CEC Self-Test Packet

4 WAYS TO ENERGIZE CLIENTS

FASTED EXERCISE:

What the research says about fasting and athletic training

Proper Warmup & Movement Prep: the warmup IS the workout

BIANNUAL EDITION: June 2023

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National Federation of Professional Trainers

NFPT SELF - TEST

JUNE 2023 EDITION

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This packet includes continuing education articles that come from NFPT's Blog. Articles for this June 2023 self-test edition are from publication months December 2022 to May 2023. All articles are enclosed here to assist you with answering the questions in the back of this packet. If submitting your answers in hardcopy, complete the bubble sheet provided (include your name and contact information) and return to:

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NOTE: there are articles in this packet which contain links and/or references to resources and information only available online. Go to: www.nfpt.com/blog/cec for these additional resources.

We thank you for your commitment to the fitness industry and to the NFPT organization of trainers. Please contact us at 800-729-6378 or at info@nfpt.com with any questions, or to just be in touch. *We wish you continued success in your endeavors!*

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4 Ways to Energize Fitness Clients

Training sessions can do a lot of things for our clients. We show them how to gain strength, become more flexible, build confidence, develop better posture, and increase mobility. We are able to plan workout sessions that can also energize.

What Creates the Energy?

Increased blood flow is one way to energize. This means the circulation is doing what it's supposed to do. Active movement encourages the blood to push through the circulatory system, like turning on a household faucet to open the water flow or putting gas in a car to make it go.

Another way to energize is by releasing <u>endorphins</u>. Anyone who can identify that they've had a rush of endorphins can attest to its power. These feel-good hormones are released through various activities; exercise is a big one. While the release of these hormones will vary with each client and each workout, once the endorphins kick in, your client will likely have a sense of exhilaration and increased energy. This can be obtained through maxing out goals, pushing the limits, exercising at a high level for a sustained amount of time, or simply doing what your client enjoys most.

Deep breathing has energizing benefits. Good <u>breathwork</u> allows the lungs and other organs to get the oxygen they need to work properly. Good respiration equates to good energy, which can also reduce stress levels. We all need that!

Impress upon your fitness clients the importance of <u>hydration</u>. Being dehydrated can deplete <u>energy</u> levels. Staying hydrated is key during training sessions, but also throughout the day every day. If clients are reluctant to maintain hydration or to track it, suggest <u>measured waterbottles and containers</u>* that can be ordered online to track hydration for them.

How Do You Energize in Training Sessions?

It helps if trainers exude high energy themselves, so put your game face on. Aside from your energy as a trainer, exercise is a bigger guide.

Exercise is like a wonder drug for so many things, including boosting energy levels.

Cardio

Most, if not all, cardio exercises, especially high-intensity varieties, pump energy

throughout the body. Clients will get their breath going. Some of these exercises include:

- Burpees
- Squat jumps
- Box jumps
- Mountain climbers
- Plank jumping jacks
- Hill sprints

Confidence Builders

Movements that build confidence and self-esteem have a way of helping clients to feel energized. When you feel good about yourself, you're more naturally inclined to feel positive energy. Some ideas:

- Goal post (goddess arms in yoga) arm rotations with weights
- Superman on floor or half-dome ball
- <u>Handstands</u>
- Balancing (standing or seated) on a half-dome ball
- Using suspension cables which require balance and strength

Achieving Goals

Exercises that demonstrate accomplishment or reaching/exceeding goals beef up the ego which reinforces energy. Keeping a written log tracks accountability and provides a visible way to see results on paper. Some ways to help clients achieve goals are:

• Doing more pushups than in the past

- Holding <u>plank</u> or bridge pose longer
- Lifting heavier weight when appropriate to progress
- Adding more reps or more sets than the last time
- Learning a difficult exercise like a pull-up, starting with regressions
- Running faster or longer than previously

External Factors that Energize

Trainers can shake things up a bit by utilizing external factors to raise the energy level. Weather-permitting, moving the workouts outside is an easy way to raise the energy bar. The change of scenery, fresh air, and a touch of Mother Nature might just be what energizes your client. Plus, the extra Vitamin D has mental and physical perks. Being outdoors offers new ways to exercise too.

Play music. Create a playlist with energizing music. Or play tunes that your client favors.

Change up workout <u>equipment</u> or <u>approaches</u>.

Sustained Benefits

Some benefits last long after the training session. After an energizing workout, clients may have a renewed sense of energy throughout the rest of their day or night. They might get more work done than usual. Chances are strong that your client will have a good, highquality sleep following the workout.

And, ideally, they'll be pumped up and ready for the next training session!

Is Lactic Acid an Energy Boost or a Drain

All <u>personal trainers</u> and their clients should be familiar with what the "burn" associated with repetitive or intense activity feels like. Historically, the blame for such discomfort fell on the build-up of lactic acid, a condition referred to as *lactic acidosis*, and was thought to inhibit one's ability to keep going. Research now suggests that acidosis may potentially improve muscle performance during high-intensity exercise. Read on to learn more about this surprising lactate-exercise link!

Lactic Acid Fatigue Fallacy

Since its original discovery, and even up through the 1970s, lactic acid bore the brunt of responsibility for muscle fatigue and tissue damage following intense workouts. For years, researchers in the fitness/physiology industry have tried to suggest that increased lactate/H+ concentrations in skeletal muscle also resulted to less than stellar exercise performance.

In the early 2000s, scientists showed conclusively that lactate imposed little to no detrimental effect on mechanically stimulated muscle fibers. Lactic acid, a byproduct of anaerobic metabolism, certainly *does* build up as the body produces energy in the absence of oxygen; but experts feel this does not necessarily work to an athlete's disadvantage.

Lactate Offers Positive Leverage

Several well-documented reports have *revealed a somewhat protective effect of lactate exposure or induced acidosis on muscle contractions.* It appears that lactate exposure can attenuate severe fatigue in stimulated rat muscle. Furthermore, upon ingesting exogenous lactate, a sprinter may delay the onset of exhaustion. Taken together, these latest findings have led to the idea that lactate/H+ plays an ergogenic role during exercise.

Lactate, Pyruvate, and Energy

The human body prefers to generate most of its energy through aerobic means. As one performs strenuous exercise, respiration increases in an attempt to shuttle more oxygen to

the working muscles. Some circumstances, however, demand energy production faster than our bodies can deliver oxygen. In those cases, the working muscles generate energy anaerobically, utilizing the process of *<u>glycolysis</u>*. When this occurs, glucose gets metabolized into a substance called *pyruvate*.

In the presence of ample oxygen, pyruvate moves through an aerobic pathway and gets further broken down for additional energy. Under conditions of limited oxygen, however, the body responds by temporarily converting pyruvate into lactate. This lactate then allows glucose breakdown/energy production to continue. As working muscle cells continue performing anaerobic activity, lactate often accumulates at high levels.

Lactate as a Fuel Source

Dr. George Brooks, Professor of Integrative Biology at UC Berkeley, recently<u>published an</u> <u>article</u> in the journal *Cell Metabolism*, posting data that helped elucidate the misunderstanding of lactic acid. While lactate does play a significant role in metabolism, Brooks and his team pioneered the research that culminated in labeling lactate as a fuel routinely produced by muscle cells.

"It's a historic mistake," Brooks said. "It was thought that lactate is made in muscles when there is not enough oxygen. It has been thought to be a fatigue agent, a metabolic waste product, a metabolic poison. But the classic mistake was to note that when a cell was under stress, it produced greater amounts of lactate. Today's theory stresses that lactate production, in and of itself a strain response, occurs to *compensate* for metabolic stress."

After decades of research, Brooks pinpointed at least three main uses of lactate in the body:

- a major source of cellular fuel for function and repair
- a key player in supporting healthy blood sugar levels
- a powerful signal for metabolic adaptation to stress

Brooks' data indicates that extra lactate present during illness or after injury could help encourage the process of recovery. "After injury, adrenaline will activate the sympathetic nervous system and that will give rise to lactate production," Brooks said. "It is like gassing up the car before a race."

The "Lactate Shuttle" System

The human body possesses the ability to store energy in several forms:

- glycogen, derived from ingested carbohydrates and stored in the muscles
- fatty acids or triglycerides, stored in adipose tissue

When the human body requires energy, it breaks down glycogen into lactate and glucose, and/or adipose tissue into fatty acids, all of which are distributed throughout the bloodstream as general fuel. However, Brooks feels that lactate deserves top billing as a major fuel source. He coined the term "lactate shuttle" to describe the processes by which lactate plays a key role in supporting the body's organs.

Lactate also acts as an energy substrate in fast-twitch and slow-twitch muscle fibers. Newer studies have brought to light the role played by lactate in enhancing oxidative capacity, by tapping into skeletal muscle mitochondrial biogenesis. In the presence of lactate, the mitochondria in muscle tissue utilize this substrate more efficiently than even glucose or fatty acids. In fact, *lactate will actually signal adipose tissue to cease its breakdown to eliminate fats as fuel utilization.*

Lactate and Brain Energy

The brain, too, seems to benefit from an uptick in lactate. The *lactate-neuron and lactate-astrocyte shuttles* allow for the utilization of lactate to support cognitive function, particularly as extended aerobic activity often results in a significant drop in circulating blood glucose levels. Clinical trials have corroborated that both *the heart and the brain function optimally when fueled by lactate instead of glucose*.

If Not Lactate, What Does Cause DOMS?

As for the burning sensation and side pains that had heretofore been ascribed to a build-up of lactic acid, scientists now consider noxious ion metabolites to blame, particularly for post-exercise fatigue and <u>DOMS</u>. The "burn" follows from anaerobic ATP production and the hydrolysis of that ATP, with an end result of increased proton release (in the form of hydrogen ions). An accumulation of hydrogen ions lowers the body's pH, causing acidosis. This in turn prevents oxygen from binding to hemoglobin in red blood cells. When the body faces reduced oxygen transport to skeletal muscle, ATP (energy) production suffers.

Both hydrogen ions and excess inorganic phosphate (accumulated from the breakdown of ATP) directly affect calcium release, which can negatively influence muscular contraction. Calcium contributes to muscle contraction by binding to a protein that enables contractile filaments of the sarcomere to interact; as this occurs, the entirety of the muscle shortens. Impaired calcium release and/or sensitivity will dampen the contraction, a true indication of muscular fatigue.

Exogenous Lactate Supplementation

Professor Yoshitaka Ohno and colleagues from the Toyohashi SOZO University in Japan recently undertook a study to determine if orally consumed lactate could facilitate muscle hypertrophy in addition to its use as an energy substrate. Their data confirmed that the administration of oral lactate positively influenced both hypertrophy and regeneration of the tibialis anterior muscle in the mouse model. Scientists believe that the potential exists for extracellular lactate to contribute to skeletal muscle plasticity as well.

Should endurance athletes think about supplementing their training regimen with oral lactate? A few select sports beverage companies have begun offering products that tout the advantages. However, fitness professionals await further research and *in vivo* testing before advocating such supplementation.

Exercise Considerations When Training Older Adults

When <u>personal trainers</u> work with older adults, there are many things they need to keep in mind when compared to younger clients. Today we're going to review some of the key areas to focus on so that training older adults is a safe and effective endeavor.

Fall Prevention in Older Adults

<u>Preventing falls</u> as we age is something that everyone should bear in mind. The good news is that as a certified personal trainer, there are strategies you can implement to help decrease the risk of a fall both during your sessions and in your clients' everyday life.

Falls are a major public health concern, coming in as the second leading cause of unintentional injury death, eclipsed only by road traffic accidents. The risk of falls increases significantly as we hit the age of 65, and goes up again over the age of 80. The older your client is, the more you need to be aware of tailoring their training plan to reduce the chance of a fall occurring. Lack of exercise is a major risk factor for fall prevention alongside any chronic illnesses your client may suffer from.

