The National Academy of Sports Medicine

Essentials of Personal Fitness Training

Live Workshop
Day 1

Workshop Agenda

- Day One:
  - Rationale for Integrated Training
  - Fitness Assessment
  - Flexibility Training
  - Core, Balance and Reactive Training
  - Cardiorespiratory Training

- Day Two
  - Resistance Training
    - Lecture
    - Hands-on
  - Goal-specific Program Design
  - Professional Development
  - Conclusion
  - Exam Preparation

Workshop Objectives

- Discuss the need for integrated training
- Discuss the Optimum Performance Training model
- Increase your confidence to:
  - Perform movement assessments
  - Recognize movement compensations
  - Perform and instruct proper exercise technique
  - Design workouts using the OPT Model
- Empower your success with evidence-based education, result-focused application tools

The Present – an American Epidemic

- Adults
  - Approximately 60% of Americans are overweight; 33% are obese (BMI measures)
  - Obesity rates have increased in 31 states (2007)
  - Rate of combined overweight/obesity ≥ 60% in 32 states (2007)
    - Highest = Mississippi (2/3 of population)
    - Lowest = Colorado (1/3 of population)
  - 85% of adults believe obesity is an epidemic
    - 22% of Americans do not participate in any physical activity
    - $35 billion spent on weight-loss products/services

- Children
  - 1st generation believed to not out-live their parents
  - 25 million are overweight (value has more than tripled since 1980)
Evidence of Increased Injury

- Low Back Pain
  - Affects > 80% of adults
  - Affects > 90% of recreational athletes

- Knee Injuries
  - >100,000 anterior cruciate ligament (ACL) injuries occur annually
  - 70% are non-contact injuries
  - Osteoarthritis occurs at 10x greater rate w/ACL injury
  - Females have 4-6x more likely than males
  - Economic impact:
    - ~$17,000 per ACL injury (with surgical repair)
    - ~$650 million annually (surgery + rehabilitative costs)

- Many of these injuries occur in the transverse plane during deceleration

Current Training Programs

- Most traditional training programs do not emphasize:
  - Movements in all planes of motion
  - Concentric, eccentric and isometric muscle actions (Tempo, Ex: 3:2:1, 2:0:2)
  - Challenging the body’s ability to stabilize or balance itself
  - Challenging the cardiorespiratory system in an integrated fashion

The Future

- Training programs must be designed with consideration toward the person, the goal, and the environment
- How is this achieved?
  - Optimum Performance Training™ (OPT™)
    - Evidence-based model
    - Principles of human movement
    - Principles of specificity

OPT and Integrated Training

- What is Integrated training?
  - It is a concept that applies all forms of training to produce specific adaptations:
    - Flexibility Training
    - Cardiorespiratory Training
    - Stabilization Training (Core, Balance, Reactive Training)
    - Resistance (Weight) Training
- How is Integrated Training applied?
  - Each Phase of the OPT model will include all of these forms of training
The Principle of Specificity

• Specific Adaptation to Imposed Demands.
  • The kinetic chain (body) will specifically adapt to the type of demand placed upon it.
  – For example, if a person repeatedly lifts heavy weights with minimal repetitions and maximal rest periods, they will produce higher levels of maximal strength and lower levels of endurance strength.

Progressive Training Adaptations

• 3 primary training adaptations
  – Stabilization
  – Strength
  – Power
• All occur in a progressive sequence (Periodization):
  – Stabilization; then Strength
  – Strength; then Power

NASM OPT Model

Stabilization Training

• The Stabilization level consists of one phase of training.
  – Phase 1: Stabilization

• The progression:
  – Proprioceptively-based training in unstable yet controllable environments
• Primary Adaptations:
  – Stabilization endurance
  – Neuromuscular efficiency
Strength Training

- The Strength level consists of three phases of training.
  - Phase 2: Strength Endurance Training
  - Phase 3: Hypertrophy Training
  - Phase 4: Maximal Strength Training

- The progression
  - Increase in load and volume

- Primary Adaptations:
  - Stabilization strength and endurance
  - Muscle hypertrophy and strength

Power Training

- The Power level consists of:
  - Phase 5: Power Training

- The progression
  - Increase in speed of movement

- Primary Adaptation:
  - Rate of force production

Training Phase Manipulations

- Training phase duration = 4 weeks
  - May vary from 2-12 weeks to allow that phase’s adaptation(s) to occur

- Re-assess regularly to establish new training goals

- The OPT model can be manipulated to train any individual with any fitness goal.

OPT Works for “Mr. & Mrs. Jones”

1. Stabilization Endurance Training (12-20)
2. Strength Endurance (8-12), Stabilization (8-12)
**OPT Works for Bodybuilders**

1. Stabilization Endurance Training (12-20)
2. Strength Endurance Training
   - Strength (8-12), Stabilization (8-12)
3. Hypertrophy Training (6-12)
4. Maximal Strength Training (1-5)

**OPT Works for Athletes**

1. Stabilization Endurance Training (12-20)
2. Strength Endurance Training
   - Strength (8-12), Stabilization (8-12)
3. Hypertrophy Training (6-12)
4. Maximal Strength Training (1-5)
5. Power Training
   - Strength (1-5), Power (8-10)

**OPT Workout Components**

- Warm Up
  - Flexibility Training
  - Cardiorespiratory Training
- Core Training
- Balance Training
- Reactive Training
- Speed, Agility and Quickness Training (optional)
- Resistance (weight) Training
- Cool Down

**Summary**

- NASM OPT
  - Includes 5 progressive workout styles (phases)
  - Stabilization → Strength → Power
- Each phase of training will include:
  - Flexibility Training
  - Cardiorespiratory Training
  - Core Training
  - Balance Training
  - Reactive Training
  - Speed, Agility and Quickness Training (optional)
  - Resistance (Weight) Training
- Each client’s personal training goals and capabilities will determine which phases of training they experience.
Fitness Assessment

Objectives:
- Explain components and function of an integrated fitness assessment
- Understand posture and how it relates to assessment
- Learn to set-up and administer Overhead and Single-leg Squat assessments
- Observe movement compensations
- Develop result-focused intervention strategies to improve compensations
- Learn how assessments can increase value, revenue, and client base

What is a Fitness Assessment?
- Systematic problem-solving method
- Provides basis for why you design client programs

Purpose of Fitness Assessment
- Gather information and get to know your client
- To help determine starting point for client programs
- It is not designed to diagnose any condition
- It is designed to observe the client’s functional status

Fitness Assessment Components

Subjective information
- Information provided by the client
  - Fitness Goals, Occupation, Lifestyle, Medical history, Personal information
  - Can be gathered with questionnaires- e.g. PAR-Q;
- By engaging client in conversation- Ask Questions!!

