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Stroke Rehabilitation and Fitness

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CEC Self Test Packet: December 2017

NFPT SELF - TEST

DECEMBER 2017 EDITION

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From Handicap to "Handi-Capable": Successful Stroke Rehabilitation

Each year, in the United States alone, approximately 700,000 people suffer a stroke. 50% of men and women under the age of 65 who suffer a stroke die within 8 years.

These are startling statistics. Stroke and its aftermath remain a leading cause of long-term disability in the United States. Stroke survivors are often deconditioned and predisposed to a sedentary lifestyle that limits performance of activities of daily living, increases potential falls, and may contribute to a heightened risk of recurrent stroke and cardiovascular disease. This creates a vicious cycle of further decreased activity and greater exercise intolerance, leading to secondary complications such as reduced cardiorespiratory fitness, muscle atrophy and osteoporosis.

Goal-Oriented Rehabilitation

Recent research studies have shown that aggressive rehabilitation increases aerobic capacity and sensorimotor function. 3 major rehabilitation goals for the stroke patient are: preventing complications of prolonged inactivity, decreasing recurrent stroke and cardiovascular events, and increasing aerobic fitness. To achieve the first rehabilitation goal, the stroke patient needs to initiate a physical conditioning regimen designed to regain pre-stroke levels of activity as soon as possible. The second goal will be enhanced once the first goal has been enacted. Diet and lifestyle changes are highly effective factors in future event/illness occurrence. The third rehabilitation goal for the post-stroke client typically begins gradually, building upon intensity and time as strength increases.

Extolling The Virtues

Clearly, stroke survivors can benefit from counseling on participation in physical activities and exercise training. Here is where trainers can bridge that gap often left by physicians not well versed in fitness programming. Evidence now suggests that the exercise trainability of stroke survivors may be comparable, in many ways, to that of their age-matched, healthy counterparts. Previous studies have demonstrated the trainability of stroke survivors and documented beneficial physiological, psychological, sensorimotor, strength, endurance, and functional effects of various types of exercise. Moreover, data research involving stroke and able-bodied subjects have unequivocally illustrated the beneficial impact of regular physical activity on multiple cardiovascular disease risk factors. There is currently ample evidence that such benefits are likely to translate into a reduced risk for mortality from stroke and cardiac events.

Starting Cardio and Resistance Training

An aerobic conditioning program can enhance glucose regulation and promote decreases in body weight and fat stores, blood pressure, C-reactive protein, and levels of total blood cholesterol. Exercise also improves coronary artery endothelial function. All of these attributes will serve a client well as he proceeds through the post-stroke exercise and rehabilitation. Working with weights has likewise been found to benefit post-stroke clients. Resistance training can increase strength and muscle mass, changes which can mean increased mobility, greater independence and better function with daily activities. As with aerobic exercise, weight workouts involve intensity, duration and frequency, all subject to the needs and abilities of the client.

Treadmill training appears to offer several distinct advantages in the exercise rehabilitation of individuals who have suffered a stroke. Walking, even with assisted devices, is something most individuals do every day, and stroke survivors with reasonable mobility should be no exception. The use of handrail support and "unweighting" devices (harnesses that "lift" patients, effectively decreasing their weight) allows patients to walk on a treadmill who might otherwise be unable to exercise. When working with patients suffering from

post-stroke residual gait deviations, increasing the treadmill grade while still maintaining a comfortable speed allows the client to vary the workout's intensity.

Brain Gains

In addition to the exercises themselves, trainers can benefit from some of the science behind post-stroke rehabilitation. A simple equation to keep in mind is: **Stroke recovery = neuroplasticity + repetition + consistency.**

Neuroplasticity refers to the brain's natural ability to rewire itself by forming new connections in healthy parts of the brain. These connections take over the responsibilities of the damaged part of the brain, such as arm or leg function. The only thing it needs from the participant is repetition.

Repetition is the fuel that helps the brain rewire itself. Without this fuel, the brain loses its ability to fully repair. The more these movements are repeated, the stronger those connections will become, and the more adept the patient will become at moving.

Fueling the brain with repetitive practice helps the rewiring process, but this fuel needs to be provided on a consistent basis. Without *consistency*, the full benefit of the exercises cannot be realized. If too much time passes between each exercise session, the new connections in the brain begin to weaken. For this reason, sticking with an average stroke rehab regimen consistently will yield much better results than practicing an elaborate regimen infrequently. Therefore, as a trainer creates a client's workout regimen, setting realistic goals will encourage him to stick with the program.

Purposeful Movements

Traditional stroke rehabilitation programs emphasize *functional training* as a means of helping the individual gain and maintain as much independence as possible. Training in the performance of mobility and personal care tasks, together with attempts to improve muscle strength and coordination, continue to form the basis of most rehabilitation programs. The heightened degree of physical skill required to perform these tasks, and the physiological stress placed on the deconditioned individual's cardiovascular system while performing activities of daily living, are very real. Studies suggest that a positive training effect is likely to occur when these movements are performed in a careful and well-thought-out manner.

Keeping Motivation High

Many stroke survivors are put off by a typical physical activity prescription of 30–45 minutes of aerobic exercise, 5-7 days a week. Physiatrist Dr. Elizabeth Pegg Frates is Assistant Director of Medical Education for the Institute of Lifestyle Medicine, and a clinical instructor in the Department of Physical Medicine and Rehabilitation, both at Harvard School of Medicine. She emphasizes how most survivors are capable of some activity depending upon their functional abilities.

"The exercise prescription needs to be individualized for each survivor based on interests, strengths and current level of fitness," Dr. Frates says. On the downside, just as there are ways to encourage survivors, there are also ways to discourage them. "Doing too much too fast is a sure way to de-motivate someone…It's a set-up for failure. Successful small steps are the way to produce long-lasting change….Varying the type of physical activity can be one way to keep survivors motivated," she suggests.

Finding What Works

In the book, *Life After Stroke: The Guide to Recovering Your Health and Preventing Another Stroke*, the authors have created four categories that can guide personal trainers with selecting an appropriate physical activity for a client:

1. Severe functional limitations
2. Moderate functional limitations
3. Mild functional limitations
4. No functional limitations

Those with **severe limitations** (e.g., paralyzed on one side of the body and/or spending extended periods of time in bed) can safely perform their exercises sitting in a chair, and with assistance be able to do neck stretches, knee lifts, ankle rotations, and flexion of the elbows / wrists on the unaffected side of the body.

Those with **moderate limitations** (e.g., significant weakness in a limb) may be able to engage in aquatic-based physical activity, where the affected limbs are lighter. Similarly, the use of a recumbent stationary bike with assistance from a trainer, or even by securing a Velcro strap to keep the affected foot on the pedal, is a creative option for some.