Physical activity is recommended by WHO Heidelberg Guidelines for virtually all older individuals, providing physical, physiological, and social benefits. Regular physical activity can also reduce the chance of a fall at home or outside of the training session. In order to help your clients protect themselves in and out of the gym, you need to focus on building their lower body strength and balance. The calf muscles often become weaker as we age, so tailoring exercises to focus on this area can help to keep your clients upright in the future. Make sure you add <u>balance and coordination work</u> and assessments into their workouts, and you'll be on your way to protecting your clients and keeping them safe in their daily lives.

Exercise Considerations when Training Older Adults

When training older adults, you'll need to think carefully about how you put together their exercise plan. We all know that personal training isn't a one-size-fits-all task, and this is even more true when working with this age group. Remember, just because someone is over the age of 65, it doesn't mean that they aren't looking for a challenge. However, you need to be aware of their limitations before you start training together and ensure you tailor their plan to accommodate any physical limitations or medical conditions they have. The physical effects of aging don't just apply to the main limbs of the body, as many people find their hearing, memory, and sight deteriorate as they age, which can impact the types of exercise you need to offer.

Cardiovascular exercise is still important for older adults, but keep in mind a safe max heart rate and cardiac output to work with. Take the time to <u>calculate the maximum heart</u> <u>rate</u> of your older clients based on their resting rate. You'll want to plan your sessions to keep the intensity and chunk time at a safe level, offering your clients a challenge without pushing them too far.

The respiratory system is a key factor to review also, as many older adults struggle with their breathing mechanics when training. Self-pacing and offering them different options can help them to overcome optimally and ensure they feel good at the end of every session. Always offer your clients breather breaks while training in a way that doesn't require them to fully sit down and recover, but instead keeps them mobile and active throughout your time together. Even just walking it out or marching in place is a good approach.

Top Chronic Conditions in Older Adults

While chronic conditions can impact us at any stage in our life, you'll find that these often increase in frequency and intensity as we age. Knowing how to train some of the <u>most</u> <u>common chronic conditions</u> can help to set you apart as a personal trainer training older adults and protect your clients when working together.

Dementia is a leading cause of death within Australian women and can be a huge challenge to train clients with. Including functional exercises that are easy to remember and using tactile cues can keep clients with dementia safe at all times.

Arthritis is another condition that's extremely common as we age, requiring you to plan a progressive strength training program. Using strength training machines is your best bet and you can use adaptive devices to help them progress with their training plan. Clients may experience a flare-up of their conditions at any time, which may require you to adjust the program for that day to avoid further aggravation.

<u>Osteoporosis</u> is very common within the over 75s, impacting women more than men. The severe pain that's experienced with this condition means you need to avoid jarring movements or anything that may put too much pressure on the joints.

These are just a few of the top conditions to be aware of, but you'll find many others that you may come across as you start to train more people in this age group.

Dispelling Myths When Training Older Adults

Working with seniors can be just as enjoyable as working with your youngest and most capable athletes, if only you educate yourself on some of the common misconceptions about working with this age group. Older adults who opt to come to your classes or train with you are willing to put in the effort to get the results they want. Most of them truly want to be there training, as opposed to being forced to be there by a doctor or family member. It's important for you to add elements into your classes that focus on building bone density and protecting your clients from falls, so make sure this is something you keep in mind for every class.

Your older adult clients don't necessarily need to be wrapped up in cotton wool during your classes. Instead, we encourage you to focus on creating an open dialogue that will allow them to feel comfortable expressing if they feel any pain or discomfort. You will find that even playing a sport such as soccer is perfectly appropriate with this age group, as they can just remove themselves as needed to take a break. Older adults want to relive their youth and continue enjoying their bodies for as long as they can, so keep this in mind when planning your sessions.

Conclusion

By focusing on these four areas when working with older adults, you can create an inclusive and welcoming environment during any training session. You'll find they are an extremely rewarding group of people to work with, which is why we encourage any personal trainer to welcome clients of all ages to their classes.

Fat Loss Resistance: 7 Reasons Why Body Composition Isn't Budging

It's no surprise, many <u>personal training</u> clients seek our services to lose weight and/or lose fat, and they can experience frustration when their goals appear slow going or totally stalled by apparent fat loss resistance. Realistically, we can expect fat loss to occur at a rate of 2.7-5.9% over the course of 2-3 months (Montano, et al., 2018). In the mind of a client, 8 to 12 weeks can feel extra long when they are hoping for visible results. It's important to work closely with clients to educate them about how to lose fat and gain muscle in order to emphasize that it's about slow, steady, and consistent change.

Explaining Fat Loss Resistance: Why Body Composition Is Not Shifting The perception that cardio is better than weights.

Cardio exercises are awesome for caloric burn and cardiorespiratory health. It's also necessary to maximize aerobic capacity and to effectively train for endurance events. However, cardio alone is not an efficient or effective way to build lean tissue or change body composition. Clients will often prioritize cardio five days a week and weights two times a week. For best results, let's flip that ratio and encourage a <u>greater emphasis on</u> <u>lifting</u> (heavy) weights to build lean tissue and fight fat loss resistance.

Restriction

If the body is in a constantly restricted state, no muscle building can happen as protein synthesis cannot effectively occur. Underfueling is as damaging to progress as <u>lack of</u> <u>sleep</u>. Clients can be enticed to turn to restriction when results aren't happening fast enough, believing mistakenly that "less is more". Unfortunately, this temptation can lead to an undoing of metabolic health that can be quite challenging to reverse.

Inconsistency

Clients won't always be motivated and sometimes this can affect their commitment to a solid strength training program. Strength training is uncomfortable, it burns, it's heavy, and don't forget the <u>DOMS</u>. To lose fat and gain muscle, clients need to understand

that commitment to consistency and a <u>strategic workout plan</u> will get them to their goals faster and in better health and prevent fat loss resistance.

Not overloading

Progressive overload and challenging muscles to endure greater resistance than they are used to is what will trigger growth in muscle tissue. The last few repetitions of any lift should be hard, and form should start to decline (and obviously stop the exercise when that happens!). Consistently performing three sets of 10 without feeling the need to contort your face into odd expressions and let out some <u>guttural grunts</u> will not cut it in the long run. The body cannot grow without being constantly challenged.

Overly focused on the scale

This relates to restriction in many ways. Weight loss and fat loss are not the same (nor the same processes), and this is where clients tend to get confused. The perception is "if the scale goes down, then that's progress." In some cases, that might be the case. But scale weight does not reflect body composition shifts nor does it paint an accurate picture of health. Lastly, if someone is gaining muscle, the scale number will increase, but inches may decrease.

Inadequate rest and recovery

Both the mind and the body need rest and sleep. Fitness clients can unintentionally overtrain outside of their personal training sessions believing mistakenly that "more is better" (funny how these principles are reversed when it comes to calories). Sometimes, more is just more, and that is the case here. Discuss quality sleep habits and <u>active rest</u> <u>strategies</u> with clients to help them refuel and rebuild.

Not cultivating patience for fat loss

Building muscle and losing fat both take time. It is critical to guide clients toward realistic timelines. Outline a plan for measuring progress that does not include only the scale but includes non-data-driven measures such as sleep fitness, energy levels, how clothes fit, how

strong a client feels, and how they feel in their own body. These are <u>nonscale</u> victories that deserve attention and celebration.

Take the time to engage in intentional conversations that focus on strategies related to genuine body composition shifts. Your personal training clients may then better understand their fat loss resistance and reap the benefits of metabolically sound approaches to changing their bodies' appearance and overall health.

Foam Rolling and Depression: Are Stiff Muscles Linked to Major Depressive Disorder?

Personal trainers wise to the relevant link between foam rolling and depression may be in a position to truly help their clients with depression. Exercise and other health behaviors have been proven time and time again to help reduce the symptoms and severity of Major Depressive Disorder (MDD). Exercise releases natural cannabinoids and various neurotransmitters that can help improve mood and behavior. More simply, a good workout may also provide a healthy distraction from the negative thoughts that torment MDD patients (Mayoclinic).

Recent research suggests that another tool in a <u>certified personal trainer</u>'s box may help have the ability to positively affect the symptoms of clinical depression. Let's explore the positive relationship between foam rolling and depression.

What is Major Depressive Disorder?

MDD affects approximately 8% of the U.S. population. Persons with MDD usually suffer from severe sadness, lack of interest, feelings of disgust, low energy, and inability to find joy in any activity. MDD sufferers often dwell on negative thoughts & memories (rumination), have feelings of worthlessness, and can potentially feel angry. Unlike general feelings of sadness, clinical depression is persistent and may be caused by low dopamine, epinephrine, or serotonin activity in the brain, and abnormal structure in the prefrontal cortex and other brain areas.

Among these symptoms and potential causes, persons with MDD may also have a "slumped" posture, with a hunch in their upper back (hyperkyphosis), or a forward translation of their head. This may cause excessive tension in the neck and upper back. According to recent research from Michalak J., et al (2022) MDD patients have more stiff, less "elastic" tissue in their upper back and neck than people who don't have MDD.

Depression and Fascia

The authors of this paper questioned whether there may be any relation between the stiff myofascial tissue in MDD patients and their depression symptoms. <u>One study</u> points to a link between myofascial facial pain and depression.

Additional research has shown that tai chi, breath work, and actions as simple as holding a "proud" posture have proven to improve mood in persons with depression. For the study cited here, 69 MDD patients were recruited. the stiffness in the tissue of their upper back and neck was measured, and they were split into two groups. Each participant in group 1 performed a very simple Self MyoFascial Release (SMFR) routine with a foam roller. Individuals in group 2 however performed a simple set of NON-SMFR exercises. Tissue stiffness was then remeasured: group 1 (the SMFR group) showed significant improvement in stiffness compared to group 2. No big surprise there. However, both groups were tested for "negative word recall" and negative memory bias as well as positive affect. Group 1 showed significantly better scores than group 2 on both measures.

It's not clear from this study whether the stiff tissue lends to a cause for MDD, or is simply correlative with the mood disorder. It's also not clear what the mechanism is that caused the improvement in the patients. Was it the act of doing something positive for themselves, is there some biochemical element in fascia that may help, or is an effect on "downregulation" of the sympathetic nervous system providing the benefit.

Foam Rolling and Depression

While more exploratory work is likely necessary, this preliminary finding is promising for mental health professionals, fitness professionals, and sufferers of depression alike. One of the difficult aspects of treating MDD with exercise is that a major symptom is a lack of energy and/or motivation.

Foam rollers and <u>SMFR</u> might be stepping stones to help improve the symptoms of a patient without the expectation of potentially taxing exercise routines. Personal trainers

can work within their scope to make an impact on the physical *and* mental health of our communities by acknowledging that foam rolling and depression are likely related, and actively incorporating foam rolling into client programming to help improve mood.

Binge Eating Behaviors in Adolescent Clients

When personal trainers hear the term "eating disorders", extreme caloric restriction, or anorexia, might come to mind before binge eating. As such, it may be surprising to learn that both Binge Eating Disorder (BED) and Bulimia Nervosa (BN) are more common medical diagnoses than Anorexia Nervosa (AN). A 2020 report by Deloitte estimates the number of cases between 2018-2019 within the US at 408,000 for AN, 621,900 for BN, and a staggering 2,033,300 for BED.

Eating disorders (EDs) and disordered eating behaviors present in numerous forms, and can affect individuals of all ages, body sizes, ethnicities, genders, and sexualities. As the median age of onset for binge eating is 17-22 years old, this discussion will focus primarily on adolescents. Since adolescence can be a difficult point in life physically, cognitively, and socially, disordered eating behaviors may emerge during this time as a maladaptive coping mechanism for stress.

At the core of being an effective personal trainer is promoting complete wellness and wellbeing in clients, so it is crucial to develop a functional understanding of binge eating behaviors to help ensure and protect the health of all clients. Here's what health and fitness coaches need to know about this alarming condition.

What Defines Binge Eating?