Purpose
- Provides opportunity to get to know your client
- Builds rapport
Fitness Assessment Components

- **Objective Information**
  - Measurable information gathered by the health and fitness professional
    - Body-composition assessments (BF%, circumference)
    - Physiological assessments
    - Cardiorespiratory assessments
    - Performance assessments
    - Posture/Movement Assessments

Why focus on Posture?

- **Ideal posture ensures:**
  - The muscles of the body have proper length-tension relationships
    - Length at which muscles produce the most force
    - This places the joints in ideal alignment to accept forces
  - **Optimum Neuromuscular Efficiency**
    - Ability of the nervous system to properly recruit all muscles in all planes of motion
    - While exercising this is demonstrated as “proper form”

Five Kinetic Chain Checkpoints

- **Feet**
  - Straight ahead w/ neutral position at the ankle
- **Knees**
  - Straight ahead in line w/ 2nd and 3rd toes
- **Hips**
  - Neutral spine with abdominals drawn in
- **Shoulders**
  - Neutral, center of shoulder in line with center of hip joint
- **Head**
  - Neutral, center of ear in line with center of shoulder

Poor Posture

- **Feet**
  - Externally Rotated
- **Knees**
  - Adducted and Rotated Inward
- **Lumbo-Pelvic-Hip Complex**
  - Excessive Anterior or Posterior pelvic tilt
- **Shoulders**
  - Rounded and/or Elevated
- **Cervical Spine**
  - Forward and/or Extended
**Effects of Poor Posture**

- Sets the body up for *Postural Distortion Patterns*.
  - Predictable patterns of muscle imbalance

- **Short/Tight Muscle**
- **Lengthened/Weak Muscle**

**Length-tension Relationships**

**Posture: Current Concepts**

- **Altered Reciprocal Inhibition**
  - Process whereby tight muscle(s) cause decrease muscle activity to opposing muscle groups

- **Synergistic Dominance**
  - Process whereby muscles become overactive to maintain force production
  - Result of *altered reciprocal inhibition*

**Effects of Muscle Imbalance**

- **Muscle Imbalance**
- **Altered Joint Motion**
- **Decreased Ability to Maintain Ideal Posture During Movement**

*How do we assess ability to maintain ideal posture during movement?*

**Answer:** Movement Assessments!
What is a Movement Assessment?

- A process that allows us to observe a client's posture while moving
- Provides quick impression of coordination and what client might look like during exercise
- Allows us to identify compensations

Movement Assessment Compensations

- What causes compensation during movements?
  - Client does not understand how to do the movement we are asking them to perform
  - Possible muscle imbalances
  - Combination of both of the above

- Why is it important to identify compensations?
  - Compensations can lead to injury such as knee pain, low back pain, shoulder pain, etc.
  - Can decrease client's ability to reach fitness goals!

Types of Movement Assessments

- Any movement or exercise can be used
- Evidence-based Movement Assessments
  - Overhead Squat Test
  - Single-leg Squat Test

Why Overhead and Single-Leg Squat?

- Based on clinical & scientific evidence
- Incorporates all of the major joints in the body
  - 5 Kinetic Chain Checkpoints
- Evaluates:
  - Total body strength
  - Flexibility
  - Neuromuscular control
Proper Squat Mechanics

- **Front View**
  - Feet pointed straight ahead, placed hip to shoulder-width apart
  - Knees lined up with second and third toe (tip of shoe)
- **Side View**
  - Torso and lower leg should form parallel lines during descent
  - Low back and neck should remain neutral
  - Weight should be distributed through entire foot (not just the toes and not just the heel)

Why Squat This Way?

- This position ensures optimal load distribution between hips, knees, and ankles

How do You Perform the Overhead Squat Assessment?

- **3 Steps:**
  - Set-up (Position)
  - Procedure (Movement)
  - Observation/Identify (Front/Side View)

Overhead Squat: Set-up

- Position client with feet shoulder-width apart and pointed straight ahead.
  - Foot and ankle complex should be in a neutral position.
- Have client raise his/her arms overhead
  - Elbow should be fully extended.
  - Upper arm should bisect the torso.
**Overhead Squat: Procedure**

- Instruct client to squat to the level of a typical chair height and return to the start position.
- Have client repeat movement at least 5 times from each view:
  - Front (Anterior)
  - Side (Lateral)

**Overhead Squat: Observation**

- Use Five Kinetic Chain Checkpoints
  - Head & Neck
  - Shoulders & Arms
  - Hips & Low Back
  - Knees
  - Feet & Ankles

**OHS Observation: Front View**

- Focus on 2 Checkpoints
  - Feet/Ankles
    - Do they turn out?
  - Knees
    - Do they move in?

**Front View: Feet Turn Out**

- Normal
- Abnormal
OHS Observation: Side View

- Focus on 2 Checkpoints
  - Hips and Low Back (LPHC)
    - Is there an excessive forward lean?
    - Is there an excessive arch?
  - Shoulder Complex
    - Do the arms fall forward?

