____

POSTURE SNAPSHOT #1

Observation Notes

_____

_____

_____

_____

POSTURE SNAPSHOT #2

Observation Notes

_____

_____

_____

_____

POSTURE SNAPSHOT #3

Observation Notes

_____

_____

_____

_____

The Core

The importance of posture was demonstrated in the previous section as being the structural foundation for all human motion. Looking one step further into the foundation of motion, we arrive at the core. The ***core*** of the human body is better known as the lumbo-pelvic complex[81-82] or the ***lumbo-pelvic-hip complex (LPHC)***.[83] Simply put, it involves the anatomical structures of the lumbar, thoracic and cervical spine, the pelvic girdle and the hip joint.

The core is comprised of between 29[81] and 35[83] muscles that attach to the spine and/or the pelvis. This centrally positioned region is also the site the body's center of gravity.[84-86] It can be said that the core is where movement originates.[84-88]

Functional Anatomy of the Core

While it is not necessary to know every muscle associated with the core at this time, it is pertinent to know the main players involved. Essentially the core can be divided into two distinct categories. These include the stabilization mechanism and the movement system.[83,89]

The ***stabilization mechanism*** consists of the deep muscles that attach to the vertebrae of the lumbar spine, pelvis and sacrum, allowing for segmental stabilization of the spine (Table 5-9).[83,89] The major muscles include the transversus abdominis, internal oblique, lumbar multifidus, the muscles of the pelvic floor and the diaphragm.[83,89] These muscles of the stabilization mechanism have been shown to have little mechanical advantage for producing movement, but are implicated as important stabilizers.[90]

It has been demonstrated that proper functioning of the stabilization-mechanism muscles are characterized by their activation prior to activity of movement-system musculature.[87-88,91-93] This is the result of a ***preprogrammed*** response. This simply means that activation of these muscles in healthy people occurs automatically and independently of other muscles.[94] Furthermore, the stabilization-mechanism muscles have been shown to operate in a ***co-contraction*** with each other.[82-83] This implies that these muscles contract together

in a force-couple. For example, when the transversus abdominis is activated, the multifidus and the pelvic-floor muscles also contract.[82]

The ***movement system*** consists of more superficial musculature that attach the rib cage and legs to the pelvis.[83,89] Some of the major muscles include the latissimus dorsi, erector spinae, iliopsoas, hamstrings, adductors, rectus abdominis and external obliques.[83,89] These muscles move the ribs, arms and legs in relation to the pelvis and also provide a means to efficiently transfer external forces to the stabilization mechanism. This helps ensure that the forces applied to the small muscles of the stabilization mechanism are manageable.[82]

PROFICIENCY EXERCISE 5-7

Fill in the appropriate muscles in their respected categories.
Hint: There are five listed under the stabilization mechanism *and seven listed under* the movement system.

MUSCLES OF THE CORE

Stabilization Mechanism	Movement System
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
	6.
	7.

Importance of the Core

As previously mentioned, the core is the origin of motion.[87-88] Furthermore, the stabilization mechanism must activate prior to the movement muscles. This ensures proper stabilization of the spine and effective movement of the body with varying loads (i.e. heavy or light).[92] It is important to realize that all movement places force on the core as it is the center of the body. This has been demonstrated through research on muscle activity and movement.[87-88,91,93,95] It has been shown that activation of the core (stabilization mechanism) occurs between 30[96] and 110 milliseconds (ms)[43] prior to any outer-muscle activity in healthy individuals. Conversely, research has shown that in persons with low-back pain, the stabilization mechanism does not activate prior to movement of outer muscles.[43,87,91]

This lack of activation prior to movement means that the spine is not being stabilized before the movement begins. These forces occurring at the core now have a greater impact on movement of the vertebrae, affecting pressures placed upon the intervertebral discs and joints of the spine.[97] This can result in kinetic chain dysfunction whereby the nervous system will alter the recruitment pattern of muscles and ultimately affect other joints in the body (synergistic dominance).[76,98]

This demonstrates the importance of making sure a client is properly activating their transversus abdominis. As this muscle is contracted, the other stabilizing muscles contract. If these muscles are not properly activated, there is no stabilization of the lumbo-pelvic-hip complex.[82] This leads to synergistic dominance of the movement muscles that do not have the proper mechanical advantage for deep stabilization.[3-4,40-41,43,48,82]

In order to have optimal functional stability and movement, these two systems must work synergistically. Regardless of the strength or force production of the movement system, optimal stability will not be achieved if the stabilization mechanism is not functioning to create internal stability.[92] This can lead to faulty muscular recruitment patterns and eventual injury.[76,92,98] It becomes essential for the fitness professional be able to quickly and effectively observe the functional capacity of the core.

Integrated Fitness Profile for the Fitness Professional

Observing the Core

A core observation provides the fitness professional with a starting point from which to design a core stabilization program. It allows the fitness professional to systematically categorize their client into a particular type of core exercises. Each level of core training has set parameters for the implementation. To sum it up, the core observation enables the fitness professional to properly implement specific core exercises suited to the client's ability level.