The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) defines binge eating as: *Consuming an amount of food significantly larger than what most people would eat under similar circumstances in a limited period of time, paired with a lack of control over eating during the episode.*

While the above defines the behavior of *binge eating*, being diagnosed with a *mental illness related to binge eating (BED) requires meeting additional criteria* physically and psychologically.

First, BED states that binge eating episodes are associated with three or more of the following conditions:

- Eating much more rapidly than normal
- Eating until feeling uncomfortably full
- Eating large amounts of food when not feeling physically hungry
- Eating alone to avoid embarrassment by how much one is eating
- Feeling disgusted with oneself, depressed, or very guilty after overeating

Further, binge eating events are accompanied by distress, occur with regularity, and the individual does *not* engage in any compensatory behavior (e.g., purging, fasting, excessive exercise ¹). Given such strict rules regarding diagnosis, many individuals might engage in some of these behaviors and have some of these feelings, but not all. In such cases, diagnosis is termed as "subthreshold". Some studies suggest that prevalence rates of *Subthreshold Binge Eating Disorder* could be higher than 10% over a 3-month span in adolescents.

The diagnosis of Bulimia Nervosa is closely related to binge eating but differs slightly from BED. The primary differences are that BN includes inappropriate compensatory behaviors (e.g., purging, excessive exercise¹, or laxative use) to prevent weight gain, and that self-evaluation is unjustifiably influenced by body shape and weight. (There is also a subthreshold form of BN.)

What is most critical to understand is that binge eating disorders are legitimate mental illnesses, with risk factors originating from biological and environmental determinants, but also psychological and social dynamics.

Risk Factors for Binge Eating

Research has shown a substantial overlap in risk factors for BED and BN. Both conditions are likely to occur in adolescents who experience body dissatisfaction, which is often linked to a thin-ideal internalization commonly promoted throughout modern media. This is particularly problematic for adolescents, as the body is undergoing significant changes due to puberty. Research has shown that body dissatisfaction, in addition to weight and shape concerns, intensifies as adolescence progresses.

Additional significant risk factors for adolescents include:

- Engaging in dieting and/or overconsumption
- The presence of extreme dieting practices within the home
- Negative affect
- Interoceptive (perception of sensations from inside the body) deficits
- Low self-esteem (particularly in girls)
- Abnormal weight or shape concerns
- Genetic factors i.e. the A1 allele of dopamine D2 receptor, which can impair reward sensitivity and cause <u>satiety</u> dysfunction
- Experiencing physical or sexual abuse
- Family challenges, especially in regard to high parental demand

Health Outcomes

Binge eating, along with the purging behaviors found in BN, can have devastating physiological effects on adolescents. Excessive consumption can lead to increased weight and adiposity, insulin resistance, elevated BP, and hypertension. Over the long-term, high adiposity increases the chance of having metabolic syndrome, which puts an individual at significant risk for developing type-2 diabetes and cardiovascular disease.

Meanwhile, self-induced vomiting associated with BN can cause cardiac arrhythmia, tooth enamel erosion, electrolyte depletion, scrapes and scars on the hands, as well as esophageal and gastrointestinal damage.

On the psychological side, research has shown specifically that girls with BED are twice as likely to develop depressive symptoms as their non-disordered peers. Binge eating behaviors are known to be closely related to anxiety, dietary restriction intentions, emotional disinhibition, body dissatisfaction, and future disordered eating. Although AN receives more attention due to having the highest mortality rate of all psychiatric illnesses, binge eating disorders still pose significant health risks.

Personal Trainer Prevention Strategies

Upon initial contact and engagement with an adolescent client, consider having them complete the <u>Eating Disorders Screen for Athletes (EDSA)</u>. As its name suggests, the EDSA is a validated scientific tool that evaluates the risk of eating disorders in competitive athletes and is usable with both boys and girls.

If a client were to score above the risk threshold — an average of 3.33 on the 6-question survey — it would be advisable to open a line of direct communication with the parents or guardians about potentially engaging the adolescent with a trained eating disorder specialist.

Once training has begun, one of the most impactable risk factors is body dissatisfaction. As adolescence is a notable transitional period of human physiological development, it is critical that trainers do not emphasize specific body types or shapes. Even though adolescent clients may come in with beliefs about and desires for bodily transformation, it is imperative that trainers adopt an approach that does not place excessive focus on weight and size-related outcomes to prevent encouraging disordered eating behaviors.

Instead, prioritize improved training capacity via increased strength and endurance, functional movement capabilities and sport-specific skill development, improved health, mood, and enjoyment of physical activity over appearance-based outcomes.

This final element connects to another highly modifiable risk factor, negative affect. By building and encouraging a highly positive training environment, a client is much more likely to be engaged and excited about physical activity, while also hopefully deriving more feelings of high self-worth resultant of their efforts.

Although personal trainers are not nutritionists, it is within our purview to discuss food intake with clients, as nourishment goes hand-in-hand with physical activity. One recommendation in this area is to promote the practice of <u>intuitive eating</u>.

Intuitive eating focuses on:

- Relying on natural hunger and satiety cues
- Eating for physical, not emotional reasons i.e., nutrition, rather than ingestion
- Unconditional permission to eat, so as to prevent restriction
- Making food choices that respect one's health in addition to taste (body-food choice congruence)

Research has shown that intuitive eating is associated with higher fruit and vegetable intake, as well as being inversely related to binge eating and mood disturbances. This relationship makes sense, as awareness of actions would directly confront the loss of control mechanism that partially defines binge eating. Intuitive eating may also decrease dieting behaviors, such as ignoring hunger cues, tackling another risk factor for binge eating disorders.

Ultimately, trainers can stay cognitive about the signs of binge eating and other <u>disordered</u> <u>eating</u> patterns, while strategizing healthful practices that promote a positive and fun training atmosphere not focused solely on weight loss or body shape. In this way, we can do our best to encourage comprehensive health and well-being for our younger populations.

[1] Trainers should be keenly aware that in regard to eating disorders, "exercise is excessive when its postponement is accompanied by intense guilt or when it is undertaken solely to influence weight or shape". This definition may conflict with common perceptions on exercise in the fitness space, but it highlights the importance of encouraging physical activity in clients for reasons other than just weight loss and/or to conform to a specific body shape. See the Prevention Strategies section for further discussion.

Fasted Exercise: What the Research Says About Fasting and Athletic Training

The two main reasons people cite for exercising in a fasted state generally relate to weight loss and/or anti-aging benefits. While studies often show data to support this theory, an equal number of scientists cite concerns. Read on to determine whether fasted exercise aligns optimally with your clients' physiology goals.

The Upside to Fasted Exercise Sessions

Substantial research seems to show that by depleting stored glycogen, the body shifts toward utilizing fat as an alternate energy source. The hormone insulin regulates the amount of sugar circulating throughout the bloodstream. Glucose levels rise with food consumption, and the body then commences the process of generating insulin to convert glucose into energy. Insulin signals the muscle cells to pull glucose out of the blood and store it as glycogen.

Upon reaching an excess, the body begins to store glycogen as fat. When exercising during a fast, the body draws upon most, if not all, of its glycogen stores for energy. After depleting glycogen, the body taps into its fat stores for energy.

As for reversing the effects of aging, <u>fasted exercise</u> may reduce inflammation pathways, and seems to have a mitigating effect on such age-related concerns as Alzheimer's disease/dementia, Parkinson's disease, and even wrinkles.

Fasting and the Cardiovascular System

Cardiologists at the Intermountain Medical Center Heart Institute corroborate other studies elucidating how fasting may lower the risk of coronary artery disease, diabetes, and improve cholesterol levels. "Fasting causes hunger or stress. In response, the body releases more cholesterol, allowing it to utilize fat as a source of fuel, instead of glucose. This decreases the number of fat cells in the body," says Dr. Benjamin D. Horne, PhD, MPH, Director of Cardiovascular and Genetic Epidemiology at the Intermountain Medical Center Heart Institute.

Since diabetes and high cholesterol very often contribute very to heart disease, fasting/intermittent fasting prior to a workout offers some appeal.

The Other Side of the Argument

Not all data, however, point to favorable outcomes in regard to fasted exercise. Here we highlight several of the more detrimental potential scenarios.

The Case for Human Growth Hormone

Human growth hormone (HGH), a component essential for cell repair and tissue regeneration, helps the body recover after workouts and facilitates the building of lean muscle mass. Some experts claim that weight training while in a fasted state induces the release of growth hormone (GH). However, a study undertaken at the University of Virginia revealed that while this release may have an anabolic effect, most likely the body reacts by attempting to counter the catabolic impact of fasted exercise. This data brought the scientists to conclude that cardio and/or resistance training in a fasted state may ultimately lower athletic productivity. For clients who clearly prefer to exercise in this fashion, particularly first thing in the morning, trainers can suggest a bedtime meal, which in turn can help ramp up glycogen stores for use the next day.

Prolonging the Burn

Some studies indicate that engaging in cardio-based fasted exercise can incite the body to burn 20% more fat, as compared to exercising after a healthy meal. While this offers a great deal of appeal for many of our clients, the fact remains that *fasted cardio does not increase the body's fat-burning ability over the ensuing 24 hours.* As such, this does not always lead to sustained weight loss. <u>The effect ends at the conclusion of the fast.</u> Ingesting complex carbs prior to training will increase the post-exercise "afterburn" more so than what one can expect in the fasted-training state. This means extra calories continue to get burned throughout the day, and not just while engaging in the workout.

Diabetics and Other At-Risk Populations

Clients living with diabetes can easily slip into a hypoglycemic state during a prolonged fast, especially when paired with exercise. This medical condition induces symptoms such as sweating, shakiness, elevated heart rate, headaches, and nausea.

Another high-risk group includes clients who take beta-blocker medications to treat high blood pressure. Such individuals often struggle merely to increase their heart rate, regardless of the intensity of training. Furthermore, such clients may suffer from lightheadedness, particularly in the absence of sufficient hydration during exercise.

Experts urge extreme caution when discussing fasted workouts with senior adults, clients with end-stage chronic diseases, those taking medications potentially impacted by fasting, or individuals undergoing chemotherapy. Similarly, trainers might hesitate to promote fasting exercise regimens for clients with a history of/current battle with an eating disorder. For such individuals, skipping a meal coupled with intense exercise prove potentially life-threatening.

Muscle Catabolism – The Bodybuilder's Greatest Enemy

When working with serious competitive bodybuilders, lack of proper pre- and postworkout fuel can actually undue months of hard work, and make the process of adding lean muscle mass even more difficult.

As we read above, exercising in a fasted state causes the body to eventually catabolize muscle to use as a fuel source. According to Chelsea Amengual, MS, RD, Manager of Fitness Programming & Nutrition at Virtual Health Partners, "You're more susceptible to hitting the wall, which means you'll have less energy and not be able to work out as hard or perform as well."

Priya Khorana, EdD, a nutrition educator at Columbia University, does not endorse intermittent fasting coupled with exercise. "Your body depletes itself of calories and energy, which could ultimately end up slowing your metabolism." She likewise stresses the importance of a carbohydrate- and protein-rich fueling, ideally consumed within 30 minutes of completing a workout.

Re-examining Carbohydrates and Performance

Whether a client participates in endurance-type exercise or prefers the variable speed involved in high-intensity interval training, glycogen stored within muscle tissue gets utilized which eventually results in fatigue. Nutritional advice for athletes, therefore, has largely focused on sufficient intake of complex carbohydrates. This applies not only to preexercise but also during and following training, in an effort to optimize performance and ensure proper recovery.

More up-to-date research indicates that advanced athletes can potentially increase glycogen storage in type I and type II muscle fibers within 24–48 hours of carbohydrate loading. Such a practice seems to improve one's performance when training/competing in events lasting an hour and a half or longer: sequential tennis matches, for example, or marathon events, most notably Ironman competitions. While scientists have also witnessed enhanced performance coupled with carbohydrate consumption *during exercise*, not every athlete's digestive system can comfortably handle such practices.