Those who can move all four limbs despite weakness in one or two of them (**mild limitations**) have even more options, including swimming and walking or using a recumbent stationary bike or stair stepper.

A structured exercise program can help stroke survivors recover not only physically but mentally as well. An in-depth analysis of 13 clinical trials found that exercise therapy was beneficial for stroke patients' "cognition." Cognition refers to vital mental processes such as thinking, learning, understanding and remembering. A stroke, which temporarily cuts off blood flow to the brain, can impair those abilities.

Lauren Oberlin, a graduate student at the University of Pittsburgh, led the study that demonstrated these results. She said the findings confirm the value of exercise after a stroke. "It can improve mobility, strength and quality of life, as well as cognition," Oberlin said. Such a mental boost, she noted, may give stroke patients "additional motivation" to maintain an exercise program. Other research points to several possible reasons why post-stroke exercises can benefit mental alertness. Exercise may improve blood flow to the brain, thereby promoting the growth of new brain cells and connections among those cells. Exercise may also enhance self-confidence and independence, thereby reducing depression and anxiety.

The most effective workouts offer patients a variety of exercises aimed at strength, balance, stretching and aerobic fitness -- the kind, Oberlin noted, that "gets your heart rate up and makes you sweat." Keeping in mind that many individuals were deconditioned even before suffering a stroke, such workouts need not be overly intense. For many, a simple walk is highly effective, enjoyable and non-threatening.

You Can Make A Difference

Other factors that influence a post-stroke level of activity include intrinsic motivation and mood, adaptability and coping skills, severity and type of preexisting /acquired medical comorbidity, medical stability and physical endurance levels. As a personal trainer begins designing a rehabilitation program, keeping these additional factors in mind will benefit not only the client, but will strengthen the trainer-client bond.

This Sweet Truth May Turn Your Protein Shake Sour

Is it possible for a "clean" protein source to work against your muscle gaining goals and harbor toxic chemicals? The answer may terrify you and the details are quite disturbing.

Numerous protein supplements available to serious athletes today contain artificial sweeteners such as Sucralose (marketed as Splenda) and Aspartame. These include pre- and post-workout products, protein powders, and even many protein bar varieties.

While we might feel justified in saving the calories that real sugar adds to foods, there lurks a dangerous and hidden truth within the science of sugar substitutes. As it turns out, upon ingestion, many of these sweetening compounds break down into neurotoxic poisons.

Hazardous To Our Health?
Sucralose is a perfect example. This compound is sucrose (simple table sugar) that has been chemically altered by the substitution of three chlorine atoms for three hydroxyl groups naturally present in sucrose. Chlorine is a known carcinogen, used in many common cleaning products; it is not, nor has it even been, considered safe for internal use. Scientists studying the efficacy of such chemical manipulation have found some prominent health risks associated with the consumption of Sucralose:

- Disruption of the endocrine (hormonal) system
- Development of toxic buildup in the body, most notably in the brain
- Unhealthy weight gain and cancer
- Damage to the "good" bacteria within the gut

Chemicals such as chlorine remain in the body and accumulate over time. According to the Sucralose Toxicity Information Center, once sucralose and its by-products are ingested, the absorbed substances tend to concentrate in the liver, kidney, and gastrointestinal tract. The FDA claims that there is only 11 to 27 percent absorption of the toxic chemicals after ingestion. However, an independent study conducted by the Japanese Food Sanitation Council showed that as much as 40 percent is absorbed, and therefore stored, by the body.

Irritated Intestines
A 20-year study conducted in Alberta, Canada revealed that individuals consuming products containing sucralose exhibited a higher incidence of ulcerative colitis, Crohn's disease and irritable bowel syndrome (IBS). Simply stated, our bodies have not evolved to recognize this substance and are therefore unable to digest or process it, rendering it the culprit in damaging not only the intestinal lining but also unbalancing the gut's natural flora.

User Error Or Poorly-Informed Public?
James Turner, Chairman of the National Consumer Education Group *Citizens for Health*, expressed shock and outrage after reading a new report from scientists outlining the dangers of the artificial sweetener Splenda (sucralose). We, as consumers and trusting public citizens, have been grossly misled. Rather than functioning as a diet aid, these sugar substitute products have the potential to significantly disrupt the biochemistry of the human brain, reducing our ability for calorie control. It has been demonstrated that sugar-free sodas can actually *double* one's risk of obesity by stimulating appetite, and carbohydrate cravings in particular.

Calorie-Free Calamity

Almost if not all testing on artificial sweeteners has taken place utilizing an animal model rather than a human one. Upon examination of the animal subjects in one such study, Sucralose (Splenda) appeared to have reduced the amount of good bacteria in the animals' intestines by 50 percent, increased the pH level in the intestines, and contributed to increases in body weight. Splenda consumption also affected a substance in the body known as P-glycoprotein (P-gp).

As the levels of P-gp were observed, it soon became apparent that Sucralose could have a detrimental affect on how certain crucial health-related drugs are processed in the human body. When exposed to higher concentrations of Splenda and its by-products, many medications have the potential to be rejected by the very humans who require them to sustain daily life. The P-gp effect could result in medications used in chemotherapy, AIDS treatment, and heart conditions being shunted back into the intestines, rendering them ineffective, rather than successfully being absorbed by the body.

The truly frightening reality in this scenario is that we most likely have no idea that this is occurring as we enjoy our refreshing, calorie-free beverage.

According to Turner, "The report makes it clear that the artificial sweetener Splenda and its key component sucralose pose a threat to the people who consume the product. Hundreds of consumers have complained to us about side effects from using Splenda and this study... confirms that the chemicals in the little yellow package should carry a big red warning label."

Focus Like an Airline Pilot

Another target under investigation is the artificial sweetener commonly known as Aspartame. This compound is often found in sugar-free beverages. Chemically speaking, Aspartame is composed of two amino acids with the addition of methanol. Upon ingestion, methanol breaks down into formaldehyde and formic acid. Both are naturally present in the body in low and manageable levels; but a small additional amount is all it takes for formaldehyde to begin exerting its toxic effects.

A publication distributed by the United States Air Force warned U.S. Air Force pilots not to consume Aspartame in any amounts. It has been purported, upon investigation, to be a possible cause of brain tumors, epilepsy, fibromyalgia, Parkinson's disease, deleterious changes in gut health, autoimmune disorders and even diabetes.