Essentially, the core can be observed during any movement or exercise seen in the Integrated Fitness Profile (Figure 5-6). To give the fitness professional a guideline to follow, we will cover a simple observation that addresses the function of the core. It gauges neuromuscular ability and endurance. It is imperative that the fitness professional understands that this is merely a general observation to gain some insight into the functional state of a person. It is in no way intended to substitute for a licensed medical professional.

NEUROMUSCULAR ABILITY — "DRAWING-IN" MANEUVER

One of the most important observations for a fitness professional to make is a person's ability to properly activate their stabilization mechanism. This is achieved by the ***"drawing-in" maneuver***.[82] A properly performed drawing-in maneuver has been implicated in activation of the transversus abdominis, multifidus, pelvic-floor muscles and diaphragm.[82] These muscles are the primary segmental stabilizers.

This is a very simple observation and can be performed in any posture (seated, standing, lying, quadruped stance, etc.). As a matter of fact, we encourage the use of a variety of postures. It should be performed during the dynamic movement section of the Integrated Fitness Profile (Figure 5-6) later in this chapter.

As with any exercise, there is a progression that can be utilized with this observation. The easiest posture to facilitate the "drawing-in" appears to be a quadruped stance.[82] Regardless of the posture, the instructions for the observation remain the same.

Instructions

1. Start by having the person take a deep breath. This will demonstrate if they have the ability to properly control the diaphragm (one of the muscles working synergistically with the transversus abdominis). Proper diaphragmatic breathing should result in a slight increase (swelling) in the abdominal area without excessive rib-cage elevation. If initially you do not see this being performed correctly, let them practice a few times. It usually does not take more than a few tries for most people to gain control.[82]
2. Upon successful completion of step one, allow the person to exhale. Then instruct them to simply draw the navel (lower portion of the abdominal region) away from their clothing and toward their spine. Successful completion of this maneuver consists of no external movement from the trunk, shoulders, head or spine. Any extra movement such as spinal flexion is indicative of activation in the movement muscles such as the rectus abdominis and external obliques. The client should not appear to be sucking in their stomach or holding their breath.[82]
3. Once the person has completed steps one and two, they must resume proper breathing while maintaining the "drawing-in" maneuver.

Successful completion of the above steps indicates that the person can try other postures and/or move on to other activities. It should also be pointed out that the client should strive for this maneuver during all activity, especially resistance training.

ENDURANCE

It has been established that the stabilization mechanism is composed of predominantly type I fibers.[81-82] This means these muscles should have the ability to sustain contractions or exhibit muscular endurance.

A quick endurance observation is simply a continuation of the drawing-in maneuver. Once all three steps have been completed, see

how long they can sustain this state. Approximately 30-60 seconds is enough time to get a good idea of the client's endurance capability. Look for shaking of their musculature or compensatory body movements. This will indicate fatigue and decreased neuromotor ability for endurance. It is important to note that this observation should be performed during the Integrated Fitness Profile and should not become a separate, time-consuming process.

PROFICIENCY EXERCISE 5-8

After your review of the core stabilization drawing-in assessment, use the space provided below to assess at least three people and compare your observations.

NAME	RESULTS/COMMENTS/COMPARISONS
1.	
2.	
3.	

Movement Observations

Movement observations are often the quickest way to gain an overall impression of a client's functional status. As posture is a dynamic quality, these observations show postural distortion in a dynamic setting. Movement observations should relate to basic functions such as squatting, walking, bending, lifting, pushing and balancing in addition to providing crucial information about muscle and joint interplay. The observation process should serve as a search for imbalance in anatomy, physiology or biomechanics that may decrease a client's results and possibly lead to injury, both in and out of the fitness environment. With the limited time that most fitness professionals have for observation, incorporating movement observations into a ***"first workout"*** provides a quick and effective means for reviewing a client's functional capacity. The National Academy of Sports Medicine suggests the following Integrated Fitness Profile for the fitness professional (Figure 5-6).

Integrated Fitness Profile for the Fitness Professional

INTEGRATED FITNESS PROFILE

SUBJECTIVE INFORMATION:

Name:_____Date:_____

OCCUPATION

What is your current occupation? _____

Does your occupation require extended periods of sitting? **Y or N**

Does your occupation require extended periods of repetitive movements? **Y or N**
Explain:_____

Does your occupation require you to wear shoes with a heel (dress shoes)?
Y or N

Does your occupation cause you anxiety (mental stress)? **Y or N**

LIFESTYLE

Do you partake in any recreational activities (golf, tennis, skiing, etc.)? **Y or N**
Explain:_____

Do you have any hobbies (reading, gardening, working on cars, Internet, etc.)?
Y or N
Explain:_____

MEDICAL

Have you ever had any pain or injuries (ankle, knee, hip, back, shoulder, etc.)?
Y or N
Explain:_____

Have you ever had any surgeries? **Y or N**
Explain:_____

Has a medical doctor ever diagnosed you with a chronic disease such as coronary heart disease (CHD) or coronary artery disease (CAD), hypertension (high blood pressure), high cholesterol, diabetes, etc? **Y or N**
Explain:_____

Are you currently taking any medications? **Y or N**
Explain:_____

PERSONAL

What goals are most important for you to accomplish with a training program?
Explain:_____

How many times per week are you willing to work out with a fitness professional?_____