Despite the popularity of fasted exercise protocols, scientists note that *improved performance outcomes do not always align consistently between studies.* Trainers often remind clients that overall fitness improves the immune system; however, athletes who frequently engage in high-intensity training, having purposefully under-fueled in terms of carbohydrates, render their bodies more vulnerable to illness and infection. Trainers may therefore consider cycling a client's training to include periods of fasting along with more normalized meal plans, taking advantage of what each protocol offers.

Safety and Fasted Exercise

Scheduling one's exercise while adequately fueled, just prior to or at the onset of a fasting window, ensures ample amounts of necessary glycogen. Gastroenterologist Dr. Niket Sonpal suggests that athletes who wish to attempt fasted exercise strive to time workouts to coincide with fueling windows so as to make the most of training-based nutrition. "If you do heavy lifting,", Dr. Sonpal says, "it's important for your body to have protein after the workout to aid with regeneration."

Keeping workout sessions short and light helps thwart dizziness and lightheadedness, and may help prevent post-workout energy crashes. Trainers might also direct their clients toward optimal hydration while exercising during a fast. Coconut water, an excellent replenishing choice, naturally contains the vital electrolytes depleted during prolonged exercise sessions.

Ultimately, every "body" is different, and as with most training approaches and nutritional plans, what one person finds successful may be an abysmal failure for another. Be clear with your clients who are asking for guidance: You can support them in their choices, but they may have to be willing to see when their efforts are not successful and change course to achieve their goals

Orthorexia: When "Healthy Eating" Goes Too Far?

Might your personal training clients be exhibiting behaviors aligned with orthorexia?

We love to see our <u>personal training clients</u> thriving and prioritizing their health and wellbeing in whatever ways serve them the best. But for some of our clients, healthy eating can become an obsession; just like anything else, it *can* be taken too far. They may obsess over nutritional practices through constant calorie counting, weighing food, and compulsively reading food labels. Can so-called "healthy" eating be taken too far? Personal trainers should be aware of the signs of *orthorexia* and its unintended consequences.

Orthorexia, coined in the 1990s, is an eating disorder characterized by compulsive habits, eating "pure" or "clean" foods, <u>extreme restriction</u>, hyper-fixation with nutrition, rigidity in daily eating habits, and/or cutting out entire food groups in the name of "eating healthy". As professionals, we need to remain attuned with our clients' habits, and be able to tell the difference between a commitment to healthy eating and potentially dangerous health-behavior patterns.

Comparison Time

Healthy Habit	Compulsive Practices
Thoughtful meal planning, but allowing room for flexibility and change	Rigid meal planning with no room for flexibility or nuance
Selecting mostly unprocessed food options when possible and taking a food-first approach	<i>Obsessively</i> selecting <i>only</i> products that fit the client's definition of "clean" or "safe"
Demonstrating an appreciation and respect for all macronutrients	Strict elimination of a particular food group due to a perceived, (non-research supported) benefit

Client can thoughtfully troubleshoot when confronted with challenges or a scheduling conflict that requires a shift in eating practices	Client experiences emotional turbulence if any obstacle or schedule challenge does not allow for them to stick to their strict schedule of eating
Client does not appear to be experiencing disturbances in their overall health due to eating practices	Client appears to be experiencing a decline in performance, digestive disorders, anemia, significant weight loss/muscle mass reduction
Mindfully observing caloric intake and exercise	Religiously tracking every food and beverage item and/or obsessively calculating macronutrient ranges.
Eating foods in balance and enjoying all foods	Strictly sticking to a specific macronutrient or caloric window and avoiding any foods the client deems "bad" or "unclean".
Continuing to enjoy social gatherings	May avoid social gatherings as the food choices will likely not align with the client's perceived needs and preferences.
Client does not generally experience food guilt or shame related to a food choice or set of choices	Client may feel extreme guilt or share or stress after eating any food classified as "unhealthy" in their mind
Client can modify food choices when preferred options are not readily available Does not think about food 24-7	Client experiences extreme anxiety when preferred options are not available Food is a dominating thought in the client's mind

Health Consequences of Orthorexia

When someone is dealing with orthorexia, they typically experience malnutrition (from cutting out a food group or severely limiting intake), calorie deficits and weight loss, anxiety, and social isolation. Each of those can lead to further negative outcomes.

Orthorexia often starts out as a well-intended desire to just eat better, improve nutrient intake, and balance meals. We know part of the "formula" for living a healthy life is being mindful of nutritional practices but doing so in balance and not at the risk of sacrificing joy or one's sanity.

This obsessive focus on food requires intervention that is outside our <u>scope of practice</u> to address. As a health and exercise professional, if you suspect a client may be struggling with this, lean on professionals in your referral network to provide additional support for that client. Most often this will be a primary care provider and mental health professional.

It's important to talk with your clients about nutrition and not just as an overarching concept, but the practices they engage in. We will likely be their first line of defense should their well-intended efforts land somewhere else and they spiral into an obsessive pattern. Be aware. Stay aware.

How Introverts Can Be Successful Personal Trainers

If you're considering a career as a <u>personal trainer</u> but are worried your introversion might interfere with your success, the following will hopefully assuage your fears and increase your confidence moving forward as you pursue your path as a fitness professional. Read on to find out how introverts can embrace their natural inclinations and personality, even in a field working with many people a day.

What Introverts Are and Are Not

Being an introvert isn't some disease or weakness. The term *introvert* doesn't necessarily even mean shy.

It means being around a lot of people drains your energy and in order to recharge, that person needs to have some solitude to recharge. It's really not about how quiet or loud or even outgoing a person is. Conversely, extroverts are fueled by others' energy and love to be around people. They usually get restless if they have too much alone time.

Introverts can be sociable and enjoy the company of others, but perhaps prefer smaller crowds or for shorter periods of time; They tend to be content spending time alone. If are someone who gets tired after being around large groups and craves solitude, you likely introverted.

Like many constructs that appear to possess duality, there exists a continuum between introverts and extroverts; you may be 85% introverted and yet still have times when you can handle the energy of others more so than someone who is more like 95%. Introverts and extroverts have overlapping qualities; the key difference is where their energy comes from.

If you're an extrovert, this blog may help you understand why some people really need downtime after being around large groups of people for a large amount of time. It doesn't necessarily mean they need therapy or have anxiety disorders. They just need some solitude to recharge! Meanwhile if you are an introvert, don't be judging extroverts as loud, outgoing gregarious, social party animals!

I wish I'd known this a long time ago. I tried living with roommates and didn't realize why I just wanted to disappear for hours at a time or needed quiet. Also, I ran cross country in high school and after long races, I just wanted to be alone. Everyone else wanted to celebrate together as a team and would ask where's Shay? Over there, in a corner. Over years of being an athlete, competing in various sports, and being a fit pro, I've been roasted for disappearing from the team. But, I always say, if you're gonna dish it out, you better be able to take it, so I'd just find something to roast my teammates about, goodheartedly of course.

Fast forward year's later and now there's this abundance of data on introverts and details courtesy of Susan Cain's book, Quiet: The Power of Introverts in a World That Can't Stop Talking. If you're interested in taking a deep dive into the world of introverts, I'd highly recommend this book. Or, if you're interested in learning about your personality type, look into the Myers-Briggs Type Inventory (MBTI).

Ways Personal Trainers Can Handle Being Introverts

If you believe you're an introvert, the following tools and techniques can aid in being successful as a fitness professional working with people:

1) Accept yourself as you are

Learn to embrace your introversion. It's a personality trait that likely will not change. You don't need to overcome it you need to honor your own needs and never beat yourself up for not being like your extroverted friends.

2) Take the space you need

If time and space are what you need find a way to ask for or take them so the influx of external energy doesn't affect how you train your clients or impact a team. Schedule time between sessions rather than stacking back-to-back. This may make for a longer day, but that's likely less exhausting for someone like you than training five people in a row without respite. (Building in a buffer before and after your shift is actually a good practice whether you are an extrovert or an introvert.)

3) Learn to leverage your strengths.

Typically, introverts are great listeners, planners, and strategists. This can be advantageous when you create your client's training programs. If you sign a client for a long-term package, you can go to town with periodization and other strategies to maximize that client's goals.

4) Partner with an extrovert! If you know there's someone at your facility or in your community who is extroverted and displays their assets as such, see how you can partner together and help each other succeed. See #3 above; extroverts may have more showmanship, but planners they are not! Work together and create your own tour de force.

5) Train your tribe on your turf.

Birds of a feather flock together: Connect with clients who are introverts and train them! As fit pros, we attract the light that we shine. If you are an introverted leader, chances are, you will attract introverted clients. You can make that one of your niches or selling points.

Alternatively, use your knowledge of whether a client is an <u>introvert or extrovert</u> and tailor their sessions accordingly.
Since introverts operate optimally in familiar territory, consider having your own studio space however small rather than working in large gym environments that are constantly in flux.

6) Practice.

Practice training family members, friends, and other personal trainers. Join organizations such as <u>Toastmasters</u> or volunteer to speak at club sports (high school, middle school, community college, etc). You can also offer to give workshops at local businesses. In this way, you can practice your craft and become a subject matter expert while also practicing speaking in front of groups.

If you work for a corporate facility that provides community outreach and marketing, volunteer to go to events and work the booths. You can also talk to people in marketing and ask to shadow them for a portion of your workday.

By doing this, you can improve your skills on:

- Speaking in front of large groups.
- Get used to working with a team.
- Increase your confidence in teaching exercise mechanics

How Introverts Can Manage Their Personal Training Business

If you're working at a large gym or any sort of open fitness floor:

Arrive early

If you work at a large facility or an open fitness floor model, chances are there will be other fit pros using the equipment and floor at the same time as you are. If you get there early, you can set up in the areas you are most comfortable in. Alternatively, if you want a challenge, then you can choose areas that you aren't comfortable in and practice getting comfortable there before your day starts and your clients come in. Prepare/create efficient systems.

If you have an efficient system on how to discuss packages with clients, work with the business closing/marketing team. Plan how you move clients through their sessions, so it takes less repetitive thinking. While you don't want to become a robot, having an efficient system creates a streamlined process so you can be in action and have the head space to train clients rather than being distracted.

Find the quiet corners to recharge.

No matter what kind of facility you're in, you can usually find a quiet corner to recharge. Even taking some quiet time when racking weights and setting up the next exercise for clients can be helpful.

Consider your business model:

1) Balance in-person training with Internet-based fitness business, Fitness vlog/blogging, becoming a <u>Social Media Influencer</u>, etc.

2) Scale your business: This doesn't exactly always mean to obtain a larger facility or bring on other fit pro's or staff. It could mean *add more*.

Mindset and Mindbody Solutions:

These tips can be helpful for all fit pro's but research shows that introverts tend to need more:

1) Create a breathing or <u>meditation</u> practice.

If you have a practice you can do quickly and on the spot such as just counting your breaths or pausing to take one deep breath, it can help you stay focused in the moment. Alternatively, you can create a daily 5-10 minute practice that helps you stay focused all day with your clients.

2) Use <u>affirmations</u> and other <u>Psychological Skills Techniques</u>.

These are mindset-based techniques that will help you gain confidence.

3) Surround yourself with supportive people.

It makes no sense to spend time off with people who aren't supportive. You support client goals all day long, so it only makes sense the people in your network do the same.

4) Check out really successful introverts and see how they did and use these as reminders that you can be successful.

The following is a list of successful introverted athletes and a book they've written:

Kobe Bryant The Mamba Mentality: How I Play

Michael Jordan: I Can't Accept Not Trying

Tiger Woods: *Tiger Woods*

Larry Bird: Drive

Reggie Miller: I Love Being the Enemy

Take some of these steps, but don't let introversion hold you back if you have the goal to be a successful personal trainer. You can help and inspire other introverted fit pros and clients. You can pair with an extrovert and both of you can learn from each other's styles and strengths. Ultimately, be creative, be you! Introversion isn't something to overcome or change. It's something to recognize, honr, and leverage.