What To Look For

How can we recognize a toxic build-up of such artificial sweeteners in our bodies? The following is a list of the most common manifestations of which to be aware:

- Extra weight in the belly area
- Bloating
- Skin irritations/itching
- Swollen hands and feet
- Occasional headaches
- Joint stiffness
- Clouded/unclear thinking

Weighing In On The Whey Options

While this startling news might be of interest to clients who are trying to cut calories and minimize overall sugar intake, another category of frequent gym-goers is also at risk. Bodybuilders who supplement their rigorous workouts with the addition of protein powders and bars will want to sit up and take notice of the myriad products on the market today that include deleterious artificial sweeteners.

Almost every major supplement company's whey protein powder products list one or more of these dangerous sugar substitutes on the package label. We may think we are doing our bodies a favor by fueling them post-workout with a hefty dose of "clean" protein in an effort to maintain and maximize lean muscle mass; however, in reality we are in fact slowly poisoning them. It does not take much to tip the scales in favor of toxicity; our healthy lifestyle soon becomes tainted, which is the ultimate antithesis of why many of us spend hours in the gym.

Ingest Intelligently

It is not the intention of this article to suggest a consumer utilizes one certain brand of protein supplement over another. Rather it is to open the eyes of those who blindly assume that the ingestion of artificial sweeteners is a safer and healthier alternative to sugar. It would appear as if the government and its regulatory factions are not going to protect us on this front. We must become well informed, and advocate for ourselves.

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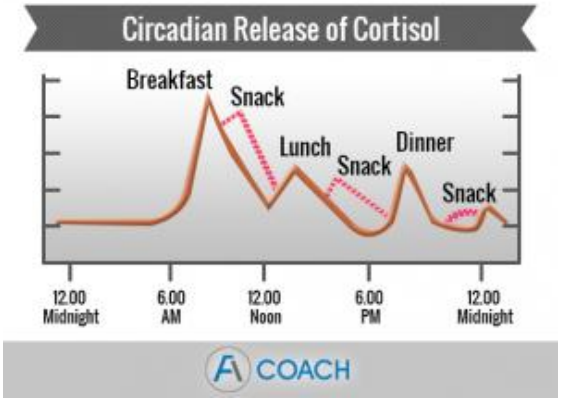
Does Exercise Lower or Raise Cortisol Levels

Are you stressing your clients out by altering cortisol levels during exercise? We all know that there is a sweet spot when it comes to exercise. So, is the "Stress Hormone" cortisol an athlete's friend or foe? The answers may surprise you!

Cortisol is among the human body's most necessary hormones. On any given day, cortisol's primary function is to control how our body creates and utilizes energy. The mechanisms by which this regulation occurs have been studied in depth, and the quest for understanding these complex dynamics seems to be ever evolving.

Normal Up's And Down's

Normal levels of cortisol are essential in protecting us from everyday stress. Typically our levels of cortisol rise in the morning, providing us with sufficient energy to get our busy day started. By the end of the day, circulating cortisol falls to a mere 10% of its morning levels, enabling the body to rest and sleep.



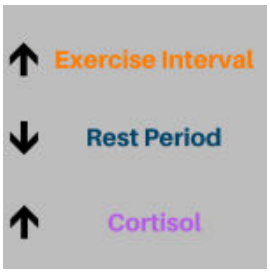
During moments of stress, our cortisol level rises, allowing the necessary adaptation for coping with and surviving emergency situations. When the body experiences a sense of calm, such as during prayer or meditation, cortisol levels once again ease down.

In the absence of sufficient cortisol, even a situation inducing minor stress can place undue demands upon the body. For example, simply skipping one meal can lead to a full- blown hypoglycemic episode without cortisol to safely elevate the blood sugar. While each of us is naturally going to react differently to lower levels of circulating cortisol, the common denominator/end result is the reduced ability to resist stress.

The Stress Response To Exercise

When the adrenal glands are unable to launch a satisfactory stress response, the body begins to deteriorate. The more often this happens, the more the stress becomes exacerbated. This leads to greater demands upon the adrenal glands; eventually, they cease their ability to produce cortisol. Such a situation is often referred to as "a vicious cycle", and results in complete adrenal gland exhaustion.

Cortisol has been demonstrated to align closely in relationship to exercise and training status and overtraining in particular. Levels in excess of 800 nmol/liter are generally indicative of overtraining. High-intensity resistance/strength training, such as performing sprints or engaging in rigorous bodybuilding workouts, have been correlated with increased plasma cortisol concentrations.



The most dramatic cortisol increases seem to occur when rest periods are short and total exercise volume is high. Upon its release from the adrenal gland, cortisol functions as an anti-inflammatory and a catabolic hormone.

In an average individual, cortisol breaks down about 1% of muscle proteins daily, which are then replaced as induced by growth hormone and insulin-like growth factor. With training, cortisol breaks down an average of 3-5% of muscle proteins daily. Overtraining releases excessive amounts of cortisol, eventually catabolizing a dangerous excess of proteins.

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Conversely, aerobic endurance training, most notably seen with elite runners, is linked with protein loss from muscle degradation, which is partly induced by cortisol. Endurance athletes general exhibit a higher cortisol response, while individuals who specialize in bodybuilding have a higher testosterone response. Cortisol causes atrophy predominantly in fast twitch, or type 2, muscle fibers. The anabolic effects of testosterone work directly in opposition to cortisol's catabolic effects.

Recovery Reactions

The acute increases in cortisol following exercise also stimulate the inflammatory response mechanisms involved with tissue remodeling. This is a necessary adaptation that helps to repair cell damage inflicted by intense workouts.

Research has shown that long-term cortisol elevations seem to be responsible for adverse catabolic muscular effects. Thus, reducing levels of cortisol is necessary in order for an athlete to achieve tissue growth and positive adaptations to exercise training.

Cortisol accelerates the breakdown of proteins into amino acids. These amino acids move out of the tissues and into the bloodstream. Eventually, they migrate toward cells within the liver, where they are converted to glucose in a process known as gluconeogenesis.

While a prolonged elevated blood concentration of cortisol results in a net loss of tissue proteins and higher levels of blood glucose, such elevated plasma glucose levels allow cortisol to provide the body with the energy required to combat stress from an intense workout. This delicate system of checks and balances defines cortisol's effects on the human body's energy system.

The Effect Of Vitamins On Cortisol

A research study done on 17 junior elite weightlifters looked at the effects of vitamin C on cortisol levels. Results demonstrated that the individuals taking 1 additional gram of vitamin C per day improved their testosterone to cortisol ratio by over 20%. Such a decrease in cortisol can lead to increased muscle and connective tissue hypertrophy as well as enhanced recovery from training. Beta-carotene, which is often used to facilitate or improve healthy skin function, may also minimize cortisol levels.