Are you willing to perform home flexibility or workout routines? **Y or N**

How many times per week are you willing to work out on your own?_____

Figure 5-6
Integrated Fitness Profile

OBJECTIVE INFORMATION

PERSONAL DATA:

CURRENT	GOAL	RESULT	% CHANGE
Height___ft. ___in			
Weight_____lbs.	Weight_____lbs.	Weight_____lbs.	Weight_____lbs.
Body fat_____%	Body fat_____%	Body fat_____%	Body fat_____%
Circumferences	**Circumferences**	**Circumferences**	**Circumferences**
Calf L:____R:____	Calf L:____R:____	Calf L:____R:____	Calf L:____R:____
Thigh L:____R:____	Thigh L:____R:____	Thigh L:____R:____	Thigh L:____R:____
Hips _____	Hips _____	Hips _____	Hips _____
Waist _____	Waist _____	Waist _____	Waist _____
Chest _____	Chest _____	Chest _____	Chest _____
Arms L:____R:____	Arms L:____R:____	Arms L:____R:____	Arms L:____R:____

MOVEMENT OBSERVATION (GENERAL WARM-UP)

A simple checklist of observations is provided specifically for each movement in the Integrated Fitness Profile. Once an observation has been made, please refer to Table 5-10 for a review of the possible causes and corrective strategies.

WARM-UP (General):
Cardiorespiratory exercise → Treadmill 5 minutes → SMFR 10 minutes

GAIT: TREADMILL WALKING

Objective: Gather general information regarding a client's dynamic posture. This should be used for a general warm-up of approximately five minutes.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Head
Forward head: Y / N

Integrated Fitness Profile for the Fitness Professional

SELF-MYOFASCIAL RELEASE (FOAM ROLL TENDERNESS SCALE)

Objective: To observe areas of tenderness based on a scale of 1-10. This signifies areas of the body that are experiencing increased muscle soreness and imbalance. A "1" represents minimal pain, a "10" represents excruciating pain. This is an OPTIONAL component of the Integrated Fitness Profile.

OVERALL TENDERNESS SCALE: 1-2-3-4-5-6-7-8-9-10

Gastrocnemius / Soleus:	L #:_____	R #:_____
Hamstrings:	L #:_____	R #:_____
Gluteus Maximus / Piriformis:	L #:_____	R #:_____
Quadriceps:	L #:_____	R #:_____
Adductors:	L #:_____	R #:_____
Thoracic Spine:	#:_____	
Latissimus Dorsi:	L #:_____	R #:_____

WARM-UP (Specific):
Overhead Squat 5-10 reps

OVERHEAD SQUAT (TOTAL-BODY PROFILE)

Objective: To observe for total-body neuromuscular efficiency, integrated functional strength, functional flexibility.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Arms fall forward (arms overhead): Y / N
Elbows flex (arms overhead): Y / N
Shoulder abduction: Y / N
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Scapulae winging: Y / N
Head
Forward head: Y / N

CORE/BALANCE EXERCISES	SETS	REPETITIONS
1. Crunch: Short-Lever Arm	1	Up to 10
2. Bridge: Two Legs	1	Up to 10
3. Multiplanar Single-leg Balance Reach	1	2 each leg/plane

SHORT-LEVER ARM CRUNCH

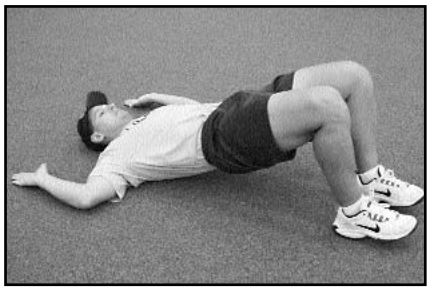
Objective: To observe the neuromuscular efficiency of the core stabilization system and the movement system of the kinetic chain.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Head
Forward head: Y / N

BRIDGE: TWO LEGS

Objective: To observe the functional synergy between the gluteus maximus/medius, hamstrings, erector spinae and deep abdominal musculature.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Head
Forward head: Y / N

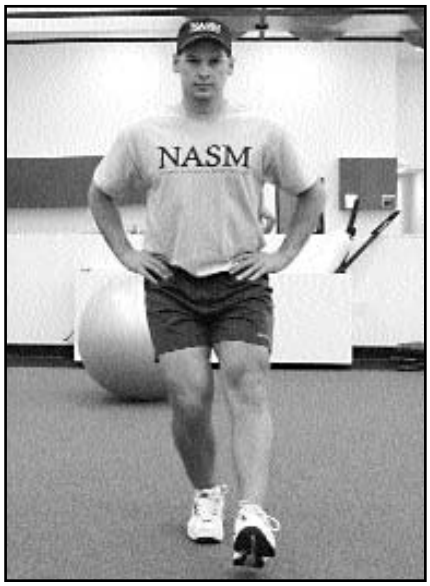


Integrated Fitness Profile for the Fitness Professional

MULTIPLANAR SINGLE-LEG BALANCE REACH

Objective: To observe multiplanar postural control, overall postural coordination and dominant plane of motion in a static environment.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Head
Forward head: Y / N
Overall
Dominant leg: L / R
Dominant plane of motion: S / F / T