Blood Pressure and Personal Training Clients: Why We Should Measure It and How

As a certified personal trainer, you may be expected to take blood pressure readings of new clients during an initial assessment. If you have a private studio or work as an independent contractor and you haven't been taking blood pressure readings with new clients, you may want to strongly consider including this measurement in your physical evaluations. The following article will walk you through what blood pressure is, how to properly measure it, and how to explain results to your clients.

What is Blood Pressure?

Blood Pressure (BP) is usually expressed as one number over another. The top number is the systolic pressure and measures the systole phase of the heartbeat. The systole is when the heart muscle contracts and pumps blood from its chambers into the arteries; the systolic pressure refers to the amount of pressure in the human body's arteries when the heart contracts. It is the maximum pressure exerted upon the walls of the blood vessels in the body.

The bottom number is the diastolic pressure and measures the diastole part of the heartbeat. The diastole is the phase of the heartbeat when the heart muscle relaxes and allows its chambers to fill with blood; the diastolic pressure indicates the pressure in the arteries between heartbeats. Since the heart is exerting less force on the fluids against arterial walls, the diastolic value is lower than the systolic value.

Simply put, the systolic pressure is the pressure when the human body's heart pushes blood out, while the diastolic pressure is the pressure when the heart rests between beats.

Both the systolic and diastolic pressures are measured in millimeters of mercury (mm HG). This is because mercury is much denser than water or blood. Since mercury is the denser substance, even a case of very high blood pressure will not rise it more than approximately one foot. According to the American Heart Association (AHA), the gold standard for healthy blood pressure in adults is 120/80, but <u>hypotension (low blood pressure)</u> would be anything that falls under 90/60.

What is hypertension?

Hypertension is the term for high blood pressure (HBP). Elevated blood pressure is a systolic number of 120-129 and a diastolic number of less than 80. This is sometimes referred to as prehypertension.

Stage 1 hypertension is a systolic number of 130-139 or a diastolic number of 80-90.

Stage 2 hypertension is a systolic number of 140 or higher or a diastolic number of 90 or higher.

Finally, a hypertensive crisis is higher than 180 systolic number and/or a diastolic higher than 120 reading.

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)	and/or	DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 - 129	and	LESS THAN 80
HIGH BLOOD PRESSURE	130 - 139	Or	80 - 89
(HYPERTENSION) STAGE 1			
HIGH BLOOD PRESSURE	140 OR HIGHER	Or	90 OR HIGHER

BLOOD PRESSURE CATEGORY SYSTOLIC mm Hg (lower number) and/or DIASTOLIC mm Hg (lower number)

(HYPERTENSION) STAGE 2

HYPERTENSIVE CRISIS

(consult your doctor immediately)

HIGHER THAN 180 and/or

HIGHER THAN 120

The human body's blood pressure changes throughout the day based on activity levels. For example, blood pressure tends to be lower at night while the body is at rest and sleeping. This is because activity level is lower and the heart does not need to work as hard as the body is slowing down.

Conversely, blood pressure tends to rise in stressful situations and during exercise because the heart needs to work harder to supply the body with the blood it needs during movement.

While blood pressure fluctuates during the day, if it measures consistently above normal, this may substantiate a hypertension diagnosis or high blood pressure (HBP).*

*It is important to see a credentialed medical provider in order to be diagnosed with HBP and to receive proper treatment for it.

Why is hypertension risky for health?

HBP exerts shear stress on the human body's blood vessels. This can damage the blood vessel walls leading to formation of arterial plaques over time, thereby narrowing the blood vessels and restricting blood flow.

When cholesterol/arterial plaques rupture, the formation of blood clots occurs. Blood clots can block blood flow and if this happens with blood flow to the brain, a stroke can occur.

If this happens where blood flow is blocked to the heart, a heart attack (myocardial infarction) can occur. Therefore, hypertension is linked to an increased risk for stroke and heart attack.

What causes high blood pressure?

Hypertension typically develops over time due to an unhealthy lifestyle. For example, a poor diet and/or not getting enough regular physical activity is associated with hypertension.

There is also a genetic component that should be acknowledged. If HBP runs in your client's family, then the likelihood of your client having hypertension would be higher than if it didn't. This is why it is important to gather a health history at the onset of training; you can ask the client what the family's lifestyle has been historically.

If the family has had a healthy lifestyle and the client still exhibits hypertension, you may choose to refer/defer to a medical provider prior to starting a training protocol with the client. On the other hand, if the family involves a sedentary lifestyle and poor nutrition choices, these habits are likely contributing to a family history of hypertension. In this case, adjusting the client's lifestyle could and should lower blood pressure.

Health conditions such as diabetes and obesity increase the risk for developing high blood pressure. If the human body is carrying excess weight and fatty tissue, the heart needs to work harder to circulate blood, thereby increasing blood pressure.

Other lifestyle risk factors for hypertension include and are not limited to:

Stress

If your client has a high-stress work environment or is facing stressful life situations, this may contribute to elevated BP due to a constant fight-or-flight stress response. Typically, once a stressful experience is over, blood pressure should lower back to a normal level.

Even though exercise is healthy for the circulatory system, it would raise BP during exercise. However, the BP should go back to 'standard' once the body recovers from the session. Similarly, BP may rise if the client has an important evaluation or presentation to do and then returns to 'standard' once it's over. However, if the stress is prolonged and the body is not able to recover, BP can remain elevated.

Tobacco Use

Nicotine is a stimulant, so it raises BP. Also, breathing in carbon monoxide, a byproduct from smoking tobacco, lowers the amount of oxygen carried by the blood. This forces the heart to work harder. Finally, smoking tends to damage blood vessels and the heart.

Excessive Alcohol Consumption

Alcohol consumption increases the hormone renin in the blood. This causes the blood vessels in the human body to constrict, making them become smaller in diameter. Another function of renin is that it lowers the amount of fluid eliminated in urine creating a higher level of fluid in the body and smaller blood vessels (vasoconstriction) thereby increasing blood pressure.

Physical Inactivity

If the body is not moving, the heart would need to work harder within the circulatory system to function. It needs to pump blood to the body but the circulatory system also needs to return the blood back to the heart, like from the feet and legs to the upper body. This is why activities such as cycling and walking can help. Too much inactivity could lead to difficulty getting the blood from the extremities back to the heart thereby making it work harder.

Poor Nutritional Choices

A client who eats a diet rich in sodium and low in potassium creates an imbalance in the body's sodium-potassium pump. Sodium is a key element in table salt and increases blood pressure. Processed foods and food from restaurants are prime culprits for high sodium content. and these foods tend have low potassium values. Instead of eating fast foods and processed foods your clients can eat foods rich in potassium such as bananas, beans, yogurt, and potatoes.

They can also focus on eating whole foods and foods on the <u>DASH diet</u>.

Demographic information on Hypertension

Age: BP tends to rise with age Sex: Women and men are both as likely to get hypertension Ethnicity: Black people tend to develop high blood pressure more often and earlier in life than Caucasian people, Hispanic, Asian, American Indians, Pacific Islanders, or Alaska Natives.

What is Phase 1 Hypertension versus Phase 2 Hypertension

If your client has a blood pressure falling in phase 1 hypertension, then according to AHA, they have less than 10% calculated 10-year risk of getting atherosclerotic cardiovascular disease (ASCVD) if they have not been able to reach a BP goal of less than 130/80 Hg after 6 months of lifestyle changes.

Phase 2 hypertension would require a combination of healthy lifestyle changes (such as exercise and nutrition) and BP-lowering medication. The medication would be prescribed by a physician or other qualifying medical practitioner and need to be qualified as two first-line agents of different classes). This is the recommended care plan for clients with stage 2 hypertension. As personal trainers, it's important to know that a client with a reading of 150/100 shouldn't be trained without a signed medical consent form.

How is blood pressure measured?

As certified personal trainers we can offer a BP screening during the initial Medical/Health Risk Assessment and as part of our information collecting from General Client Information and Par-Q when we first start working with a client and develop a training protocol for them. Offering a BP screening will help you create a training protocol but even before that, you will know if your client is 'at-risk,' needs a referral, or a release form. It will also impact your training protocol depending on the BP outcomes.

You can take BP manually, or with a manual cuff and stethoscope, or with an automatic BP device.

You should take a client's BP both at rest and following an activity.

According to the NFPT Manual, it is recommended to have the client perform an aerobic activity such as ergometer cycling. Take the client's BP at three separate stages. In an ideal situation, the systolic number should rise slightly and the diastolic number shouldn't change too much.

If something alternative occurs, it is recommended to have the client slow down on the cycle and come to a stop. The fit pro should then recommend the client see a medical provider for a medically supervised "maximal" pre-exercise test.

Managing/Addressing/Treating Hypertension

Fortunately, hypertension can be addressed and managed through lifestyle changes most of the time. Even in cases where medication is required, by having an active and healthy lifestyle, you may be able to help your client decrease their medication or help them stay on a minimal maintenance dose.

Movement: Exercise will help the circulatory system remain active and the movement will help the circulatory system return blood back to the heart from the body's extremities (the opposite of sedentary lifestyle).

Proper Nutrition: By lowering sodium intake and having adequate <u>potassium</u>, the human body's sodium-potassium pump can work optimally thereby balancing these two electrolytes in a healthy manner to help regulate blood pressure. Eating <u>healthy fats</u> helps to prevent damage to the heart and blood vessels thereby allowing them to function well.

If your client maintains a healthy lifestyle, is active, makes good nutritional choices, then the likelihood is they have a healthy BMI. By not carrying extra fatty tissue, the chances of fatty plaque building up in the vessels are less likely coupled with the heart not needing to work extra at rest.

Mindfulness/Managing Stress: By managing stress levels and having recovery days, the circulatory system can recover. Also having recovery periods within training sessions allows BP to be managed.

Medication: As stated, in some cases, medication is needed, especially if there is a genetic component or if the client is in hypertension II. Even still, working with a fit pro and maintaining a healthy lifestyle can assist by keeping the dose to a minimal level to still be effective. Coaching your personal training clients on healthy lifestyle is part and parcel of your scope. While high blood pressure is a medical condition that requires the guidance of trained medical professionals, you are on the front lines working with the general population on a regular basis and have much influence on the lifestyle choices your clients make. Be sure to broach topics that can have an impact on their overall health and longevity, among which blood pressure and its impact on life, is certainly relevant.

Proper Warm-up and Movement Prep: The Warm-Up IS the Workout for Personal Training Clients

For many of our personal training clients, the one area of training that should not be overlooked or undervalued is the warm-up. When everyone feels pressed for time, the warm-up is easy to dismiss or, worse, skipped altogether–especially if a client is running late. I think we've all been there and it's tempting to appease the client by scrapping the warmup and just "getting after it", considering there is only so much time in a workout session and there may be a lot to cover. As tempting as it is to skip the warm-up or haphazardly run through it quickly, you are running the risk of injury to save time; this is not the answer.

Instead, make the warm-up "Act 1" of the workout and simply the opening credits. As <u>certified personal trainers</u>, we must exercise due diligence on our clients' behalf.

First, do no harm. Keep your clients' safety ahead of perceived progress and intensity. A client who gets injured while working with you may have a hard time trusting your process.

Second, help clients achieve greater results, become stronger, more injury-resistant, athletic, etc. The warm-up is where it starts and is frankly necessary to prepare the body for exercise. Without proper blood flow into our muscles and dynamic, preparatory movements, injuries are more likely to occur.

Types of Warm-ups

The most common type of warm-up (which I used to believe was effective and enough) is to have clients get their heart rate up on some piece of cardio equipment like the treadmill or elliptical for 5 minutes. Though there is benefit to increasing tissue temperature and heart rate, these conditions are not adequate on their own, failing to prepare the body for the demands of the strength portion of the workout. Another common approach to warming up would be to just start a workout with lighter sets of a given exercise (like bodybuilders have done for decades) and then build up to working (heavier) sets. This also offers some benefit, but is still missing the key components of a solid, appropriate warm-up for your personal training clients.