As we have learned, cortisol plays a number of important roles in our daily health. It turns on the "light switches" in the body so we can get moving in the morning. It elevates during exercise to enable us to perform at a higher level without negative interference. It also acts as a buffer to stress. Just as oil in a car engine lubricates the mechanisms, cortisol enables the human body to operate at a higher pace without dangerously "overheating".

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Personal Training a Client with Meniere's Disease

What does your diet have to do with balance? Quite a bit! Especially for people who have Meneire's disease. For these clients, spatial experience is significantly different than the average person working toward balance goals, warranting extra attention from their personal trainer. You can learn a lot about the factors that effect spatial awareness from studying this condition.

A Dizzying Experience

The manifestations of Meniere's disease include experiencing a violent sense of vertigo; anything within the line of sight is perceived to be spinning, rendering the individual off-balance and often finding himself on the ground. Tinnitus, or a buzzing/ringing sensation in one ear, frequently accompanies such episodes. Temporary hearing loss, particularly of sounds in the lower ranges, is also reported, and these attacks may last up to several hours. Loud noises become disconcerting and distorted. After living with Meniere's for some time, hearing loss typically becomes permanent, at which point many sufferers opt for a cochlear implant.

Meniere's disease is most likely caused by an abnormality in the volume of fluid within the inner ear. This chronic condition typically strikes between the ages of 20 and 50, with no apparent gender specificity. Currently, the scientific research community is without a cure, but there are exercises and training guidance that can help those living with this illness achieve a greater sense of balance and control in their lives.

Coping Strategies

Dietary changes are usually the first line of defense recommended following a diagnosis of Meniere's. Decreasing or eliminating the intake of caffeine, salt and MSG are suggested. Interestingly enough, stress management is among the top suggestions along with a nutritional strategy.

This is one aspect where a personal trainer can be of great help. At the conclusion of a workout, a few moments for engaging in relaxing meditation will go a long way towards reducing anxiety and stress. Yoga classes and body movements that facilitate positive blood flow and passive stretching also are great resources.

Sensory Input: The Brain Game

Our bodies achieve stability as a variety of systems coordinate their input to the brain. Meniere's disease causes a disruption in the vestibular system, which is comprised of 3 tiny organs nestled within the inner ear: the utricle, saccule and 3 semicircular canals. The first 2 are responsible for the sensation of gravity and linear movement. Rotational motions are detected by the 3 semicircular canals, which are filled with endolymph fluid. As the head rotates, this fluid exerts pressure upon the sensory receptors within the inner ear, which in turn send specific impulses to the brain regarding movement. A healthy set of vestibular organs sends identical impulses from the right ear and the left ear. However, in the case of Meniere's disease, this process is not symmetrical, leading to severe balance problems.

The brain is the Command Center for the complex integration of every system in the human body. Any information obtained through the vestibular system must coordinate with the data being put forth from both the proprioceptive and the visual systems. A misfire in any of these 3 will disrupt and alter an individual's sense of balance. If you have ever tried balancing on one foot while closing your eyes, you have experienced an example of this situation. Since Meniere's disease is considered a problem within the vestibular system, it can lead to challenges with cognitive functioning, vision and posture.

The Importance Of Exercise

Physical Therapists often recommend a patient undergo vestibular rehabilitation therapy. While this must be engaged in under professional therapeutic conditions, patients often wonder what they can do in between PT visits to help mitigate their episodes and reduce stress. Since overall fitness is always going to be beneficial, most ENT's will encourage exercise. Walking is always a great place to begin, followed by easing into low-impact aerobics. The one caveat that is incumbent upon the individual is to identify and avoid any specific movements that induce dizziness or vertigo sensations.

Balance-retraining exercises are ones with which a personal trainer can assist during a workout session. Tai Chi movements are particularly good for restoring and strengthening one's sense of balance. Slow foam rolling will help increase and improve circulation, another factor that also accompanies the list of Meniere's disease attributes.

To further reduce stress to the body while increasing circulation, shoulder work is very helpful. With the client seated in a chair or on a bench, have him shrug his shoulders all the way up to the ears, then release purposefully. Every client is unique, so it is best to try this first without any weights and add dumbbells as the individual progresses. Rolling the shoulders forward and backward with a momentary hold in between each movement has also proven to be beneficial. Some clients manifest symptoms to a lesser degree and may wish to safely engage in more aggressive movements. In order to facilitate such a request, a little more science and anatomy will be helpful. An individual's innate ability to control his body as it moves through space is thought to switch on a connection between the brain and the body that to date has not been witnessed while engaging in weight bearing exercise.

A client with Meniere's disease essentially suffers from a misfire in his vestibular system, as mentioned above; as such, these connections need to be "reprogrammed" and then strengthened. Exercises using only one's body weight are the key to developing and strengthening these interactions. Since basic resistance-training exercises have their roots in what many professionals refer to as "the classic exercises", movements such as a push-up, pull-up, sit-up and bodyweight squat become the platform from which a trainer can facilitate progress for his client.

A client who suffers from exaggerated symptoms must be handled with caution. Often the best place to begin is by establishing surface stability. Have a client stand on a flat, stable surface with his feet apart. Encourage him to distribute his weight equally over both feet. As comfort level increases, have the client slowly move his feet closer and closer together, pausing to establish weight distribution each time. Continue until he feels stable with his feet almost touching each other. After this has been accomplished, assist the client as he moves to his tiptoes, returns to flat feet, and then rocks back on his heels. Remember that what seems rudimentary to some can be an overwhelming challenge to others.

Other Considerations

As we can imagine, living with an illness such as Meniere's disease often leads to anxiety and depression. By teaching basic exercise strategies to help alleviate some of the symptoms, we can enable clients to go a long way toward confidence building and returning a sense of mastery and control to their lives.

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5 Popular Diets Your Clients May Be On

Fashion trends come and go and diet fads also have their seasonality. You may find yourself working with an array of clients with special dietary requirements or practices which are ever changing.

Being familiar with some of these unique dietary approaches will provide you a better understanding of your client's eating habits and also allow you to design a program catered specifically to their nutritional lifestyle.

It's nearly impossible to be acquainted with every diet out there, from the baby food diet to the cabbage soup diet-- the list is endless!

Don't worry though, we narrowed it down to 5 of the most popular diets buzzing right now along with their description, recommended foods and/or those to avoid, as well as a consensus on each diet's pros and cons!

1. Ayurveda

This holistic diet first hailed from India where its name translates to "the science of life". Ayurvedics believe the key to preventing disease is establishing a balance within the mind and body and becoming in tune with nature.