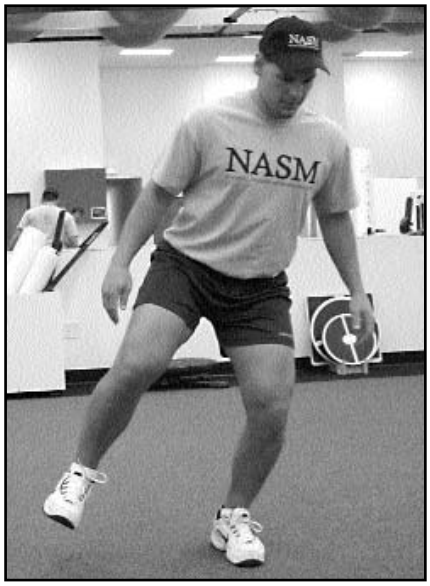


REACTIVE EXERCISES	SETS	REPETITIONS
1. Multiplanar Hop with Stabilization	1	2 each Leg/Plane

MULTIPLANAR HOP WITH STABILIZATION

Objective: To observe multiplanar postural control, overall postural coordination and dominant plane of motion in a dynamic reactive environment.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Head
Forward head: Y / N
Overall
Dominant leg: L / R
Dominant plane of motion: S / F / T

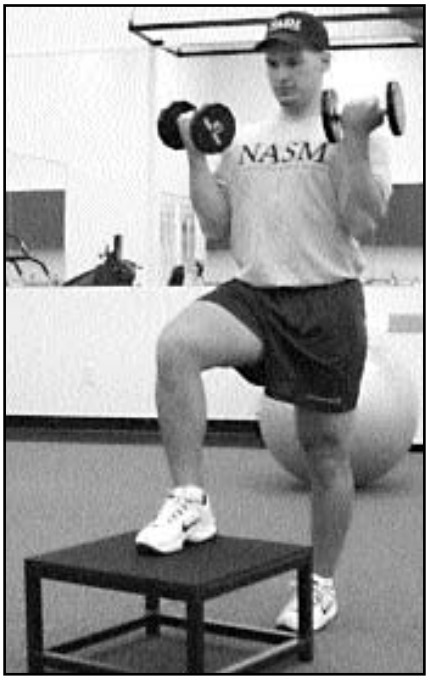


INTEGRATED STRENGTH EXERCISES	SETS	REPETITIONS
1. TOTAL BODY: Step, Curl and Press	1	Up to 15
2. CHEST: Push-up or Standing Cable Chest Press	1	Up to 15
3. BACK: Standing Cable Pull-down	1	Up to 15
4. SHOULDERS: Standing Dumbbell Scaption	1	Up to 15
5. LEGS: Multiplanar Lunges		

STEP, CURL AND PRESS

Objective: To observe total body neuromuscular efficiency, integrated functional strength and functional flexibility.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Head
Forward head: Y / N
Overall
Dominant leg: L / R
Dominant plane of motion: S / F / T

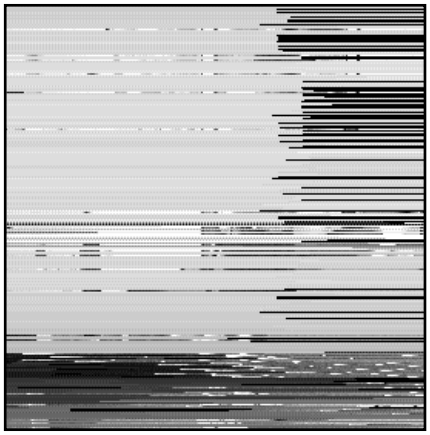


Integrated Fitness Profile for the Fitness Professional

PUSH-UP OR STANDING CABLE CHEST PRESS

Objective: To observe the neuromuscular efficiency of the upper extremities with the core and lower extremities.

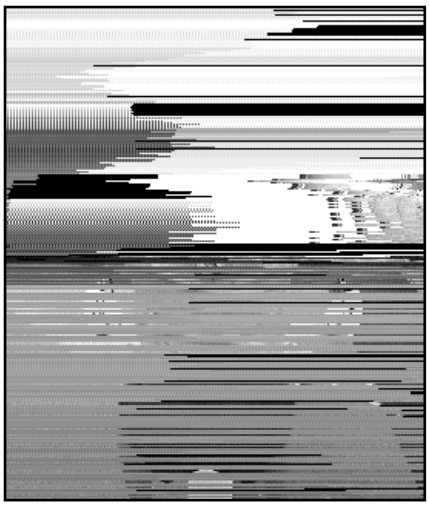
KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Scapulae winging: Y / N
Head
Forward head: Y / N
Overall
Dominant leg: L / R
Dominant plane of motion: S / F / T



STANDING CABLE PULL-DOWN

Objective: To observe the neuromuscular efficiency of the upper extremities with the core and lower extremities.