Side View: Excessive Forward Lean

Normal | Abnormal

Side View: Arch

Normal | Abnormal
Side View: Arms Fall Forward

- Normal
- Abnormal

Example of “Ideal” Overhead Squat

Record Findings

<table>
<thead>
<tr>
<th>Side (Lateral)</th>
<th>Kinetic Chain Checkpoints</th>
<th>Motion: Observation</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet (Anterior)</td>
<td>Feet</td>
<td>Turn out</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Move inward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumbopelvic-hip complex</td>
<td>Excessive forward lean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-back arch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrows fall forward</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Solutions (from handout)

<table>
<thead>
<tr>
<th>Compensation</th>
<th>Probable Overactive Muscles</th>
<th>Key Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet Turn Out</td>
<td>Lateral calf complex, biceps femoris (short head)</td>
<td>SL Balance</td>
</tr>
<tr>
<td>Knee Moves In</td>
<td>Adductor complex, biceps femoris (short head), TFLIT Band</td>
<td>Bridging, SL Balance, Lateral Tube Walking</td>
</tr>
<tr>
<td>Forward Lean</td>
<td>Calf complex, hip flexor complex</td>
<td>Ball Cobra, Bridges, Ball Wall Squat</td>
</tr>
<tr>
<td>Low Back Arches</td>
<td>Hip flexor complex, erector spinae, tautissimus dorsi</td>
<td>Prone Iso Abs, Quadruped Arm/Leg Raise, Bridges</td>
</tr>
<tr>
<td>Arms Fall Forward</td>
<td>Latisimus dorsi, pectoral complex, eres major</td>
<td>Ball Cobra, Ball Combo l, Squat-to-Row</td>
</tr>
</tbody>
</table>
Assessment Summary

- Who should you use movement assessments with?
- Will a thorough assessment help you design an individualized program?
- How can you use assessments to build your business?

Flexibility Training

- Objectives:
  - Define flexibility
  - Differentiate flexibility and stretching techniques
  - Perform appropriate flexibility techniques

- Definition
  - **Flexibility** is the normal extensibility of all soft tissues that allow the full range of motion of a joint.
  - Flexibility must occur in all three planes of motion for effective/efficient human movement
Limited Flexibility

- Poor flexibility leads to the development of **relative flexibility**.
  - The phenomenon of the kinetic chain seeking the path of least resistance during functional movement patterns.
  - This leads to muscle imbalances.

Flexibility Continuum

- Flexibility should follow a systematic progression
  - **Corrective**
    - Flexibility is designed to improve muscle imbalances and altered arthrokinematics.
  - **Active**
    - Flexibility is designed to improve the extensibility of soft tissue and increase neuromuscular efficiency by using reciprocal inhibition.
  - **Functional**
    - Flexibility is integrated, multiplanar soft-tissue extensibility with optimum neuromuscular control through the full range of motion.

Levels of Flexibility Training

- **Corrective Flexibility**
  - SMR and Static Stretching
- **Active Flexibility**
  - SMR and Active-Isolated Stretching
- **Functional Flexibility**
  - SMR and Dynamic Stretching

Self-Myofascial Release

- Self-Myofascial Release (SMR) is another form of flexibility training that focuses on the fascial system in the body.
  - Beneficial when used prior to other techniques
  - Mechanism:
    - Direct pressure stimulates Golgi Tendon Organ
    - Autogenic Inhibition
  - Technique of choice to reduce impact of tension-spots
Static Stretching

- Static stretching is the process of passively taking a muscle to the point of tension and holding the stretch for (at least) 20 seconds.
  - Mechanism:
    - Stimulates Golgi Tendon Organ
    - Autogenic Inhibition
  - Technique of choice to lengthen tissue

Active Stretching

- Active stretching is the process of using agonists and synergists to dynamically move the joint into a range of motion.
  - Utilizes reciprocal inhibition of the functional antagonist(s)
  - Mechanism:
    - 5-to-10 repetitions
    - Hold each repetition for 2-to-4 seconds
  - Beneficial to activate isolated muscle groups to assist gains in ROM
**Dynamic Stretching**

- Dynamic stretching uses the force production of a muscle and the body’s momentum to take a joint through the full available range of motion.
  - Can it be used as a pre-activity warm-up?
  - Beneficial to facilitate co-activation of muscle groups to dynamically control movement
  - Different joint angles require different muscle contributions

**Corrective Flexibility Training Hands-on**

- **SMR**
  - Calves / Peroneals
  - Hamstrings
  - TFL / IT-band
  - Quadriceps
  - Adductors
  - Piriformis
  - Thoracic spine
  - Latissimus dorsi

- **Static Stretches**
  - Gastrocnemius
  - Adductor (standing)
  - Hip Flexor (kneeling)
  - Latissimus dorsi
  - Pectoralis major
  - Cervical extensors
Flexibility: Summary

- Flexibility occurs along a continuum
  - Corrective
  - Active
  - Functional
- No single technique will address every movement need
  - Select the techniques to provide the desired outcome
  - Sequence the techniques according to the evidence

Flexibility Hands-on

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Flexibility Training Summary

- Who should perform flexibility exercises?
- How do you know which flexibility exercises to perform with each client?
- How can you use flexibility techniques to build your business?
Core, Balance, Reactive Training Concepts

- Objectives:
  - Rationalize the importance of core, balance and reactive training
  - Differentiate how (and when) to use specific core, balance, and reactive exercises in the OPT model
  - Apply core, balance, and reactive exercise techniques through interactive practice

The Importance of Core, Balance, & Reactive Training

- **Core** – building the body’s foundation to ensure a solid base for proper movement
- **Balance** – focuses on reflexive joint alignment while moving
- **Reactive** – focusing on starting, stopping and changing direction quickly and efficiently.
What is the Core?

- Consists of:
  - Lumbo-pelvic-hip complex,
  - Thoracic spine
  - Cervical spine
- Center of gravity located here
- Origin & insertion of 29 muscles

The Core Musculature

- The musculature of the core is divided into two categories:
  - The stabilization system stabilizes the spine
    - Transverse Abdominis
    - Lumbar Multifidus
    - Diaphragm
    - Transversospinals
    - Internal Oblique
    - Pelvic Floor Muscles
  - The movement system moves the spine
    - Rectus Abdominis
    - External Oblique
    - Erector Spinae

What is Stability?

- Definition of stability
  - Ability of a loaded structure to maintain static equilibrium after perturbation around the equilibrium position
- Stability is required to prevent joint injury

Two Components of Core Stability

- Intervertebral Stability
  - Stability between two vertebrae (intervertebral joint)
- Lumbopelvic Stability
  - Stability between the lumbar spine and pelvis
  - Lumbopelvic region is only as stable as the weakest (intervertebral) link

Core Stability = (Intervertebral Stability + Lumbopelvic Stability)
What is Core Stability?