When following the Ayurvedic principles there are three different categories known as doshas, which reflect an individual's body type and personality. Each dosha is based on the five elements of nature (space, fire, air, water, and earth):

Vata- represents air and may indicate erratic behavior and light-heartedness. Foods recommended are warm, cooked, nourishing and easily digestible foods. Avoid cool, non-digestible foods and sugar.

Pitta- represents fire and indicates a strong personality and leadership with intense emotions. Foods recommended are cool, raw, or lightly cooked foods. Avoid fried foods and spicy foods.

Kapha- represents water and is presented in a slow and steady demeanor with a strong foundation of loyalty. Foods recommended are light, warm and spicy foods. Avoid greasy foods and processed sugar.

Survey says this is an all encompassing approach to health and relies heavily on bio-individuality and whole foods, however, there is little scientific evidence to back it up and could be limiting for some.

2. Ketogenic

This diet was first recognized in the 1920's to help control epileptic seizures in those who did not respond to medication but has since been marketed as an aid in quick weight loss. Ketogenics is based on the process of ketosis, where the body uses ketones, a byproduct from fat metabolism, for fuel instead of carbohydrates.

This process puts the body in a fat-burning state. Ketosis typically occurs when the body goes into starvation mode, carbohydrate restriction or excessive exercise. Calorie intake must be limited and made up of 80% fat in order to reach this state of ketosis.

Recommended Foods:

- Low-carb vegetables
- Low-carb fruits
- Meat
- Poultry
- Fish
- Eggs
- Dairy
- Nuts and seeds
- Healthy oils

Foods to Avoid:

- High-carb vegetables
- High-carb fruits
- Grains
- Beans
- Sugar
- Trans fats
- Processed food

Survey says studies have shown this diet can help individuals who suffer from epilepsy as well as support quick weight loss. On the contrary, this diet is extremely hard to maintain and has many side effects such as: dehydration, constipation, vomiting, high cholesterol, kidney stones, pancreatitis, excess fat in the blood, fatigue, behavior changes, bad breath and a metallic taste in the mouth. Ketones can be toxic to the body and must be released as energy, therefore ketosis would not be safe for those who don't exercise.

3. Low FODMAP

This diet was designed for individuals who have difficulty digesting certain short-chain carbohydrates with common symptoms such as gas, constipation and bloating. FODMAP stands for Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols which are all examples of different sorts of starches or short-chain carbohydrates that can cause stomach upset. Typically this diet is prescribed for those with IBS (Irritable Bowel Syndrome) to lessen symptoms.

High FODMAP foods to AVOID:

- Artichokes, cauliflower, mushrooms, sugar snap peas
- Apples, apricots, blackberries, boysenberries, dates, figs, guava, mangoes, nectarines, papaya, peaches, pears, plums, persimmons, prunes, watermelon
- Dried and canned fruit
- Gluten-containing grains
- Beans
- Lactose-containing dairy

- Trans and Saturated fats
- Sugar
- Refined grains
- Processed foods

Survey says this diet can be beneficial for those who suffer from IBS by alleviating symptoms and can improve an individual's overall health habits due to the avoidance of sugar and processed foods. The only qualm is it may be difficult to maintain due to the long list of restricted common foods.

4. Paleo

Also known as the Primal diet, is centered around eating food similar to what our caveman ancestors ate in order to achieve optimal health. This means eating only whole foods which have not been processed or packaged.

Vigorous exercise is also incorporated into this diet theory, as well as only eating when hungry and getting plenty of Vitamin D. Paleo emphasizes high amounts of healthy fats and lower amounts of carbohydrates mainly coming from cooked or raw vegetables.

Recommended Foods:

- Vegetables
- Meat (organic, grass-fed)
- Poultry (organic, grass-fed)
- Fish (organic)
- Eggs
- Quinoa
- Healthy fats
- Fruits
- Nuts

Foods to avoid:

- Wheat, rye, barley, oats, brown rice
- Dairy, except for ghee and grass-fed butter
- Processed foods
- Artificially low-fat foods
- Sugars
- Fruit juices

Survey says this incorporates a great deal of whole organic foods, high in fiber and healthy fat and discourages processed/high sodium foods. The pitfall here though is the price tag that comes with purchasing high quality meats. This diet may also be too low in carbohydrates for some individuals.

5. Vegan

This diet focuses on consuming plant-based foods and eliminates any animal or animal by-products. Basically, anything derived from an animal is restricted from the diet (i.e. butter, honey, yogurt, cheese). Vegans may also avoid cosmetics and soaps derived from animal products as well as products which have been tested on animals.

Recommended Foods:

- Vegetables
- Fruits
- Grains
- Beans
- Nuts and seeds
- Oils

Foods to avoid:

- All animal products

Survey says this can support weight loss, reduce risk for heart disease and support the environment. For some though, a strict plant-based diet could lead to anemia as well as other nutritional deficiencies (individuals going vegan should be knowledgeable about how to replace vitamins and minerals such as B12 which is a vitamin more readily absorbed in the body from animal protein).

Check out these other forms of vegetarianism:

Lacto-ovo vegetarian: someone who eats vegetables, eggs, and dairy products but who does not eat meat
Lacto-vegetarian: someone who does not eat meat and eggs, but who eats dairy products
Pescaterian: vegetarian who consumes fish
Pesco-pollo vegetarian: vegetarian who consumes fish and chicken
Flexitarian: a more flexible version of the vegetarian diet; meat is eaten occasionally but is primarily plant-based

As always, there is no one size fits all approach when it comes to wellness. Different dietary approaches work for different people, well others may not. This is why it is important to keep an open-mind when working with a diverse group of clients by respecting their values both on and off their plate!

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Mirror Exercise for Stroke Rehabilitation and Fitness

An educated and informed personal trainer can be of tremendous help to post-stroke clients. Gym facilities are famous for their extensive array of mirrors on the fitness floors.

By taking advantage of this, a trainer can carefully guide a client through the observation process described below. We all routinely demonstrate a new exercise to a client before he attempts it; this is much the same principle. A simple mirror can be the solution to a complex rehabilitation problem.

Strokes are currently the leading cause of neurological disability worldwide. Post-stroke life is often characterized by both cognitive and motor impairments as well as balance difficulties. Such challenges lead to functional dependence and a reduced quality of life.

As stroke-related disability is expected to increase in the coming years, it seems crucial to find effective means of neuro-rehabilitation. There is mounting evidence that *mirror therapy* could play an important role in this endeavor. This also opens yet another avenue of specialization for personal trainers.

How Mirror Therapy Works

The effect of mirror therapy on brain activity has been investigated in a number of studies. The principle of mirror therapy (MT) is the use of a mirror to create the reflective illusion of a limb that has been severely affected by a stroke. The goal of such an exercise is to "trick the brain" into thinking movement has occurred *in the absence of pain*.