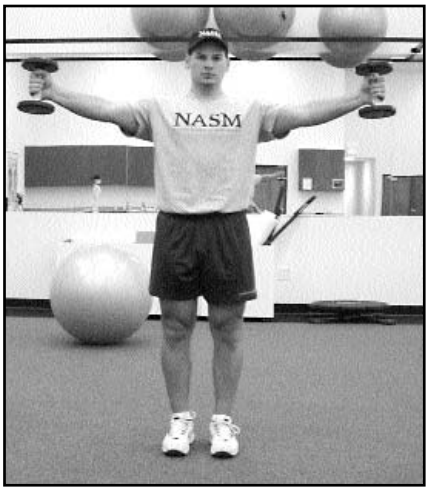
KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Scapulae winging: Y / N
Head
Forward head: Y / N



STANDING DUMBBELL SCAPTION

Objective: To observe upper extremity, shoulder girdle (stabilizers of the scapulae) and cervical spine neuromuscular efficiency and stabilization strength.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Shoulder Complex
Shoulder protraction: Y / N
Shoulder elevation: Y / N
Scapulae winging: Y / N
Head
Forward head: Y / N



MULTIPLANAR LUNGES

Objective: To observe lower extremity neuromuscular efficiency and functional strength in all planes of motion.

KINETIC CHAIN CHECKPOINTS:
Foot and Ankle
Feet flatten (pronate): Y / N
Externally rotate (turn out): Y / N
Knees
Knees buckle inward: Y / N
Knees bow outward: Y / N
Lumbo-Pelvic-Hip Complex
Asymmetrical weight shifting: Y / N
Low back arches: Y / N
Low back rounds: Y / N
Abdomen protrudes: Y / N
Head
Forward head: Y / N
Overall
Dominant leg: L / R
Dominant plane of motion: S / F / T

COOL DOWN
Self-myofascial Release with the foam roll on the most tender areas *(Table 5-10).*

Integrated Fitness Profile for the Fitness Professional

Table 5-10
Compensations, Muscle Imbalance and Corrective Strategies

COMPENSATIONS, MUSCLE IMBALANCE AND CORRECTIVE STRATEGIES

ABNORMAL MOVEMENT	TIGHT MUSCLES	WEAK MUSCLES	CORRECTIVE STRATEGY
■ FOOT AND ANKLE COMPLEX			
Feet Flatten	Gastrocnemius, Peroneals	Gluteus Medius, Anterior Tibialis, Posterior Tibialis	**Foam Roll and Static/Active Stretch:** Peroneals and Gastrocnemius **Core Stabilization:** Tube Walking, Ball Bridges **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
Feet Externally Rotate	Soleus, Biceps Femoris, Piriformis	Gluteus Medius	**Foam Roll and Static/Active Stretch:** Soleus, Biceps, Femoris, Piriformis **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat **Core Stabilization:** Tube Walking, Ball Bridges
■ KNEES			
Knees Adduct	Adductors, Iliotibial Band	Gluteus Medius, Gluteus Maximus	**Foam Roll and Static/Active Stretch:** Adductors and Iliotibial Band **Core Stabilization:** Tube Walking, Ball Bridges **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
Knees Abduct	Biceps Femoris, Iliopsoas, Piriformis	Gluteus Medius, Gluteus Maximus	**Foam Roll and Static/Active Stretch:** Biceps Femoris, Iliopsoas, Piriformis **Core Stabilization:** Tube Walking, Ball Bridges **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
■ LUMBO-PELVIC-HIP COMPLEX			
Asymmetrical Weight Shifting	Gastrocnemius, Soleus, Biceps Femoris, Adductors, Iliotibial Band, Iliopsoas, Piriformis	Gluteus Medius, Gluteus Maximus, Transversus Abdominis, Multifidi	**Foam Roll and Static/Active Stretch:** Biceps Femoris, Iliopsoas, Piriformis **Core Stabilization:** Tube Walking, Ball Bridges **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat

COMPENSATIONS, MUSCLE IMBALANCE AND CORRECTIVE STRATEGIES
(CONTINUED)

ABNORMAL MOVEMENT	TIGHT MUSCLES	WEAK MUSCLES	CORRECTIVE STRATEGY
■ **LUMBO-PELVIC-HIP COMPLEX**			
Increased Lumbar Extension	Iliopsoas, Rectus Femoris, Erector Spinae, Latissimus Dorsi	Gluteus Maximus, Gluteus Medius, Lumbo-Pelvic-Hip Complex Stabilization Mechanism	**Foam Roll and Static/Active Stretch:** Iliopsoas, Rectus Femoris, Erector Spinae, Latissimus Dorsi **Core Stabilization:** Tube Walking, Ball Bridges, Ball Crunches **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
Increased Lumbar Flexion	External Obliques, Rectus Abdominis, Hamstrings	Gluteus Maximus, Gluteus Medius, Lumbo-Pelvic-Hip Complex Stabilization Mechanism	**Foam Roll and Static/Active Stretch:** External Obliques, Rectus Abdominis, Hamstrings **Core Stabilization:** Tube Walking, Ball Bridges, Ball Crunches **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
Abdomen Protrudes	Iliopsoas	Lumbo-Pelvic-Hip Complex Stabilization Mechanism	**Foam Roll and Static/Active Stretch:** Iliopsoas **Core Stabilization:** Tube Walking, Ball Bridges, Ball Crunches **Single-leg Balance Progression:** Single-leg Balance Reach, Single-leg Squat
■ **SHOULDER COMPLEX**			
Arms Fall Forward (when overhead) or Lumbar Spine Hyperextends	Latissimus Dorsi, Pectoralis Major	Middle/Lower Trapezius	**Foam Roll and Static/Active Stretch:** Latissimus dorsi, Pectoralis Major **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill
Elbows Flex (when arms are overhead)	Pectoralis Major	Middle/Lower Trapezius	**Foam Roll and Static/Active Stretch:** Pectoralis Major **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill
Shoulder Blade Abducted	Upper Trapezius, Levator Scapulae, Pectoralis Major, Pectoralis Minor	Rhomboids, Middle/Lower Trapezius	**Foam Roll and Static/Active Stretch:** Upper Trapezius, Levator Scapulae, Pectoralis Major/Minor **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill

Integrated Fitness Profile for the Fitness Professional

COMPENSATIONS, MUSCLE IMBALANCE AND CORRECTIVE STRATEGIES
(CONTINUED)

ABNORMAL MOVEMENT	TIGHT MUSCLES	WEAK MUSCLES	CORRECTIVE STRATEGY
Shoulder Blade Protracted	Pectoralis Major, Pectoralis Minor Latissimus Dorsi	Rhomboids, Middle/Lower Trapezius, Teres Minor, Infraspinatus	**Foam Roll and Static/Active Stretch:** Pectoralis Major/Minor, Latissimus Dorsi **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill
Shoulder Elevated	Upper Trapezius, Levator Scapulae	Lower Trapezius	**Static/Active Stretch:** Upper Trapezius, Levator **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill
Shoulder Blade Winging	Pectoralis Minor	Serratus Anterior, Lower Trapezius	**Foam Roll and Static/Active Stretch:** Pectoralis Minor **Core Stabilization:** Ball Prone Cobra, Ball Scaption, Ball PNF **Single-leg Balance Progression:** Single-leg Windmill
■ **CERVICAL SPINE**			
Forward Head	Sterno cleidomastoid, Scalenes	Deep Cervical Flexors (Longus Coli/ Capitus)	**Static/Active Stretch:** Sternocleidomastoid, Scalenes **Core Stabilization:** Ball Cervical Retraction

The above observations correlate to the subjective and objective information in the Integrated Fitness Profile (Figure 5-6). For example, a few common hypothetical correlations could be:

1. **An apparently healthy male, 35 years old and in good physical condition. He is a driver for a mail-delivery company and likes to play tennis on the weekends.**
   - On the subjective questions, he stated that he has sprained his right ankle a few times in the past.
   - During squatting, he had a slight shift toward the left.
   - During the single-leg movements, he demonstrated a decreased ability to balance on his right leg and had more foot/ ankle pronation and knee adduction and internal rotation.

A sprained ankle that was detected in the subjective information questions can signal that there may be decreased range of motion in that ankle from scar tissue build-up and/or a decrease in the neural control to the gluteus maximus and/or gluteus medius. This could be an indicator of a lower-extremity postural distortion. Based upon the findings, he would classify as a lower-extremity postural distortion. This possible decreased range of motion in his right ankle could be the factor causing him to shift over to the left during squatting movements. The possible decreased neural control to his right gluteus maximus and/or gluteus medius could be the cause of his decreased ability to balance on his right side and the increased foot/ankle pronation and knee adduction and internal rotation during the single-leg movements.

2. A 45-year-old female college basketball coach in apparently good health.

- On the subjective information questions, she stated that she has mild low-back pain, had a C-section birth, had sprained both ankles as a college basketball player and has some intermittent shoulder pain.
- A quick view of her posture showed an upper-extremity postural distortion and a probable lower-extremity postural distortion (hard to tell when she first came in because she had pants on).
- A quick core observation while she was on the treadmill showed a lack of control of the stabilization mechanism.
- During squatting movements, both feet flattened and externally rotated, both knees caved in, her abdomen was protruding, her low back arched, her arms fell forward and her head protruded forward.
- During the single-leg movements, she had poor balance on both legs, her feet and knees overpronated and her abdomen protruded with arching in her low back.

Low-back pain is an indictor that the stabilizing mechanism may not be functioning properly. With the addition of a C-section birth, her abdominal musculature has been traumatized and may have further

Integrated Fitness Profile for the Fitness Professional

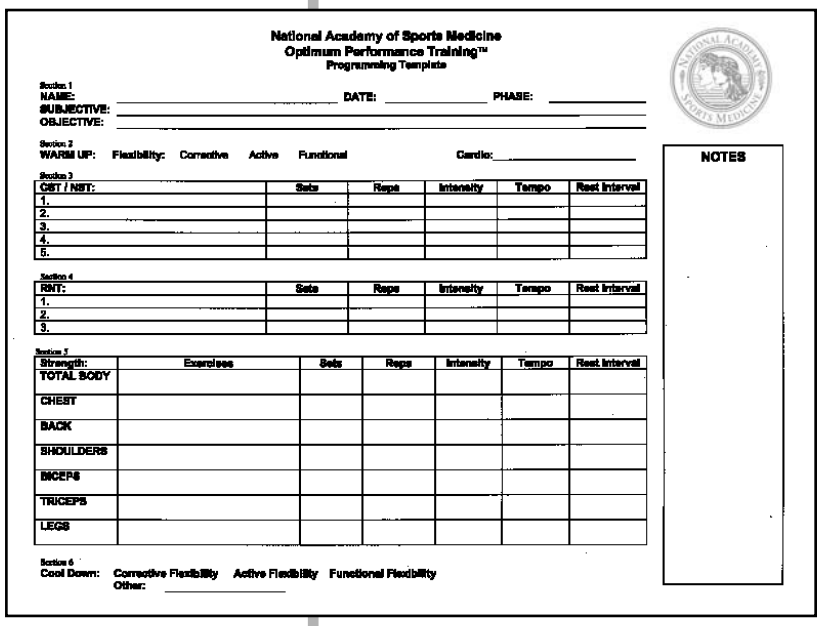
caused imbalance in the stabilization mechanism. Imbalance in the stabilization mechanism can be a predictor of a lumbo-pelvic-hip postural distortion. The resulting factor from the ankle sprains was discussed in the previous example. The ankle sprain can also be a predictor of a lower-extremity postural distortion. Intermittent shoulder pain can indicate decreased stabilization of the shoulder joint and may be a predictor of an upper-extremity postural distortion.