Intervertebral Instability

Solutions for Stabilization

First

• Stabilize the spine
  – Pulling in the region just below the naval toward the spine (drawing in maneuver)

Then

• Stabilize the trunk through integrated process

Rationale for Balance Training

• Balance training has been shown to be beneficial in improving dynamic joint stabilization.
  – Improved through repetitive exposure to a variety of multi-sensory environments.

Training the Balance Mechanism

• Multi-sensory environments
  – Unstable, yet controllable environment
  – Proper progression:
    • Seated
    • Kneeling
    • Standing
    • ½ foam roll
    • Balance Board
    • Airex pad
    • Dyna disc
    • BOSU
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Importance of Reactive Training

**Reactive Training** (power) is defined as a quick, powerful movement involving an eccentric contraction followed immediately by an explosive concentric contraction.

Eccentric (Force Reduction)  
Concentric (Force Production)  
Core Stabilization  
Neuromuscular Stabilization

Levels of Core, Balance & Reactive Training

- **CBR Power**  
- **CBR Strength**  
- **CBR Stabilization**

The Importance of Stability & Efficiency

**STABILIZATION Exercises**

- **Core Stabilization** – Exercises that involve little to no motion through the spine  
- **Balance Stabilization** – Exercises that involve little to no motion through the stance leg  
- **Reactive Stabilization** – Explosive or fast exercises that improve landing mechanics – focusing on landing
**CORE: Stabilization Exercises**

**BALANCE: Stabilization Exercises**

**REACTIVE: Stabilization Exercises**

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**Stabilization Program Design**

<table>
<thead>
<tr>
<th>Type</th>
<th>Exercises</th>
<th>Sets</th>
<th>Reps</th>
<th>Tempo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>1-4</td>
<td>1-3</td>
<td>12-20</td>
<td>4/2/1 or Hold 3-10 sec</td>
</tr>
<tr>
<td>Balance</td>
<td>1-4</td>
<td>1-3</td>
<td>6-10 on each leg</td>
<td>4/2/1 or Hold 3-10 sec</td>
</tr>
<tr>
<td>Reactive</td>
<td>0-2</td>
<td>1-3</td>
<td>5-8</td>
<td>Hold 3-5s</td>
</tr>
</tbody>
</table>
**STRENGTH Exercises**

- **Core Strength** – Exercises that involve more dynamic eccentric and concentric (movement) through the spine
- **Balance Strength** – Exercises that involve more dynamic eccentric and concentric (movement) through the stance leg
- **Reactive Strength** – Exercises that focus on controlled explosive movements through a more dynamic eccentric and concentric range of motion

**CORE: Strength Exercises**

**BALANCE: Strength Exercises**

**REACTIVE: Strength Exercises**
**Strength Program Design**

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<tbody>
<tr>
<td>Core</td>
<td>0-4</td>
<td>2-3</td>
<td>8-12</td>
<td>Medium 3/2/1 to 1/1/1</td>
</tr>
<tr>
<td>Balance</td>
<td>0-4</td>
<td>2-3</td>
<td>8-12</td>
<td>Medium 3/2/1 to 1/1/1</td>
</tr>
<tr>
<td>Reactive</td>
<td>0-4</td>
<td>2-3</td>
<td>8-10</td>
<td>Medium (Repeating)</td>
</tr>
</tbody>
</table>

**POWER Exercises**

- **Core** Power – Designed to improve the rate-of-force production of the core musculature.
- **Balance** Power – Explosive exercises that are designed to improve landing mechanics on the stance leg.
- **Reactive** Power - Exercises that are performed as fast and as explosively as possible.
**Power Program Design**

<table>
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<th>Reps</th>
<th>Tempo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>0-2</td>
<td>2-3</td>
<td>8-12</td>
<td>As fast as can be controlled</td>
</tr>
<tr>
<td>Balance</td>
<td>0-2</td>
<td>2-3</td>
<td>8-12</td>
<td>Hold landing position for 3-5 sec</td>
</tr>
<tr>
<td>Reactive</td>
<td>0-2</td>
<td>2-3</td>
<td>8-12</td>
<td>As fast as possible</td>
</tr>
</tbody>
</table>

**Filling in the Template**

- **Core Stabilization**
  - Floor Bridge
  - Floor Cobra
  - Prone Iso-Abs
- **Core Strength**
  - Ball Crunch
- **Balance Stabilization**
  - SL Balance
  - SL Balance with MP Reach
- **Reactive Stabilization**
  - Squat Jump to Stabilization
- **Reactive Strength**
  - MP Squat Jumps
Core, Balance & Reactive Training

Summary

• Who should perform core, balance and reactive training?
• How do you know which type of core, balance and reactive training exercises your clients should do?
• How could you incorporate these techniques into your client’s programs?
• How can you use these components to build your business?

Cardiorespiratory Training

• Benefits of Cardiorespiratory Activities and/or Exercise
  - Decreases
    • Daily fatigue
    • Anxiety
    • Depression
    • Coronary artery disease (CAD)
    • Hypertension
    • Non-insulin dependent diabetes mellitus
    • Cancer
    • Osteoporosis
    • Obesity

Myth of the “Fat-Burning” Zone

• Myth: Fat reduction only results from extended periods of time on a piece of cardio equipment.
  - At slow (low) intensity

• Fact: Fat reduction occurs when there is more energy being burned than consumed
Myth of the “Fat-Burning” Zone

• The body uses a maximal amount of fat as fuel when the body is at complete rest.
  – This is how the fat-burning myth originated.

• Low intensity exercise utilizes a higher **percentage** of fat (glucose) for fuel.
  – The amount of energy used (calories burned) is minimal and **not** productive for weight loss

Take Home Message to Your Clients

• Remember, it is not how much fat an individual burns that ultimately dictates body fat reduction. Instead it is how many **calories** are burned.

Cardiorespiratory Training

• Stage Training
  – Three-stage programming system
  – Uses different heart rate training zones
  – Stages mimic the three stages of training seen in the OPT™ model.