This involves placing the affected limb behind a mirror, which is positioned such that the reflection of the opposing (healthy) limb appears in place of the hidden limb. The force behind the resulting adaptations is the activation of the frontal or parietal lobe in the corresponding motor region of the brain. The key players in this process are known as the mirror neurons.

Mirror neurons comprise approximately 20% of all the neurons present in a human brain, and are responsible for one's ability to differentiate between the left and right sides of the body. Mirror neurons fire not only when a movement is performed, but also when *someone else* executes that movement and the patient is *observing* the performance.

A 1995 research study demonstrated the first evidence for the existence of a mirror system in humans by showing that the *observation* of a movement resulted in motor facilitation. It would appear that action observation triggers action simulation, which in turn facilitates action execution.

Harness The Power of Mental Imagery

Historically, scientists have operated under the postulate that we gain new skills through practice or direct experience. Today, the understanding of the complex mirror neurons means one can also gain skills through observation and indirect experience.

Consider a time when you were observing a demonstration, perhaps at a fitness conference or workshop. When the presenter demonstrated the correct body mechanics and execution for you to imitate, it is the mirror neurons that are activated, enabling you to learn by creating the mental image of the proper form.

A Clear Picture Is Emerging

Several underlying mechanisms have been suggested for the effect of mirror therapy on motor recovery after stroke. It has been proposed that mirror therapy is related to motor imagery; the mirror is conferring visual feedback of

successfully executing an imagined action with the affected limb. Motor imagery itself, the mental performance of a movement without actual execution, has proven to be highly beneficial in the post-stroke rehab process.

The Mirror as a Stabilizer

Since the ability to balance successfully is the basis for independent movement and most functional performance, damage in this area after a stroke decreases an individual's stability. Not only does this make the simple act of standing quite challenging; loss of balance leads to difficulty in walking and performing activities of daily living. Scientists have reported improvement of balance ability in stroke patients who performed exercise training in front of a full-length mirror.

Results have led to the prevailing notion that instant self-analysis and correction for stroke patients are in fact achievable, as they receive visual confirmation of their physical alignment through mirrors. Seat a client on a stability ball and have him carefully observe where you place his feet for optimal stability.

The first goal is to acquaint the client with the kinesthetic awareness of his surroundings. The next goal is creating comfort in his stabilization. Eventually, the trainer can progress to the "hidden limb" process, knowing that the client has already established a base of "security" in his ability to begin controlling his balance and his place in the surroundings.

Although mirror neurons were originally thought to only involve hand movements such as grasping, it has recently been demonstrated that the firing also occurs during the execution of movements involving other parts of the body. Since stroke survivors very often exhibit gait issues, more research is currently underway to explore the lower limbs as well.

The mind is a very powerful tool. If we can harness mirror neurons and enable a client to believe in his abilities post-stroke, we are doing more than rehabilitation. We are restoring confidence.

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Fermented Foods for a Fit Gut

Your clients can tone their abs and feel more positive about exercise in general by incorporating fermented foods into their routines. Share the good news!

Did you know that the human body consists of a greater number of bacterial cells than animal cells? You can thank your gut for that!

There are currently trillions of tiny creatures living in our bodies—and we should be grateful they are there. These good bacteria, particularly the species that reside in our gut, may significantly improve digestion, and guaranteeing their long-term existence is fairly simple.

The most effective way is by consuming a variety of fermented foods. These are packed with *probiotics*, a term used to define the good bacteria that live in the intestinal tract. Our intestines play host to as many as 500 different species of bacteria, which can be classified as those that facilitate good health (such as the ones found in yogurt, Bifidobacteria and Lactobacilli) and those that cause harm to the body (such as Clostridia).

Harness the Power to Change
The bacteria, or *microflora,* that lives in fermented foods creates a protective lining in the intestines, thereby shielding against disease-causing pathogens such as salmonella and E.coli. Fermented foods lead to an increase of antibodies and a stronger immune system; they regulate the appetite and help reduce cravings for simple sugars and carbohydrates.

A study that appeared in *Nature* indicates that changes can happen incredibly fast in the human gut—within three or four days of altering what we consume. “We found that the bacteria that lives in peoples’ guts is surprisingly responsive to change in diet,” reports author Lawrence David, Assistant Professor at the Duke Institute for Genome Sciences and Policy.

“Within days we saw not just a variation in the abundance of different kinds of bacteria, but in the kinds of genes they were expressing.” While we may not be able to permanently eliminate gastrointestinal health problems, we can certainly increase the odds by striving to improve the ratio of good bacteria to harmful ones. One of the most effective ways to accomplish this is through the consumption of fermented foods rich in lactic acid–producing bacteria. These bacteria possess “yin-yang” qualities: they are responsible for milk turning sour, yet also for the process of fermenting vegetables.

Beneficial Bugs for Gut Health
There are four important health benefits of traditional fermented foods that clearly explain why they are so crucial to maintaining a healthy gut:

1. Traditional fermented foods help balance the production of stomach acid. Fermented foods have the unique ability to ease digestive discomfort related to having either too much or too little stomach acid. The key is to incorporate a small portion of these foods once or twice daily.

2. Traditional fermented foods help the body produce acetylcholine, a chemical that facilitates the transmission of nerve impulses. Acetylcholine helps increase bowel movements and has the ability to reduce constipation.

3. Traditional fermented foods hold an extra benefit for individuals living with and managing diabetes. In addition to improving pancreatic function, carbohydrates in fermented foods have been broken down or "pre-digested." Unlike some of the regularly consumed carbohydrates in our diets, such foods relieve the burden on the pancreas.

4. Traditional fermented foods produce numerous unknown compounds that destroy and inhibit the growth of pathogenic bacteria.

The Simple Process of Fermentation

The history and application of fermentation indicate its use as a means to provide nutritional value and medicinal properties to the foods we consume on a regular basis. This ancient practice has evolved through the years. The science behind the fermentation process is relatively simple, yet somehow mind-boggling if we consider that the end goal is to create bacteria!

When a food is being fermented, it is left to steep until its sugars and carbohydrates become bacteria-boosting agents. Some of the more popular and readily available sources are kefir, kombucha, sauerkraut, miso, tempeh, kimchi, and yogurt.

Kefir is a fermented milk product resembling a drinkable yogurt. Its benefits include high levels of vitamin B12, calcium, magnesium, vitamin K2, biotin, folate, enzymes, and probiotics. Regular consumption of kefir may boost immunity, ease or eliminate symptoms of IBS (Irritable Bowel Disease), fight allergies and improve digestion.