The quick static postural observation showed signs of an upper-extremity postural distortion while the quick core assessment showed signs of a lumbo-pelvic-hip postural distortion. Following the movement observation, it was shown that she demonstrated the signs for all three postural distortion patterns. This is very common.

Filling in the Template

The Integrated Fitness Profile (Figure 5-6) builds the foundation for the entire template. It enables the fitness professional to decide the appropriate selection of flexibility, cardiovascular, core, balance, power and strength training exercises. Specifically, the Integrated Fitness Profile allows the fitness professional to fill in the first section of the template seen in Figure 5-7.

- The **NAME**, obviously to keep proper records of the correct client.
- The **DATE** to follow their progression over time and keep track of what workouts occurred on what dates.
- The **PHASE** to signify where in the OPT™ model the client is. This can also act as a reminder for the acute variables significant to this phase (this will be discussed in detail in the programming chapter).



National Academy of Sports Medicine
Optimum Performance Training™
Programming Template

Section 1
NAME: _____ DATE: _____ PHASE: _____
SUBJECTIVE: _____
OBJECTIVE: _____

Section 2
WARM UP: Flexibility: Corrective Active Functional Cardio: _____

Section 3

CRT / NRT:	Sets	Reps	Intensity	Tempo	Rest Interval
1.					
2.					
3.					
4.					
5.					

Section 4

RNT:	Sets	Reps	Intensity	Tempo	Rest Interval
1.					
2.					
3.					

Section 5

Strength:	Exercises	Sets	Reps	Intensity	Tempo	Rest Interval
TOTAL BODY						
CHEST						
BACK						
SHOULDERS						
BICEPS						
TRICEPS						
LEGS						

Section 6
Cool Down: Corrective Flexibility Active Flexibility Functional Flexibility
Other: _____

NOTES

Figure 5-7
The Optimum Performance Training™ (OPT)™ Model

Example: IST

- **SUBJECTIVE** is where to write down the information that the client gives the fitness professional regarding goals or desires and any information from the subjective information questions.

  Example: Works at a computer, had a right ankle sprain and low-back pain, plays tennis on the weekends.

- **OBJECTIVE** is where to write down the information that is gathered from the personal data and the movement observation process. This is what the fitness professional found.

  Example: Body fat is 28 percent, upper-extremity postural distortion, lumbo-pelvic-hip postural distortion and lower-extremity postural distortion were all noted.

Integrated Fitness Profile for the Fitness Professional

Summary

The primary responsibility of the fitness professional is to safely and effectively guide clients to successful attainment of their goals. To do so, the fitness professional must have a comprehensive understanding of the clients' personal and professional background as well as their physical capabilities and desires. The Integrated Fitness Profile (Figure 5-6) designed by the National Academy of Sports Medicine provides fitness professionals with a comprehensive tool to systematically gather client information and utilize it appropriately.

The Integrated Fitness Profile provides the essential starting point for the fitness professional to begin personalizing the OPT™ model template seen in Figure 5-7. This is the foundation from which the entire program will be constructed. Most importantly, it provides the fitness professional with a systematic plan to progress the clients from start to finish.

To be a leader in the fitness industry, the fitness professional must gain an understanding of how the human body works and how it breaks down. It is essential to understand the components of posture and the core as well as postural distortions and core imbalances that can drastically affect the structural and functional efficiency of the kinetic chain. By learning to observe the kinetic chain during common movement patterns and correlate that information with simple personal and medical questions, the fitness professional can begin to adjust and manipulate programming variables to better suit the clients' goals and needs collectively.

National Academy of Sports Medicine
Optimum Performance Training™
Programming Template

Section 1

NAME: _____ DATE: _____ PHASE: _____

SUBJECTIVE: _____

OBJECTIVE: _____

Section 2

WARM-UP: Flexibility: Corrective Active Functional Cardio: _____

Section 3

CST / NST:	Sets	Reps	Intensity	Tempo	Rest Interval
1.					
2.					
3.					
4.					
5.					

Section 4

RNT:	Sets	Reps	Intensity	Tempo	Rest Interval
1.					
2.					
3.					