The ideal warm-up would involve approaching it the same as you would your workout programming. *What is the goal?* What does this person need more of in order to achieve better results? The universal goal is to improve all-around movement and prepare the body for more intense exercise.

Here's what takes place with this type of warm-up:

- Increase tissue temperature (which enhances the muscular system)
- Prepare the central nervous system (CNS)
- "Prime" and improve mobility
- Rehearse and improve overall movement patterns
- Activate certain muscles to improve stability

The Necessary Components of an Ideal Warm-Up

Let's break down what each of these is and why they are important to have in the warm-up.

1) Increase tissue temperature (which enhances the muscular system)

This is the most common shared characteristic of pretty much any warm-up; it's simply getting your heart rate up and the body warmer. Anytime you do this your muscles are increasing tissue extensibility which will allow for greater contraction and dynamic movements.

2) Prepare the central nervous system (CNS)

The CNS gets to decide what muscles fire, how strong and fast they are, how far they will elongate, what motor patterns and postures you adopt, and whether you will experience pain – in short, everything that matters.

3) "Prime" and improve mobility

One of the main reasons the warm-up is so important is to <u>improve mobility</u> and overall movement. Most people need more <u>ankle</u>, <u>hip</u>, and <u>thoracic</u> (upper back) mobility. It is imperative to get synovial fluid into the joints, lubricating them, and thus allowing for better mobility throughout a workout.

4) Rehearse and improve overall movement patterns

Depending on which exercises are in the strength portion of the workout, performing similar movements in the warmup is beneficial. If the workout calls for <u>deadlifts</u>, for example, doing <u>hip hinges</u> and lighter variations of deadlifts beforehand will get the body ready for working sets of deadlifts. Simply jumping right into heavy sets of deadlifts would not be prudent.

5) Activate muscles to improve stability

While some may say these exercises look more like rehab than training, including exercises such as glute bridges, mini band lateral steps, and band pull-aparts promote <u>muscle</u> <u>activation</u>, waking up muscles that are often weak links or perhaps not trained at all. Remember that most people sit too much, develop rounded shoulders and weak core musculature; muscles get "sleepy" –this is why we want to "wake" them up.

Sample Warm-Up

While the warm-up is certainly individualized and should be tailored to meet the needs of where each person is at, here is a sample of what covers most bases for clients that include

Foam Roll (soft tissue work)

Foam-rolling or self-myofascial release (SMR) not only brings blood flow to the area, but helps to release tension, and potentially reduce delayed onset muscle soreness (DOMS). Prime areas to focus on include calves, hamstrings, quads, glutes, upper back, and inner thighs. However, a <u>proper assessment</u> of your client should indicate if additional areas of concern are worth prioritizing.

Dynamic Stretching

Static stretching will likely reduce power output and is only ever necessary for an overactive or excessively short muscle. Instead, employ dynamic stretching in which the client is moved through a full range of motion.

Some movements to include:

Inchworms 90/90 for hips Walking lunges Prisoner squats Shoulder circles

Or the world's greatest warm-up (and variations of such). Remember, you are responsible for tailoring specifics for the client you are working with:

Muscle Activation

This might include corrective exercises and movement from the ground-up and a gradual buildup of movement intensity:

<u>5 Each:</u> leg lowering single leg glute bridges hip hinges

10 <u>shoulder raises</u>10 mini band lateral steps15 band pull-aparts

Heart Rate Elevators and Activators:

stairs down and back x 230 seal jacks (clap in front, rather than overhead)Marching/Toy Soldier

Take-Home

If you are pressed for time in the workout, do not devalue the warm-up, instead tweak the workout portion to meet your clients' needs. World-renowned strength coach, Dan John says the warm-up *is* your workout and I tend to agree. The warmup is important if not more important because injury reduction and better results for clients will keep them paying customers for the long haul. Hopefully, after reading this article, you will look at warming up differently and start to incorporate the different aspects instead of just warming up for 5 minutes on the elliptical. Remember the warm-up is the start of the workout.

The Importance of Pre-Screening for Personal Trainers: A Comprehensive Guide

As a <u>personal trainer</u>, your primary objective is to ensure your clients achieve their fitness goals safely and effectively. An essential step in this process is pre-screening, which helps you gather crucial information about a client's health and fitness background before starting any exercise program. In this article, we will discuss why pre-screening is vital, examine some industry-standard pre-screening forms, explore situations where a client should obtain a referral before commencing training, and identify additional assessments that can complement the information gathered from pre-screening forms.

Why is pre-screening important?

Pre-screening serves several critical purposes, including:

Identifying potential health risks: Pre-screening helps you detect any underlying health conditions or risk factors that may impact a client's ability to exercise safely. This information enables you to tailor exercise programs to accommodate their specific needs and limitations.

Establishing a baseline: Pre-screening allows you to record a client's initial health and fitness status. This baseline can be valuable for tracking progress, setting realistic goals, and adjusting the training program as needed.

Ensuring legal protection: Proper pre-screening helps protect you and your business from potential liability issues. If a client experiences an injury or health complication during training, well-documented pre-screening records can demonstrate that you took the necessary precautions to assess their readiness for exercise.

Examples of industry-standard pre-screening forms

There are several widely-used pre-screening forms that personal trainers can utilize to assess their clients' health status:

Physical Activity Readiness Questionnaire (PAR-Q): The PAR-Q is a simple, selfadministered questionnaire that asks clients about their medical history and any potential risk factors for exercise. It is a popular and accessible tool for identifying individuals who may require further medical evaluation before engaging in physical activity.

American College of Sports Medicine (ACSM) Preparticipation Screening Questionnaire: This comprehensive form, developed by ACSM, evaluates a client's medical history, current health status, and exercise history. It can help you identify clients at low, moderate, or high risk for exercise-related complications.

Health History Questionnaire (HHQ): The HHQ is another widely-used form that delves into a client's personal and family medical history, lifestyle habits, and exercise experience. It provides a thorough overview of potential health risks and contraindications for exercise.

When a client should get a referral before commencing training

A client may need to obtain a referral from their healthcare provider in the following scenarios:

The pre-screening form reveals a history of heart disease, diabetes, high blood pressure, or other significant medical conditions.

The client is pregnant or has recently given birth.

The client is over 65 years of age and has no prior exercise experience.

The client experiences pain, discomfort, or any concerning symptoms during the prescreening assessment or initial training sessions.

Additional assessments beyond pre-screening forms

While pre-screening forms provide valuable insights into a client's health status, it's important to incorporate additional assessments to obtain a comprehensive understanding of their fitness level. Some key assessments include:

Heart rate: Measure your client's resting heart rate to gauge their cardiovascular fitness and monitor progress over time.

Blood pressure: <u>Assess your client's blood pressure</u> to identify potential hypertension or other health concerns.

Height and weight: Record your client's height and weight to calculate their Body Mass Index (BMI), which can help determine a healthy weight range.

Waist circumference: <u>Measure waist circumferenc</u>e as an indicator of visceral fat, which can be a risk factor for various health issues.

Body composition: If possible, use a <u>body composition assessment method</u>, such as skinfold measurements or bioelectrical impedance analysis, to estimate your client's body fat percentage. This information can help you tailor their exercise program and provide a more accurate measure of progress than BMI alone.

<u>Functional movement screening (FMS)</u>: Conduct a functional movement assessment and/or an <u>overhead squat assessment</u> to identify any muscle imbalances or movement restrictions that could impact your client's performance and increase their risk of injury. By addressing these issues early on, you can create a safer and more effective training program.

Fitness tests: Perform baseline fitness tests, such as the push-up test, plank test, or a timed walk or run, to <u>assess your client's current fitness leve</u>l and track improvements over time.

Summary

In conclusion, pre-screening is a vital aspect of personal training that helps you identify potential health risks, establish a baseline for tracking progress, and protect yourself legally. By utilizing industry-standard pre-screening forms, obtaining referrals when necessary, and conducting comprehensive assessments, you can create safe, effective, and personalized exercise programs for your clients. As a personal trainer, taking the time to conduct thorough pre-screening and assessment processes is not only a professional responsibility but a key component in ensuring your clients' success on their fitness journey.

What Challenging Clients Teach You as a Personal Trainer

As personal trainers, we would love it if all clients we work with were "easy" in terms of communication, adherence, motivation, and commitment. However, we are serving people, not robots. Turns out, this is a good thing. We learn more from climbing difficult mountains than following a smooth and clear path. For this article, I interviewed three other <u>certified</u> <u>personal trainers</u> to get their insights as to what they learned when working with <u>challenging clients</u>.

Lessons from Fitness Industry Pros Alex D.

Alex has been a certified personal trainer for three years and owns and operates his own remote personal training business. Alex shared that he has had two difficult/challenging clients in the last two years that have forced him to rethink his approach.

"Initially, I was just frustrated because I interpreted their lack of adherence as laziness. I was wrong. What I realized is that I had not built the solid foundation of rapport and trust that was necessary. I focused too much on the "science" part and not enough on the "people" part.

After speaking to a friend, also a personal trainer, she asked me how much I really knew about these clients and if I had spent time "digging" into the 'why' of their intentions. I realized the answer to that was no. I reconnected with these two clients with more intention and a more mature perspective. I spent time investing in them while they were investing in my services. We've been good ever since."

The Lesson: The work we do is as much about the people we serve as the science of our craft.

Britany K.

Brittney, like Alex, owns her own face-to-face personal training and nutrition coaching business. She also instructs group fitness classes. When she first began, she was so focused

on "creating the right program" that she overlooked an important factor. *Much like, Alex, she was neglecting the human factor.*

"After working with my fifth client, who was an unbelievable challenge, I realized something critical. To be a great personal trainer, you must also be a great coach. I had not considered the coaching aspect and the skills that accompany that role. For example, <u>motivational</u> <u>interviewing</u> was a skill I had to build. I also had to shift from being a drill sergeant to respecting that the client knows what is best for them and what is reasonable for them to do. Once I embraced this and focused on balancing the development of a safe and effective exercise program with the guiding voice of a coach, my clients' success elevated to a new level."

The Lesson: Invest in developing a coaching style.

Gavin G.

Of the three professionals I spoke with, Gavin was the most experienced with a 12-year career behind him. He shared three tips for working with challenging clients; tips he learned the hard way.

"As a new personal trainer, I wanted to do it all and do it all well. I didn't realize until I felt the burnout that doing it all perfectly was not possible. And, when I would work with a difficult client, I found myself arguing with them about why they needed to do this or do that...I overlooked the fact that I was just encouraging them to dig their heels in and remain where they were. I didn't respect how hard changing a pattern is. I was frustrated because my clients were frustrated. They were frustrated because I didn't understand the challenge of change. I never struggled with it. I was always active, healthy, and fit. This is not the case for most of our clients who come to us. For me, I realized I needed to do three things.

First, develop my <u>emotional IQ</u>. I wasn't responding to clients with the empathy they needed. Second, I needed to affirm to clients that change is hard and it's ok to experience frustration – I normalized that. Finally, I needed to ask my clients how they wanted to be held accountable. There is more than one way. In doing this, my clients felt the kindness and compassion they needed to feel safe and secure with me and my style. We worked together to plan for hiccups in the road and we openly discussed the challenges they faced. Those clients are still with me today."

The Lesson: Respect the challenge of change even if you've never had to struggle.

No two clients will ever be the same, and all will <u>challenge</u> you in unique and unfamiliar ways. Just as we would not want our clients to skip the struggle to change because the change is worth it – we shouldn't skip or wish away the struggle to improve our skills. Those clients who challenge us, change us for the better and provide us with additional skills we would not have learned from a textbook or study program. It's the life experience that helps us sharpen our edge in this industry.