Kombucha is a fermented beverage made from black tea and sugar. It contains a colony of bacteria and yeast that are responsible for initiating the fermentation process once combined with sugar. After being fermented, kombucha becomes carbonated and a potent source of B-vitamins, enzymes, and probiotics.

Sauerkraut, made from fermented cabbage, has a variety of beneficial effects on human health. It boosts digestive health, aids circulation and fights inflammation, a serious threat to gut health.

Commonly found in Japanese cuisine, **miso** is made by fermenting soybeans, barley or brown rice with the help of a fungus known as Koji. Miso has anti-aging properties and helps to maintain healthy skin.

Tempeh is created by introducing soybeans to a “tempeh starter”, similar to the process of making sourdough bread. When it sits for a day or two, tempeh becomes a firm cake-like product. This delicious fermented food contains protein quality equal to that found in meat. As such, it too contains high levels of vitamins B5, B6, B3 and B2.

Kimchi is sauerkraut’s Korean counterpart, prepared from cabbage, with a generous addition of spices and seasoning. This delicacy dates back to the 7th century and has been shown to improve digestive health.

How Does A Fermented Food Become Brain-Friendly?

A research team led by Eva M. Selhub, M.D., of Harvard Medical School and Massachusetts General Hospital, sought to explore the influence of fermented food and beverages on the health of the human body.

Their article appeared in the *Journal of Physiological Anthropology*, and explained their results as follows: “As our knowledge of the human microbiome increases, including its connection to mental health, anxiety, and

depression, it is becoming increasingly clear that there are untold connections between our resident microbes and many aspects of physiology."

Selhub and her colleagues were among the first to purport that fermented foods might be the liaison between traditional dietary practices and positive mental health. This could potentially occur with direct communication between the gut and the brain. There might also be an indirect component, manifested as increased anti-inflammatory symptoms within the intestines.

Yet another noteworthy mechanism may be the influence of fermented food on lipopolysaccharide (LPS), large molecules that are of particular importance in depression. Laboratory findings confirm that even small increases in LPS levels can trigger depressive symptoms. Also being postulated, and slated for additional research, is the influence fermented foods may have over the production of neurotransmitters in the brain. Since 90 percent of mood-regulating neurochemicals such as serotonin is produced in the gastrointestinal tract, a clearer picture of the relationship between the gut and the brain is starting to emerge.

Sharing the Significance with Clients

The scientific community is beginning to comprehend the beneficial role that "good bacteria" can play in keeping us healthy. Sadly, the pharmaceutical companies can turn a greater profit by marketing selling antibiotics and other medications. Thus, it falls upon the shoulders of allied health professionals such as personal trainers and sports dietitians to teach clients a more holistic approach. Our first focus must be creating the perfect microflora environment for the comfortable survival of "good bacteria". Think of fermented foods as a greener approach to cleaning up the body's internal environment!

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Clients and Combat Training - Presenting Krav Maga

Offering a client the opportunity to become a *human walking weapon* simply through proper training might open up new doors for personal trainers seeking to expand their repertoire. Krav Maga is the avenue to follow.

Krav Maga, translated from Hebrew as "contact-combat", is a military self-defense system developed for the Israel Defense Forces (IDF) and Israeli security forces such as Mossad. It combines techniques from boxing, wrestling, aikido, judo and karate along with realistic fight training. Currently, Krav Maga is the preferred system of combat training employed by U.S. military and law enforcement personnel.

What Is The Secret?
Known for its focus on real-world situations and its extreme efficiency, Krav Maga constitutes one of the best workouts in existence. This method of training is as much an offense system as it is a defense system and can prove to be lifesaving as well.

Krav Maga encourages students to avoid confrontation. If this is impossible or unsafe, the philosophy promotes finishing a fight as quickly and aggressively as possible. Attacks are aimed at the most vulnerable parts of the opponent's body.

According to XKM Krav Maga Blackbelt head instructor and Xtreme Krav Maga St. Louis owner Steve Sulze, "Krav Maga gives students the tools they need to win in a potentially deadly encounter and gives them the confidence to act appropriately when necessary." Thus, it has been said that a well-trained practitioner of Krav Maga is basically a walking human weapon.

Movement And Awareness
Retzev, the Hebrew word for "continuous motion", relates to the principles of simultaneous defense and attack. When employed within Krav Maga, *retzev* becomes an instinctual method of movement. This enables the well-trained student to react to any type of threat without hesitation.

Self-Defense *and* Self-Confidence?
Like most exercise, Krav Maga builds self-confidence and a sense of self-worth. A question often posed is exactly how does training that simulates being continuously attacked boost one's self-confidence? According to Patrick Lockton, Director of KMI (Krav Maga Institute NYC), "The training changes people's psychological patterns and opinions of themselves, others, and life in general…Strange things happen when you realize you are capable of a lot more than you thought."

The discipline of Krav Maga has been likened to a doorway leading to a new aspect of self-discovery; one that offers the realization that we can accomplish anything in life. "The KMI mindset helps people start believing in themselves, and this can make a huge difference in someone's life," Lockton continues. "Students can easily translate their success in training to success in their lives."

Non-Violent Real World Applications
I often train clients in a manner I call "functional exercise", strengthening the muscles required to perform activities of daily life more comfortably and easily. As Lockton stated above, success in the gym often leads to positive attitudes and accomplishments outside of the fitness arena. Whether this is accomplished through

bodybuilding, aquatic classes or extreme self-defense moves, the common goal is what a personal trainer strives for with each and every client.

Krav Maga's fitness programs rely upon cardio classes, heavy bag work, and sports conditioning techniques in order to burn fat and tone muscle. Every class begins with a warm-up, followed by power drills, and exercises that combine cardio and strength training at intense intervals.

If this sounds familiar to you, it is most likely because while the moves themselves may be unique and different, the premise of the session is fairly typical. As the participant is learning life-saving techniques, he is simultaneously conditioning the body to execute these techniques more effectively.

Krav Maga and Personal Training

Incorporating aspects of Krav Maga into personal training sessions is not as difficult as one may think. Just like any new class or exercise, there will be a learning curve as one embarks on this sort of practice. Proper form is key, so introduce these moves slowly. We all have witnessed the benefits of interval training; Krav Maga moves are no exception. Bouts of powerful punching, blocking and kicking are followed by periods of rest. To prepare for such workouts, encourage participants to hydrate well and take in the proper nutritional fuel well in advance of training sessions.

Since Krav Maga is basically a functional workout, taxing the entire body in new ways, it is a good idea to remind clients and participants that they can expect a significant amount of muscle soreness following the first few workouts. Reassure them that this is completely normal, and encourage them to take a few days to recover before the next Krav Maga session.