Section 5

Strength:	Exercises	Sets	Reps	Intensity	Tempo	Rest Interval
TOTAL BODY						
CHEST						
BACK						
SHOULDERS						
BICEPS						
TRICEPS						
LEGS						

Section 6

COOL-DOWN: Corrective Flexibility Active Flexibility Functional Flexibility

Other: _____

NOTES

Integrated Fitness Profile for the Fitness Professional

WORKBOOK

Check your understanding of the material in this chapter by responding to the following exercises.

SHORT ANSWER

1. Why would a fitness professional conduct an Integrated Fitness Profile?

2. Describe and define the components of an Integrated Fitness Profile.

3. List five questions that you can use to derive pertinent general and medical information from your client.

   1.
   2.
   3.
   4.
   5.

4. Describe the three common postural distortions defined in this chapter.

   1.
   2.
   3.

WORKBOOK

RESEARCH EXERCISE

1. Review your movement-observation checklist (Table 5-10) and watch the video (*Integrated Fitness Profile*) demonstration/explanation of the movement-observation workout. Following your review of the video, perform three movement-observation workouts on three people and fill out the analysis portion of the templates below.

Hint: Study kinetic chain checkpoints and practice the form of each exercise within the workout (movement assessment).

Remember: *You're assessing how the person moves. You are not teaching them how to perform the exercise. Teaching them how to perform the exercise will occur after the movement observation.*

National Academy of Sports Medicine
Optimum Performance Training™
FITNESS TRAINING ACTIVITY READINESS PROFILE

Name: **Date:** **OPT Phase:** 1st Assessment
Subjective:
Primary Goals, Needs & Wants:

WARM-UP: SMFR 10 min.→Overhead Squat 25 Reps

CST / NST:	Sets	Reps	ANALYSIS
1. Crunch: Short-lever Arm	1	20 Max	
2. Bridge: Two Legs	1		
3. Multiplanar Single-leg Balance Reach	1		
4.			

RNT:	Sets	Reps	ANALYSIS
1. MP Hop w/Stabilization	1	3 each plane	
2.			

STRENGTH:	Exercises	Sets	Reps	ANALYSIS
TOTAL BODY	Step, Curl and Press	1	20 Max	
CHEST	Push-up _____ / or Standing Cable Press	1		
BACK	Standing Cable Pull-down	1		
SHOULDERS	Standing DB Scaption	1		
BICEPS				
TRICEPS				
LEGS	Multiplanar Lunges	1		

COOL-DOWN SMFR most tender areas (see chart)

PLAN:

National Academy of Sports Medicine
Optimum Performance Training™
FITNESS TRAINING ACTIVITY READINESS PROFILE

Name: **Date:** **OPT Phase:** 1st Assessment
Subjective:
Primary Goals, Needs & Wants:

WARM-UP: SMFR 10 min.→Overhead Squat 25 Reps

CST / NST:	Sets	Reps	ANALYSIS
1. Crunch: Short-lever Arm	1	20 Max	
2. Bridge: Two Legs	1		
3. Multiplanar Single-leg Balance Reach	1		
4.			

RNT:	Sets	Reps	ANALYSIS
1. MP Hop w/Stabilization	1	3 each plane	
2.			

STRENGTH:	Exercises	Sets	Reps	ANALYSIS
TOTAL BODY	Step, Curl and Press	1	20 Max	
CHEST	Push-up _____ / or Standing Cable Press	1		
BACK	Standing Cable Pull-down	1		
SHOULDERS	Standing DB Scaption	1		
BICEPS				
TRICEPS				
LEGS	Multiplanar Lunges	1		

COOL-DOWN SMFR most tender areas (see chart)

PLAN:

National Academy of Sports Medicine
Optimum Performance Training™
FITNESS TRAINING ACTIVITY READINESS PROFILE

Name: **Date:** **OPT Phase:** 1st Assessment
Subjective:
Primary Goals, Needs & Wants:

WARM-UP: SMFR 10 min.→Overhead Squat 25 Reps

CST / NST:	**Sets**	**Reps**	**ANALYSIS**
1. Crunch: Short-lever Arm	1	20 Max	
2. Bridge: Two Legs	1		
3. Multiplanar Single-leg Balance Reach	1		
4.			

RNT:	**Sets**	**Reps**	**ANALYSIS**
1. MP Hop w/Stabilization	1	3 each plane	
2.			

STRENGTH:	**Exercises**	**Sets**	**Reps**	**ANALYSIS**
TOTAL BODY	Step, Curl and Press	1	20 Max	
CHEST	Push-up _____ / or Standing Cable Press	1		
BACK	Standing Cable Pull-down	1		
SHOULDERS	Standing DB Scaption	1		
BICEPS				
TRICEPS				
LEGS	Multiplanar Lunges	1		

COOL-DOWN SMFR most tender areas (see chart)

PLAN:

WORKBOOK

2. Now that you have gathered three different observations, list similarities and differences.

SIMILARITIES	DIFFERENCES

3. Review each person's compensations and list in the chart below the primary, secondary and tertiary (third in importance) concerns you would address as a fitness professional.

Example:

Primary: Head excessively "juts" forward with all movements.

Secondary: Fatigues around repetition 5 of the 15 asked of him/her.

Tertiary: Low in motivation.

PRIMARY	SECONDARY	TERTIARY

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