<table>
<thead>
<tr>
<th>Heart Rate Zones</th>
<th>HR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone One</td>
<td>65-75%</td>
</tr>
<tr>
<td>Zone Two</td>
<td>80-85%</td>
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<td>Zone Three</td>
<td>86-90%</td>
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**Stage Training**

- **Determining Heart Rate**
  - Subtracting age from the number 220 (220 – Age).

- **Zone One**
  - Maximum Heart Rate x 0.65
  - Maximum Heart Rate x 0.75

- **Zone Two**
  - Maximum Heart Rate x 0.80
  - Maximum Heart Rate x 0.85

- **Zone Three**
  - Maximum Heart Rate x 0.86
  - Maximum Heart Rate x 0.90

---

**Example**

- Age: 50
  - 220 – 50 = 170
  - Zone One: 170 x 0.65 = 111
  - 170 x 0.75 = 128
  - Zone Two: 170 x 0.80 = 136
  - 170 x 0.85 = 145
  - Zone Three: 170 x 0.86 = 146
  - 170 x 0.90 = 153

---

**Stage I**

- For the intermediate client with a good cardio-base
  - Use heart rate Zones One and Two (65-85%)

- Focus is on increasing the workload (speed, incline, level, etc.)

- Helps increase the cardiorespiratory capacity needed
  for the workout styles in the strength level of the OPT™ model.

- Alternate days of the week with Stage I training.
  - This means alternating sessions every workout.

---

**Stage II**

- Example
  - Age: 50
  - 220 – 50 = 170
  - Zone One: 170 x 0.65 = 111
  - 170 x 0.75 = 128
  - Zone Two: 170 x 0.80 = 136
  - 170 x 0.85 = 145
  - Zone Three: 170 x 0.86 = 146
  - 170 x 0.90 = 153
Stage II

- For the advanced client who has built a very good cardiorespiratory base and will use heart rate Zones One, Two and Three.
- Focus is on further increasing the workload (speed, incline, level, etc.) in a way that will help the client alter heart rate in and out of all three zones.
- Increases the capacity of the energy systems needed at the power level of the OPT™ model.

Stage III

- Simply increasing the intensity for the same type of training will not produce consistent increases in fitness levels and weight control, as the body will soon adapt.
- By increasing a client’s intensity through the three heart rate zones seen in Stage III training, the client can take greater advantage of EPOC and help ensure greater results.

The Importance of Stage Training

- For the advanced client who has built a very good cardiorespiratory base and will use heart rate Zones One, Two and Three.
- Focus is on further increasing the workload (speed, incline, level, etc.) in a way that will help the client alter heart rate in and out of all three zones.
- Increases the capacity of the energy systems needed at the power level of the OPT™ model.
Cardiorespiratory Summary

- Who should be doing cardio?
- Where do you garner the necessary information to design a cardio program for your clients?
- What new ideas do you have about cardio programming?
- How can you use cardio programs to build your business?

Summary of Day 1

- What we’ve covered:
  - OPT model
  - Fitness assessment
  - Flexibility training
  - Core training
  - Balance training
  - Reactive training
  - Cardiorespiratory training
  - Opportunities to increase revenue with OPT

- Sneak peek at tomorrow
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Essentials of Personal Fitness Training

Live Workshop
Day 2

Workshop Agenda

• Day One:
  – Rationale for Integrated Training
  – Fitness Assessment
  – Flexibility Training
  – Core, Balance and Reactive Training
  – Cardiorespiratory Training

• Day Two
  – Resistance Training
    • Lecture
    • Hands on
  – Goal-specific Program Design
  – Professional Development
  – Conclusion
  – Exam Preparation

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Resistance Training

Lecture

OPT Program Design

• Objectives
  – Discuss acute training variables
  – Discuss physiologic adaptations resulting from resistance training
  – Discuss progressive, systematic organization of training adaptations
Acute Variable Definitions

- **Repetition**: One complete motion of an exercise that includes the eccentric, isometric and concentric actions of the targeted muscle.
  - **Eccentric** action: When the muscle is lengthening in the same direction as the resistance.
  - **Isometric** contraction: When there is no visible joint motion occurring.
  - **Concentric** contraction: When the muscle shortens against the resistance.

- **Set**: Total number of repetitions performed without rest (Time under Tension) at one time.

- **Tempo**: The speed that the repetition is performed. The letters/numbers correspond with the amount of seconds spent in each portion of the repetition (E/I/C).
  - Example: 4/2/1
    - 4 seconds on the eccentric portion of the repetition
    - 2 seconds on the isometric portion of the repetition
    - 1 seconds on the concentric portion of the repetition

- **Intensity**: The amount of external resistance that is added to the exercise.
  - NASM does not advocate the use of a 1-RM (repetition maximum)

- **Rest Period**: The amount of rest in between sets or exercises.
**Principle of Specificity**

- **SAID Principle:**
  - Specific Adaptation to Imposed Demands.
  - The kinetic chain will specifically adapt to the type of demand placed upon it.
    - For example, if a person repeatedly lifts heavy weights with minimal repetitions and maximal rest periods, they will produce higher levels of maximal strength and lower levels of endurance strength.

**Progressive Strength Adaptations From Resistance Training**

- **Primary adaptations from resistance training**
  - Stabilization
  - Strength
  - Power
- **All occur in a progressive sequence:**
  - Stabilization → Strength
  - Strength → Power

**Progressive Strength Adaptations From Resistance Training**

- **Stabilization (phase 1)**
  - Stabilization must be established prior to training for other adaptations
    - Focuses on postural stability
  - The emphasis is placed on nervous system in this adaptation category
    - Controlled Instability
  - 2 primary adaptations
    - Muscular endurance
    - Stability

**Progressive Strength Adaptations From Resistance Training**

- **Muscular Endurance**
  - Muscular endurance is the ability to produce and maintain relatively low levels of force over prolonged periods of time.
- **Stability**
  - Stability is the ability of the kinetic chain’s stabilizing muscles to provide optimal dynamic joint stabilization and maintain correct posture during all movements.
Stabilization Level

- Phase 1 – Stabilization Endurance Training
  - Program Design
    - Reps = 12-20
    - Sets = 1-3
    - Intensity = 60-70%
    - Tempo = Slow (4/2/1)
    - Rest Interval = 0-90 seconds
    - Duration = 4-6 weeks
    - Frequency = 2-4x/week