Osteoporosis and Exercise: What Personal Trainers Need to Know

Osteoporosis is a disease that affects millions of people globally and is characterized by weak bones and a high risk of fractures. As a <u>certified personal trainer</u>, it's important to understand the impact of this bone disease and how to best support clients who may be affected. In this blog, we will explore everything personal trainers need to know about osteoporosis.

Definition and Prevalence of Osteoporosis

Osteoporosis is a condition in which the bones become porous, brittle, and more likely to fracture. The word osteoporosis literally means "porous bones."

Bonnick¹ further defines it as "a systemic skeletal disease characterized by low bone mass and micro-architectural deterioration of bone tissue with a consequent increase in bone frailty and susceptibility to fracture." These types of fractures are called *fragility fractures* and are most common in the hip and the spine. The fractures are usually due to bone being subjected to a forceful blow, as in a fall.

This newer definition has evolved due to the technology in bone densitometry that is able to detect changes in the amount of bone as small as 1.5 percent. A woman is at risk for fracture when she has lost approximately 20 percent of her bone mass. The more bone lost, the greater the risk of fracture.

A 50-year-old Caucasian woman today has a 54 percent chance of having an osteoporosisrelated fracture in her lifetime.

The condition is most commonly diagnosed in postmenopausal women, but it can also affect men and women of all ages. According to the <u>Bone Health and Osteoporosis</u> <u>Foundation</u>, approximately 10 million Americans have osteoporosis *while another 44 million have low bone mass;* it is estimated that 80% of those with the disease are women.

Fixed risks for Osteoporosis

Although these risks are fixed and not much we can do as trainers to help there are precautions that can be taken to reduce bone mineral loss.

- Age Risk becomes greater with age
- Gender Women are at higher risk
- Family History
- Previous Fractures
- Ethnicity Asian and Caucasians are at higher risk
- Menopause
- Rheumatoid Arthritis

Exercise and Osteoporosis

Strength training is particularly effective in preventing osteoporosis and building bone density. This type of exercise stimulates bone growth by placing stress on the bones, which triggers the body to respond by building more bone tissue. Resistance exercises that use resistance bands, free weights, or machines can help improve strength and balance, which can reduce the risk of falls and fractures.

Aerobic exercise is also an important component of a prevention program. This type of exercise helps maintain good cardiovascular health and improves circulation, which helps deliver vital nutrients to the bones. It can also help improve balance, coordination, and flexibility, reducing the risk of falls and fractures.

When working with osteoporitic clients, personal trainers should be cautious of exercises that put too much stress on the bones. Instead, trainers should encourage <u>low-impact</u> <u>exercises</u>, such as yoga, tai chi, and swimming, which can help build and maintain strength without putting excessive stress on the bones.

Osteoporosis Exercise Program Goals for Prevention

The following are goals for osteoporosis prevention:

- Maintain bone mass
- Prevent bone loss due to aging
- Maintain joint mobility
- Improve coordination
- Improve posture
- Increase muscle strength and endurance
- Maintain correct postural alignment
- Attain cardiorespiratory fitness
- Reduce risk of falling

Exercise may also have positive benefits, however, certain contraindications are involved

while training clients with diagnosed osteoporosis:

- Omit exercises that flex the spine (bending forward at the waist) for clients with spinal bone degeneration. Sinaki² found that trunk flexion exercises increased the rate of spinal fracture by 89 percent, compared with a 16 percent fracture rate in the back extension group. This means omit crunches, abdominal curls, and rowing machines.
- Avoid bringing the knee to the chest, as this may compromise the spine.
- Avoid activities or movements that place clients at risk for falling. This includes exercising on slick floors, step aerobics, quick directional changes.
- Avoid high-impact, jarring, jumping, or jogging activities. This can increase the risk of spinal fracture, as weakened vertebrae cannot tolerate this force.
- Avoid pulling the neck forward if hands are placed behind the head.

Some women have been advised not to exercise after an osteoporotic fracture. However, no exercise only perpetuates osteoporosis and will result in an overall decline in health. The primary objective is to exercise safely.

Nutrition

Proper nutrition is an essential component in maintaining strong bones. A diet rich in <u>calcium and vitamin D</u> is crucial for optimal bone health and can help slow down the progression of osteoporosis.

Calcium is a key mineral for building and maintaining strong bones, and it's essential for many functions in the body. The recommended daily intake of calcium for adults is 1000-1300 mg per day, and it can be obtained through dairy products such as milk, cheese, and yogurt, as well as leafy greens such as kale and spinach, and almonds. However, note that the proper ratio of calcium and magnesium is necessary for the minerals to work optimally in the body; a <u>2 to 1 ratio of calcium to magnesium</u> is recommended.

Vitamin D is equally important for bone health as it helps the body absorb calcium. The recommended daily intake of vitamin D for adults is 600-800 IU per day. Vitamin D can be obtained from sunlight, fatty fish such as salmon and mackerel, and fortified foods such as milk, orange juice, and cereal. It's important to note that adequate exposure to sunlight may not be possible for everyone, particularly during the winter months, making it essential to include vitamin D-rich foods in the diet.

Summary

In conclusion, as a personal trainer, it's important to understand the impact of osteoporosis and how to best support clients who may be affected. Exercise plays a crucial role in preventing and managing bone loss and weight-bearing and resistance exercises are particularly effective for maintaining strong bones. In addition to exercise, a diet rich in calcium and vitamin D is crucial for optimal bone health. When working with clients with osteoporosis, personal trainers should encourage low-impact exercises and be cautious of high-impact activities that put excessive stress on the bones.

Pelvic Floor Training: Men need it, too

<u>Certified Personal Trainers</u> may work with women and men who discreetly share that they can't sleep through the night without an incontinent trip, or trips, to the bathroom and would benefit from pelvic floor training. Granted, voluntary control of bodily functions centered on one's pelvic floor is a delicate subject, one not frequently broached by fitness professionals. Yet, *pelvic floor muscle control* is an important training topic for trainers and adult clients alike.

Note: Beyond incontinence, poor voluntary control of the pelvic floor can contribute to constipation, cold, tingly feet, low back and/or hip pain, and digestive issues. But first...

How rare or common is urinary incontinence (UI) in America?

And what, in anything, can women and men do about it?

Our National Institute of Health¹ and the <u>Illinois Department of Public Health</u>, plus other credible resources provide statistics like these:

- About *half* of all women over age 50 experience either/both episodic or chronic UI symptoms.
 - Note that UI issues are symptoms *not* diseases.
- About one in 8 men in America experience, or will experience UI at some time in their lives.
 - On an average day in America, *about 13 million* adults are incontinent.
 - *Most* non-chronic symptoms of UI can be remediated <u>without</u> surgery by improving fitness and movement.
 - Though encouraging in principle, these moving remediations may take *several* months to achieve success in practice.
 - Root causes of gender-independent UIs may be regional surgery (examples are hysterectomy and prostatectomy), infection, stress, urge, obesity, or bladder overflow. Yes, heavy coughing, obesity, and heavy lifting may also be root causes of UI.

This article stresses that there is *much more* to pelvic floor health for *all* adults than performing proper Kegel exercises to address symptoms.

– You probably know that <u>Kegels</u> are focused muscular contractions and relaxations of "right muscles" that gynecologist Dr. Arnold Kegel championed in the 1940s. His original focus of "right" pelvic floor exercises, or Kegels (pronounced kay-gils) was to address female incontinence in a private, non-surgical way.

We now know that the health of <u>pelvic skeletal muscles</u> extends well beyond female incontinence (UI). We also know, from Dr. Kegel and many others, that focused pelvic region and <u>deep core exercises</u> are very effective for maintaining muscle mass and function.

An overview of key muscles, connective tissue, and bones of the human pelvic region is provided for trainers' awareness.

Then, you will read about Pelvic Floor Muscle Training, or PFMT. Gaining or improving voluntary control of pelvic region muscle groups is either a self-help or supported protocol to help both women and men improve their activities of daily life (ADL). Expanded exercise routines to support bladder, bowel, and sexual wellness are provided.

Credible resources that professional trainers may share with adult clients are offered before a summary of the self-evident fact that men have pelvic floors, too.

Are You Floored?

Synopses of key muscles, connective tissue, and bones of the human pelvic region follow.

Inter-twined and layered pelvic floor muscles can be seen in this physio-pedia image. The viewpoint is upward-looking with female frontal anatomy at the top.



Pelvic diaphragm (superior view)

Shown with permission of physio-pedia.com:



Note: If a prolapse of the female pelvic floor occurs, the exhibited muscles allow internal organs to lapse downward away from the center of the body.

The predominant muscle group of the human pelvic floor is called the Levator Ani, or LA. This funnel-shaped, broad yet thin LA group has striated skeletal muscle fibers. *Hammock-like* LA muscles support and raise the pelvic floor for both genders as they accommodate important pelvic structures.

The LA has three discreet muscles in its groupage:

1. puborectalis

- 2. pubococcygeus
- 3. the iliococcygeus muscle.

As one NIH² report advises, the neuromuscular function of this Pelvic Floor group has both voluntary and involuntary innervations. To reinforce the complexity of the Pelvic Floor³, there are 14 muscles in five layers plus important fascia and neural components that surround and interact with our bladder, gut, and reproductive organs. The LA muscle group is the middle, or third, layer of the Pelvic Floor (PF).

Of those 14 total muscles with long, Latin names, there is one that serves as our ringmaster for pelvic health – the pubococcygeus, or PC muscle. This vital LA muscle is linked between the anterior pubis bone and the posterior coccyx or tailbone. When this PC muscle *voluntarily* contracts, our other voluntary and involuntary muscles of the pelvic floor should respond in good ways.

Aging and many other life factors can *adversely* affect those voluntary "PC" contractions. Self-help or assisted PC exercises, including proper Kegels, done regularly for extended periods, may often improve an adult's bladder, bowel, and reproductive functions. Though there are involuntary sphincters deep in the pelvic floor, you should think of focused, voluntary "training" of the PF muscles as you would other major muscle regions.

Pelvic Floor Muscle Training

With the complexity and inter-relationships of the entire <u>Lumbo-Pelvic-Hip-</u> <u>Complex</u> (LPHC) in mind, there are vital Pelvic Floor Muscle Training (PFMT) protocols that can benefit nearly all adults.

Yes, proper Kegels are included in comprehensive PFMT protocols. As one reminder, mindful breathing is essential.

Yet, other "deep core" muscles of the <u>LPHC</u> can help mitigate UI and other symptoms that impact one's ADLs and quality of life(QoL).

The Psoas and Internal <u>Oblique</u> "corset" muscles are two important muscles of the LPHC to include in a regular PFMT protocol. Exercising the twin Psoas muscles with <u>Dead Bug</u> or Tin Soldier movements from supine positions work the corset-like deep core muscles above and around the Pelvic Floor.

A third deep core muscle, The <u>Transverse Abdominus</u>, or TVA, stabilizes the core, pelvis, and lower back. A Navasana (Boat Pose from Yoga), or Oyster movement can dramatically help proper PF functions.



As gluteal muscles are proximate to the PF, exercises such as <u>Hip Thrusts</u> and Squats enhance PF responsiveness.

Yes, Squat variations – with as much depth exhibited as possible in safe eccentric phases, promote that hamstrings strength to support PF health.

Donkey kick activation of your gluteals from a kneeling (hands-and-knees-and-toes) position is another proactive move to support PFMT.

Another supportive muscle for spinal support, the deep and long <u>multifidus</u>, helps stabilize the pelvic complex in movement.

The multifidus and other spinal/sacral stabilizers should be gently and regularly activated each day. Good posture is a starting point for PF health. One gentle PFMF movement is best done on the floor in a prone position with forehead placed on hands – straight downward:

• The client should subtly lift tailbone upward by rotating the pelvis back slightly. Hold for a second or two, then rotate the pelvis downward, pointing tailbone to the floor and repeat.