Stabilization Training

Neural Continuum

Upper Body:
- (Stable to Unstable)
- 2 Arms
- Alternating Arms
- 1 Arm
- 1 Arm w/ Rotation

Lower Body:
- (Stable to Unstable)
- 2 Legs Stable
- 1 Leg Stable
- 2 Legs Unstable
- 1 Leg Unstable

Progressive Strength Adaptations From Resistance Training

- Strength (phases 2, 3 and 4)
  - Primary adaptations
    - Strength endurance
    - Hypertrophy
    - Maximal strength
  - Heavier weights and higher volumes of training
  - Increased recruitment, synchronization and the firing rate of motor units
  - Necessary mechanical stress on the muscles to force increase size and/or strength
Progressive Strength Adaptations
From Resistance Training

• Strength Endurance
  - Strength Endurance is the ability to repeatedly produce higher levels of force for prolonged periods of time.
  - Muscular endurance involves lower intensities of force being used with higher repetitions (12-20) and minimal rest between sets.
  - Strength endurance allows the body to use higher levels of force with lower repetitions (8-12) and more sets, repeatedly, with minimal rest.

Strength Level

• Phase 2 – Strength Endurance Training
  - Program Design
    - Reps = Strength 8-12 / Stabilization 8-12
    - Sets = 2-4
    - Intensity = 70-80%
    - Repetition Tempo = Strength (2/0/2) / Stabilization (3/2/1)
    - Rest Interval = 60 seconds between pairs
    - Duration = 4-6 weeks
    - Frequency = 2-4x/week

Progressive Strength Adaptations
From Resistance Training

• Hypertrophy
  - Hypertrophy is the enlargement of skeletal muscle fibers in response to increased time under tension, as seen in resistance training.
  - Muscle fibers must be recruited in order to induce hypertrophy
    - Rationale for beginning with Stabilization training
**Strength Level**

- **Phase 3 – Hypertrophy Training**
  - Program Design
    - Reps = 6-12
    - Sets = 3-5
    - Intensity = 75-85%
    - Repetition Tempo = Moderate/slow (2/0/2)
    - Rest Interval = 0-60 seconds
    - Duration = 4 weeks
    - Frequency = 3-6x/week

**Muscular Development Training**

**Progressive Strength Adaptations From Resistance Training**

- **Maximal Strength**
  - Maximum force that a muscle can produce in a single, voluntary effort, regardless of how fast the load moves
  - In order for a muscle to produce maximal force, all of the muscle’s motor units must be recruited
    - Enhanced with Stabilization training
    - Improved ability to stabilize a joint while other muscles are lifting maximal loads

- **Phase 4 – Maximum Strength Training**
  - Program Design
    - Reps = 1-5
    - Sets = 4-6
    - Intensity = 85-100%
    - Repetition Tempo = Fast (x/x/x)
    - Rest Interval = 3-5 minutes
    - Duration = 4 weeks
    - Frequency = 2-4x/week
Maximal Strength Training

**Power (phase 5)**
- Ability of the neuromuscular system to produce the greatest possible force in the shortest possible time.
- An increase in either force and/or velocity will produce an increase in power.
- This can be achieved by
  - Increasing the weight (force); and/or,
  - Increasing the speed of the movement (velocity)

Power Level
- **Phase 5 – Power Training**
  - Program Design
    - Reps = 1-5 (Strength) / 8-10 (Power)
    - Sets = 3-5
    - Intensity = 85-100% (Strength) / up to 10% of bodyweight (Power).
    - Repetition Tempo = Strength (x-x-x) / Power (explosive)
    - Rest Interval = 2 minutes between pairs
    - Duration = 4 weeks
    - Frequency = 2-4x/week

Progressive Strength Adaptations From Resistance Training

• Power (phase 5)
  – Ability of the neuromuscular system to produce the greatest possible force in the shortest possible time.
  – An increase in either force and/or velocity will produce an increase in power.
  – This can be achieved by
    • Increasing the weight (force); and/or,
    • Increasing the speed of the movement (velocity)

Elastic-Equivalent Training
Resistance Training

Hands On

Objectives:
- Perform exercise technique of common resistance training exercises

Individual body parts are addressed
- Adaptations can be manipulated by altering:
  - Acute variable selection
  - Exercise selection
    - Stabilization
    - Strength
    - Power
Core Stability \(=\) (Intervertebral Stability + Lumbopelvic Stability)

Anatomical Arrangement
- Muscle orientation defines function
  - Single-joint
  - Multi-joint

Key Resistance Training Concept
- Full available range of motion
  - Pain free!
  - Without compensation!
- Determining factors?
  - Load
  - Structure
  - Control
    - Mobility
    - Stability
    - Flexibility

Chest Training
- Range of motion
- Planes of motion
- Common compensation
- Exercise progressions
Chest Training Hands-on

- Push-up Progression
- Chest Press Progression

Back Training

- Rows
  - Trunk position
  - Planes of motion
  - Scapulothoracic rhythm
  - Common compensations
  - Exercise progressions

Shoulder Training

- Presses
  - Range of motion
  - Common compensations
  - Exercise progressions
- Scaption
  - Rationale
  - Common compensations
  - Exercise progressions

Back and Shoulder Training Hands-on

- Row Progressions
- Scaption
- Ball Combo 1
Bicep and Tricep Training

- Hand position
- Compensations

Leg Training

- Squats
  - Feet position
  - Common compensations

Leg Training Hands-on

- Body Weight Squats
  - Arms in front
- Ball Squats
- Single-leg Squats
- Multiplanar Lunges

LUNCH BREAK
Program Design Concepts

Goal-specific Planning

• Objectives:
  – Understand how to utilize the different phases of the OPT model for common fitness goals.

Personal Training Goals

• **Step 1:** Identify training goals
  – Fat Loss
  – Muscle Gain
  – General Performance
• **Step 2:** Recommend training program/sessions to achieve goal
  – Example: If the client works with a Fitness Professional 3 times a week for 2 months that will equal 24 total sessions to help them reach their goals.
• Revenue Generator!!
  – By providing the client a timetable that includes the amount of sessions they will need to reach their goals, this will show the client from the very beginning an attainable start and finish for their program.

The OPT Model for Fat Loss

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Appropriate Phases of Training

• Phase 1: Stabilization Endurance Training
• Phase 2: Strength Endurance Training
Exercises can be performed in a circuit fashion for caloric expenditure and time efficiency.

For individuals wanting to train more than 3x/week, cardio can be incorporated on T/Th as well.

Next we’ll look at Muscle Gain.

**Example Total Body Monthly Plan**

- M/W/F: Core, Balance, Reactive and Resistance Training
- Cardio may be option for this goal
- Individuals can also train different body parts on different days.

**The OPT Model for Muscle Gain**

**Appropriate Phases of Training:**
- Phase 1: Stabilization Endurance Training
- Phase 2: Strength Endurance Training
- Phase 3: Hypertrophy Training
- Phase 4: Maximal Strength Training

**Example Split Routine Monthly Plan**

- M/Th: Chest, Shoulders and Triceps
- T/Fri: Back, Biceps, Legs
- W/Sat: Cardio (if necessary)
- Next, let’s look at the programming strategies for general performance.
Appropriate Phases of Training:
• Phase 1: Stabilization Endurance Training
• Phase 2: Strength Endurance Training
• Phase 5: Power Training

Example Combination Monthly Plan
• Perform a different phase of training 3 days/week
  – M: Phase 2 Strength Endurance
  – W: Phase 1 Stabilization Endurance
  – Fri: Phase 5 Power
• Typically, combination programs should be done after successful completion of 4 weeks of Stabilization Endurance Training, and 4 weeks of Strength Endurance Training.

Summary
• There are countless variations of how to use the OPT™ Model.
  – Flexible; not rigid
• Gain confidence by using programs from textbook
• For more information on program design, please review NASM Essentials of Personal Fitness Training textbook.

Program Design – Case Study
• Group Demonstration
  – Perform OHS on participant
    • “Class” identifies compensations
    • Develop stabilization program (flexibility/exercise)
Program Design – Group Workout

- Instructors lead the group of the exercises selected in the case-study
  - Monitor tempo
  - Monitor exercise technique
- Everyone gets a chance to experience OPT

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Your Future Possibilities with NASM

Future with NASM

- Continuing Education
- Advanced Specialization
- Mentorship & Internships
- Higher education
  - ASHS (graduate + doctoral programs)
  - CUP (undergraduate + graduate programs)
- Represent NASM and evidence-based health and fitness in local community

NASM Solutions

- Evidence-based education
- Result-focused application tools
  - Any client
  - Any goal
  - Any setting
- 1-year sponsorship with NASM credentials
FitCard Business Opportunity

- Give the gift of health, and get paid for it!!
- Refer individuals to consumer-fitness website
- Reward: 40% on every subscription

Workshop Summary

- Discussed the public need for integrated training
- Discuss the Optimum Performance Training model
- Increase your experience:
  - Performing movement assessments
  - Recognizing movement compensations
  - Performing and instructing proper exercise technique
  - Designing workouts using the OPT Model
- Discussed evidence-based solutions platform to empower your success
- Presented an exciting business opportunity to improve the public’s health & wellness

Professional Development

- Objectives
  - Discuss opportunities in the fitness industry
  - Present a professional goal setting process
  - Establish best practices for a fitness professional
  - Share solutions that NASM provides
Opportunities

- What do you want to do?
  - Large gym chain (24hr Fitness, Bally, Lifetime, etc)
    - Training
    - Support structure
    - No investment
    - High volume of traffic
  - Independent/franchise (Gold’s, World, Anytime Fitness)
    - Less structured
    - Typically more on your own
    - Volume of traffic varies
  - YMCA/JCC/Community based facility
    - Generally not geared towards profitable personal training dept.

- What do you want to do?
  - Private training facility
    - Self marketing (typically)
    - Low volume of traffic
  - Corporate wellness
  - Specialty facilities (athletes/rehabilitation/weight loss)
  - In home training
    - It is all up to you
  - Choose a path that makes you happy or leads to your development of experience
    - All roads lead to helping people live a healthier lifestyle!

Goal Setting

“The journey of a thousand miles begins with a single step”

- Planning
  - Business
    - How many clients do you want?
    - What income do you need! Want?
    - Reducing to the ridiculous can make a daunting yearly challenge into a manageable daily or even hourly challenge. This concept is also used to take the sting of sticker shock away from a large purchase such as a personal training package and reducing it to a daily investment.

- Plan your goals/achievements on regular timetables
  - Weekly
  - Monthly
  - Semiannually
  - Annually
  - Five and ten year/long range

- “No one plans to fail, they simply fail to plan”
  - Plan your goals/achievements on regular timetables
    - Weekly
    - Monthly
    - Semiannually
    - Annually
    - Five and ten year/long range
Goal Setting

• Large goal to small example
  – If you wish to make $45,000/yr
    • Divide by 12 for your needed monthly income= $3750
    • Divide by the number of days you will work in the month Let’s assume 20 days (five days a week)= $187.5/day
    • Divide by hours worked a day (8)= $23.43/hr
    • Working more days and more hours will obviously yield a greater income, and working less…less
  • You should create your goal plan immediately. Adjust and review the numbers daily.
  • Just as making a client write down their food and exercise makes them accountable, you will be more successful by putting your goal plan on paper.

Building a Business

• Question:
  – What is the purpose of a business?

• Answer:
  – To create, keep and grow a customer.