Yes, many Yoga asanas, with mindful breathing, are an eminently useful movement for PFMT. This image suggests four additional asanas that both women and men can and should perform to improve their PF wellness. *Note*: The boat pose and hip thruster asanas were mentioned previously in this post.

When properly done, these warrior poses, cat/cow shifts, plus down dogs are very useful for PFMT in women and men.

None of these listed pelvic floor training movements are time-consuming or aggressive. Therefore, even time-crunched adults or those with some remedial needs for personal training should make them habitual.

It is imperative to remind clients that pelvic floor and LPHC muscles benefit, over time, from varied volume, intensity, and tempo in movement characteristics. Slow movements or sustained "holds" favorably work the Type I "slow twitch" components, while quick, repetitive contractions support health of the Type 2 muscle fibers of the pelvic floor. Proper movement in all three body planes is recommended for optimal PFMT. Where can clients find more information about this formerly taboo topic of pelvic health?

Pelvic Floor Health Resources

There are many authoritative references for PF health and PFMT:

As stated, PF health is much more than addressing incontinence. Yet, the <u>National</u> <u>Association for Continence</u> is a fine online resource for broader PFMT practices.

The <u>Memorial Sloan Kettering Cancer Cente</u>r describes the proper protocol for men to do Kegels.

Harvard Health Publishing shares its step-by-step <u>guide</u> for proper PFMT to aid bladder and bowel function.

Pelvic Floor Training Takeaways

Whether the cause of a PF health issue is age, surgery, or another trigger, statistics show that millions of Americans have UI or other PF problems.

"One of the best ways to empower ourselves to have better pelvic floor health is to have a thorough understanding of what the pelvic floor is and its many functions.³

It is fascinating that the many-layered muscles in and around the pelvic floor are quite like the other muscles in our body that we use for exercise. Voluntarily use 'em or they lose their contractive functions.

No single movement or exercise is a "one-stop" protocol to improve the health of the Pelvic Floor, as it is supported by many muscles and tissues. Though remediation can take weeks or months, a majority of clients with PF issues can improve their QoL with exercise and focused movements – PFMT.

It is great counsel to suggest that a client seek a Physician to determine if she or he has a symptom that can be remediated with movement, or a disease that may require pharmaceutical or surgical intervention.

Yes, men have Pelvic Floors, too.

SELF-TEST

- 1. Which of the following creates energy?:
 - a. Increased blood flow
 - b. Release of endorphins
 - c. Deep breathing exercises
 - d. All of these create energy
- 2. Which of the following is an external factor that can raise energy levels?
 - a. Staying indoors to maintain a consistent workout environment
 - b. Using a different kind of workout equipment or approach to the same exercises
 - c. Keeping the environment as noise-free as possible, no music or outside chatter
 - d. Having a venting session before and after a workout
- 3. Lactic acid is a byproduct of:
 - a. Aerobic conditioning
 - b. Anaerobic metabolism
 - c. Endurance training
 - d. Protein metabolism
- 4. When the demand for energy production is faster than our bodies can deliver oxygen, the working muscles generate energy anaerobically, utilizing the process:
 - a. glycolysis
 - b. gluconeogenesis
 - c. metabolism
 - d. protein synthesis
- 5. In the presence of ample oxygen, _____ moves through an aerobic pathway and gets further broken down for additional energy.
 - a. Lactate
 - b. Protein
 - c. Amino acid
 - d. Pyruvate
- 6. Which of the following is a main use of lactate in the body?
 - a. Supports oxygen levels
 - b. Processes protein during protein synthesis
 - c. Acts as source of cellular fuel for function and repair
 - d. Is major contributor to the breakdown of fats
- 7. There is no connection between an uptick in lactate and beneficial brain energy.
 - a. True
 - b. False
- 8. Which statement best describes the physiology of 'the burn':
 - a. The result of anaerobic ATP production and the hydrolysis of that ATP, with the end result of increased proton release in the form of hydrogen ions. An accumulation of hydrogen ions lowers the body's pH, causing acidosis.
 - b. The result of lactic acid production inside of ATP that allows oxygen to bind to hemoglobin in red blood cells. An accumulation of amino acids from glycolysis will impair the release of phosphates inside of contractile filaments, causing contractile inability.
- 9. As a personal trainer, to assist with fall prevention, you should keep a focus on:
 - a. Building lower body strength and balance in older clients
 - b. Encouraging less movement per day as the client ages
 - c. Prescribing the correct mobility devices
 - d. None of these, you shouldn't be working with older clients
- 10. Which of the following is a common chronic condition in older adults?
 - a. Dementia
 - b. Arthritis
 - c. Osteoporosis
 - d. All of these are common in older adults
- 11. Which of the following is a reasonable rate of fat loss that can be expected over the course of 2-3 months?
 - a. 1.2 3.2%
 - b. 2.7 5.9%
 - c. 8.2 9.5%
 - d. 10.3 12.4%
- 12. Cardio alone is an effective way to build lean tissue and change body composition.
 - a. TRUE
 - b. FALSE
- 13. Exercise releases natural ______ and various neurotransmitters that can help improve mood and behavior.
 - a. Calcium
 - b. luteinizing hormone
 - c. Cannabinoids
 - d. Amino Acids
- 14. MDD stands for:
 - a. Major Depressive Disorder
 - b. Multiple Depression Dysfunctions
 - c. Mild Deeping Depression
 - d. Morbid Disease Depression

- 15. Persons with MDD often display:
 - a. Slumped posture
 - b. Hunched back
 - c. Forward translation of head
 - d. All of these are often displayed with MDD
- 16. The median age for the onset of binge eating is:
 - a. 9-12
 - b. 14-16
 - c. 17-22
 - d. 23-27
- 17. Which of the following is a condition that is present with Binge Eating Disorder (BED)?
 - a. Going long periods of time without eating
 - b. Eating things that are not food/inedible
 - c. Eating large amounts of food when not feeling hungry
 - d. Slowly eating tiny bites or 'pretending' to eat
- 18. What is the difference between BED and Bulimia Nervosa (BN)?
 - a. BED is consuming too little food whereas BN is consuming too much food
 - b. BED is not a psychological condition whereas BN is a psychological condition
 - c. BN presents with compensatory behaviors like purging or laxative whereas BED does not
 - d. BN is not a disorder with social dynamics whereas BED includes social and environmental factors
- 19. Significant eating disorder risk factors for adolescents include:
 - a. The presence of extreme dieting
 - b. Low self-esteem
 - c. Physical or sexual abuse
 - d. All of these are risk factors
- 20. Research shows that intuitive eating is associated with higher fats and carbs intake, as well as being directly related to binge eating disorders.
 - a. TRUE
 - b. FALSE
- 21. The two main reasons people cite for exercising in a fasted state are:
 - a. Hunger satiety and self-control
 - b. Weight loss and anti-aging
 - c. Self-discipline and weight loss
 - d. Anti-aging and hinger satiety
- 22. Research shows that by depleting stored _____, the body shifts toward utilizing _____ as an alternate energy source.
 - a. ATP; glucose
 - b. glucose; ATP
 - c. glycogen; fat
 - d. fat; glycogen

- 23. Research indicates that advanced level athletes can potentially increase ______ storage in ______ muscle fibers within 24-48 hours of carb loading.
 - a. Protein; Type I and II
 - b. Glucose; Type I and II
 - c. Carbs; overtrained
 - d. Amino Acids; Type II and III
- 24. It is important for your body to have protein after the workout to aid with regeneration.
 - a. TRUE
 - b. FALSE
- 25. Orthorexia is an eating disorder characterized by:
 - a. A disordered craving for eating things that are non-consumable
 - b. The idea that eating only junk food is not bad for you
 - c. A fixation on eating 'pure' or 'clean' food in a compulsive way
 - d. A binge eating disorder associated with severe depression
- 26. Which is a common reason for someone who is dealing with orthorexia to be malnourished?
 - a. Eating a diet that is too balanced
 - b. Strict elimination of a particular food group
 - c. Modification of food choice due to availability
 - d. All of these are reasons for malnourishment
- 27. The systole phase of the heartbeat is when:
 - a. The heart muscle contracts and pumps blood from its chambers into the arteries
 - b. The heart muscle relaxes and allows its chambers to fill with blood
- 28. Blood pressure is expressed by:
 - a. systolic pressure/diastolic pressure
 - b. diastolic pressure/systolic pressure
- 29. What is the gold standard for a healthy blood pressure?
 - a. diastolic number of 120-129
 - b. systolic number of 120-129
 - c. systolic number of less than 80
 - d. diastolic number of more than 80
- 30. A stroke can occur when:
 - a. Arterial plaques rupture
 - b. Blood clots block blood flow to the brain
 - c. Blood flow is blocked to the heart
 - d. Systolic veins become blocked
- 31. Which of the following contributes to high blood pressure?
 - a. Stress
 - b. Smoking
 - c. Inactivity
 - d. All of these are contributors to high BP

- 32. The most common type of warmup is:
 - a. 1RM
 - b. Static Stretching
 - c. 2 Minute Plank
 - d. 5 minutes of cardio
- 33. Which of the following is NOT an appropriate way to warmup?
 - a. 2 sets of 1RM
 - b. Jump roping
 - c. Dynamic stretching
 - d. 5 minutes of cardio
- 34. Which of the following is NOT a goal of a warmup?
 - a. Prepare the CNS
 - b. Activate/Prime Muscles
 - c. Decrease internal tissue temperature
 - d. Rehearse and improve overall movement patterns
- 35. Why does a personal trainer need to do a client pre-screening?
 - a. To establish a baseline
 - b. To identify potential health risks
 - c. To ensure legal protection
 - d. All of these are reasons to do a pre-screening
- 36. What is a PAR-Q?
 - a. Liability waiver form
 - b. Consent to perform exercise form
 - c. Physical activity readiness questionnaire
 - d. All of these above
- 37. The overhead squat is an example of a pre-screening assessment that can be used to test:
 - a. Body Composition
 - b. Heart Rate
 - c. Functional Movement
 - d. Movement Flexibility
- 38. When dealing with a difficult client, it is important to remember:
 - a. You should fire clients at the first sign of trouble
 - b. You aren't there to listen to your client's whining
 - c. You're in the people-business
 - d. You should ignore the human factor
- 39. To better deal with difficult clients, you should consider which of the following:
 - a. That the work you do is as much about the people as it is about the science
 - b. To be a great personal trainer, you must also be a great coach
 - c. Be ready to affirm your clients' feelings of frustration and difficulty with change
 - d. All of these are things to consider and be open to in order to be the best trainer that you can be

- 40. The word 'osteoporosis' literally means:
 - a. Skeletal disease
 - b. Porous bones
 - c. Without calcium
 - d. Bone fracture
- 41. Osteoporosis is most commonly diagnosed in:
 - a. Men over 50 with low testosterone levels
 - b. Postmenopausal women
 - c. Premenopausal women
 - d. Overweight men over 60
- 42. Which of the following should a trainer include the fitness program for a client who has osteoporosis?
 - a. Exercises that flex the spine
 - b. Low-impact cardio
 - c. Rowing exercises
 - d. All of the above should be part of the fitness program
- 43. A diet that is rich in ______ and _____ is crucial for optimal bone health.
 - a. Vitamin D and Calcium
 - b. Calcium and Vitamin B12
 - c. Vitamin B12 and Vitamin D
 - d. Selenium and Calcium
- 44. Poor voluntary control of the pelvic floor can contribute to:
 - a. Low back and hip pain
 - b. Constipation
 - c. Tingly feet
 - d. All of the above
- 45. The predominant muscle group of the human pelvic floor is called the:
 - a. Hammock Ali
 - b. PFMT
 - c. Levator Ani
 - d. Iliac Crest
- 46. Slow movements, or sustained holds, favorably work the:
 - a. Slow twitch Type I components
 - b. Fast Twitch Type I components
 - c. Slow Twitch Type II components
 - d. Fast Twitch Type II components

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