Starting: 80/20 Rule

• How do you get clients?
  – It is the trainer’s responsibility to actively seek out clients. If you wait for them to find you, you may be waiting a long time.
    • Meet and greet at the entrance
    • Captives on cardio
    • Work your way throughout the facility
      – Give help and guidance where appropriate
      – Clean and tidy up
      – Say “Hi!”
    • Do not stay hidden in an office, behind a counter, or anywhere else
    • Be seen, create a presence
    • Establish yourself as the “go to” person
    • If you say you’ll do it, DO IT!
Building Your Business

- **How do you get clients?**
  - Be alert for opportunities to help and be of service
  - Nothing to do? Take a member through a quick bodypart blast
    - Giving of your services freely at times can yield you future clients and spread goodwill that is guaranteed to come back
  - Opportunities to get clients in the gym are so numerous that you rarely need to actively look outside the gym

Floor Service Process

- **Approaching Potential Customers**
  - Initial meeting
  - Distinct service experience!
  - Provide measurable service

- **A Systematic Approach to Follow-up**
  - Send a thank you card
  - Make a follow-up call
  - Set an appointment for a 10-min. assessment

- **READ System (Rapport, Empathy, Assessment, Delivering)**

R.E.A.D System

- **Rapport**
  - Establish Trust
    - Be honest, caring, and effective
  - Communicate Effectively
    - Verbal, non-verbal, tone of voice
    - What is said must be consistent with how it is said
  - Create a Presence
    - Confidence, Professionalism, Enthusiasm

- **Empathy**
  - Motivation
    - What are you trying to achieve?
      - Identifies goal
    - How long has this been a goal?
      - Quantifies the result
    - What is most important to you about achieving that?
      - Reveals the desired outcome
      - What has prevented you from achieving that in the past?
        - Identifies potential roadblocks and obstacles
  - Motivational Strategies
    - Positive or Negative emotions will determine your strategy
    - Do they want to alleviate discontent, or experience satisfaction?
R.E.A.D System

• **Assessment**
  - Ask Questions! Direct focus on the client and his/her desires and specific needs
    - Non-directive Questions
      - Cannot be answered with a “Yes” or a “No” e.g. Why?
      - What? Why? How?
    - Directive Questions
      - Can only be answered with a “Yes” or a “No”
      - Used to establish agreement
    - Paraphrasing
      - Shows the client that you are listening and understand what they are saying - builds rapport

• **Developing**
  - Develop Individualized Recommendations
    - Solutions
    - Features vs. Benefits
      - Features - Number of sessions, materials, assessments, etc.
      - Benefits - How the features are going to get the client from where they are to where they want to be
      - Remember, they will be thinking WIIFM!
    - Identify His/Her Goals
      - Correlate the features of each component of the OPT™ model with the respective benefit it will enable them to achieve

Essential Business Skills

• **People skills/communication**
  - Learn how to communicate effectively
    - Certain words and phrases can have considerably more impact than others. Learn how to communicate with impact
      - Learn to speak in a way that implies success
      - Use assumptive phrases
    - *How To Win Friends and Influence People* by Dale Carnegie

• **Organization**
  - Goal setting
  - Work the phone properly
  - Keep a tickler file of leads (leads are not failed sales, they are future sales opportunities that are stronger).

• **Sales**
  - The next time someone says “here comes a salesman,” don’t let them down!
  - Learning the process and psychology of sales will make you a better more effective presenter
    - Better, more effective presentations will yield more clients
**Mining for Clients**

Not busy enough with the people you see in your gym?

1. Get a list of members not utilizing the gym regularly.
   - Call them and invite them in for a free workout
   - This establishes you in the accountability loop
2. Hold a seminar or workshop on a popular fitness topic at your facility
   - Healthy eating, body parts, etc.
3. Get involved with professional meeting/speaking groups
   - Toastmasters, Rotary, Women’s Groups, etc
4. Wear clothing with your company logo out and about
   - Opens up opportunities for conversation
   - People love to ask trainers questions (You’re the Expert!)

**Essential Business Skills**

- Words of wisdom from years of experience
  - Act professionally and you will be perceived as a professional
  - A clean attended to appearance rarely offends
  - Clean and iron (as appropriate) your work clothes
  - Many fashion and grooming trends offend or put off those that are not your peers
  - Be aware you are being watched, all of the time
    - Managers
    - Potential clients
  - Smile and say “Hi” to everyone you can, not just your clients
  - Give your client or whoever you are meeting with your undivided attention

**Established: 80/20 Rule**

- Presenting
- Prospecting
- Follow-up
- Train

**Personal Development**

- It is very easy to consume your day and hence your life with work
  - Learn to set boundaries, if you wish to work 70 hrs/wk, fine, if not, know what you absolutely will or will not do
  - Find a balance between work and YOUR time
  - Because fitness is OUR life to many, find ways to incorporate learning and workshops/expos/etc. with travel
Status Check!

G.R.O.W. Your Career!

- **Goal** – What do you want?
- **Reality** – What is currently happening?
- **Options** – What could you do?
- **Will** – What will you do?

What is Your Why?

“He who has a why to live for can bear almost any how.”

“Friedrich Nietzsche

Thank You!!!

For Your Commitment to Excellence
Exam Review

How was the exam developed?

• Job Analysis Survey, 2004
  – Statistical study to identify the body of knowledge, skill, ability, and attitudes that were ‘testable’
  – Validated by the profession of personal fitness trainers
  – Committee of CPTs wrote the exam questions according to industry best practices

Certification Exam Preparation

What’s on the exam?

• Content domains & weighting
  – Assessment (25 questions)
  – Exercise Technique (25 questions)
  – Program Design (25 questions)
  – Nutrition (10 questions)
  – Client Communication (10 questions)
  – Professional Development & Responsibility (5 questions)
  – Research Items (20 questions)

• How was the exam developed?
• What’s on the exam?
• What resources are available to me?
• How to get registered?
• What to bring with you on ‘test day’?
• How do you know if you passed?
**What resources are available to me?**

- NASM Board of Certification (FAQs)
- Preparation materials:
  - Exam Candidate Handbook
  - Online practice exam
  - Essentials of Personal Fitness Training, 3rd Ed.
  - NASM Study Guide
  - DVD or Online Study Course

**How to get registered?**

Enrollment ≠ Registration

LaserGrade (800-211-2754)
www.lasergrade.com

**What to bring with you on ‘test day’?**

1. LaserGrade Confirmation Receipt
2. Photo ID (driver’s license, passport, etc.)
3. CPR + AED Certification (must be current)

**How do you know if you passed?**

- Upon completion of your exam, you’ll receive a printed receipt from the Exam Proctor
  - Receipt will indicate “Pass” or “Fail”
    - If unsuccessful, the receipt will indicate performance according to content domain only
  - Receipt will not indicate your actual score
    - Purpose of the exam is only to identify entry-level status...not to identify mastery
    - NASM does not maintain actual score – only Pass/Fail status
Thank You