Some of the moves to incorporate rely solely upon body weight. Challenge a client to learn a 1-arm burpee, a scorpion push-up, and side mountain-climbers. Once his confidence in executing these moves is sufficient, create a protocol whereby the client sees how many of each move he can perform in a 45-second time period. Follow this with a brief rest interval; then move on to 45 seconds of another exercise.

Krav Maga Certification - Yes or No?

Is it necessary to obtain a special certification in order to teach Krav Maga to clients and students? There are several organizations that offer formal certification training, but these tend to be for individuals seeking more of a military-based approach, or those who wish to become professional Krav Maga military instructors. For our purposes as personal trainers, simply creating a workout based upon the principles set forth in Krav Maga most likely will not require any further professional credentials than what most certified trainers already hold.

Clearly, Krav Maga is not going to suit all of your clients. However, for those who demonstrate a strong desire to amp up their current routines in a novel manner, offer them the chance to become the most powerful warrior possible!

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Cross-Cultural Personal Training

Learn to become a culturally diverse personal trainer by creating a "melting pot gym" for new clients whether or not foreign travel is within your grasp.

Every country across the globe takes pride in its various cultures and traditions. Among those is a unique version of what is considered "ideal physical beauty", placing a slightly different emphasis on various aspects of aesthetics. Therefore, it comes as no surprise that physical recreation -- or even the total lack thereof --- varies around the world.

The United States has long been described as the "melting pot of the world", as we have always welcomed individuals from foreign shores to consider our country a safe, stable land upon which to establish new roots. As this practice continues today, we will often encounter individuals in all aspects of our daily lives who may be 1st generation Americans. This includes our gyms and fitness centers.

Viva La Diversity
While we may pride ourselves on offering clients a state-of-the-art workout facility, fully equipped with the best machines on the market and up-to-the-minute group exercise disciplines, a new member or client who hails from another country may find this environment intimidating.

For starters, it behooves us to realize that exercise practices differ vastly from country to country. In Bangladesh, badminton is all the rage. In fact, the capital city makes every effort to create even temporary courts, often stringing clotheslines between trees or bars on windows. Cricket, too, is very popular. However, few if any natives venture into traditional gyms.

The Chinese take great pride in their practice of group calisthenics. Public parks become recreational areas for older individuals engaging in Tai Chi, backwards walking, and vigorous arm movements, in an attempt to improve circulation. Those individuals growing up in Paris, France stay fit while swimming, running or walking, but not for reasons of health or aesthetics. The French simply undertake these sports for the sake of pure enjoyment. Similarly, the French practice of Parkour cultivates strength, endurance and agility by overcoming outdoor obstacles with a variety of runs, jumps and climbs…again, simply because it is fun!

Even in chilly winters with precious few hours of available sunlight, fitness-minded folks in Sweden prefer the use of outdoor gyms. They tout the advantages of being free, less crowded, and less sweaty/more hygienic than our fitness centers. Point taken!

Incorporate, Acclimate
Armed with the knowledge of such diversity, we can expect to see surprised expressions on the faces of clients who are steeped in the traditions of their countries of origin, where physical fitness culture does not even remotely resemble our gyms. As personal trainers, it is our job to maintain an open mind and have a healthy respect for different ways of thinking.

Take the time to sit with a client who is new to the Western world; listen, learn, and ask questions; display a genuine curiosity for the cultures they may have left behind; help them discover the possibilities you can offer in a patient, straightforward manner. Above all, be willing and prepared to explain how your gym's exercise equipment works.

Time-honored cultural traditions will sometimes present a challenge for trainers and clients. Women from Saudi Arabia love exercises focusing on strength, stretching and gymnastics; however, for Saudi females, fancy form-fitting athletic clothing is not an option. Some exercises you may have chosen to include in a program for such a client might need modification if she is wearing a longer, looser garment. Although pop music too is forbidden in Saudi Arabia, behind closed doors where men cannot observe, these ladies love Zumba classes!

Observing Faith-Based Challenges

In a similar manner, the constraints of one's faith don't often come to mind when designing a personal training regimen. However, an Orthodox Jewish woman, perhaps new to this country, faces modesty issues that can limit an exercise program. Traditionally, the most pious of Orthodox Jews may not exercise without a skirt covering the knees and a scarf/wig covering the head. Those who practice such traditions also may not swim in a co-ed pool. For such individuals, being sensitive enough to restrain from suggesting a group water aerobics class will be greatly appreciated.

Flexibility, creativity and a willingness to step outside of the typical personal training box can serve as a springboard for working with the aforementioned populations. In Bangladesh, Mongolia and Malawi, for example, sheer physical labor as a way of life is how these individuals are accustomed to maintaining strong, lean physiques.

If you encounter a new client from one of these countries, a program such as CrossFit or an outdoor circuit-training boot camp might fit his needs as well as catering to his comfort zone. Aspects of these exercise disciplines can also be woven into a more traditional 60-minute training session, serving as a way of integrating familiar moves while also introducing exercises typical of the Western world.

How We Can Help And Grow Together

It seems as if there are many cultures whose recreational traditions will demand our respect and understanding if we choose to work with such populations. There are, however, many ways we can honor one's country of origin and at the same time make him feel comfortable and accepted in what can be viewed as a very foreign scenario/location.

Instead of having a client warm up by cycling on a stationary bike for 5 minutes, offer some suggestions that may be more familiar, such as mountain-climbers, body-weight pull-up's, push-ups or wind sprints. Create a cordoned-off area on your Fitness Center floor where observant religious women may be trained comfortably.

Do not shy away from asking for input from your new client, during your initial assessment. An avid exerciser will no doubt be forthcoming with preferences in terms of exercise disciplines, especially if he is eager to begin training. The more often you meet with such clients, the more you will begin to cultivate a strong partnership, built upon both his culture and yours.

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No Pain, No Gain? No Way!

"Part of what makes an athlete an athlete is the ability to play through pain." DO YOU AGREE? This statement was made by Brian P. McKeon, Boston Celtics chief medical officer during an interview.

Staggering Statistics
According to the CDC (Centers for Disease Control and Prevention), high school athletes alone account for an estimated 2 million injuries, 500,000 doctor visits and 30,000 hospitalizations every year. Another 3.5 million children under the age of 14 receive medical treatment for sports injuries each year.

A new study by national research group *Safe Kids Worldwide* may help explain why a child is taken to the emergency room for a sports injury ***every 25 seconds.*** The study revealed how young athletes are engaged in a dangerous culture, comprised of ignoring sports injuries and feeling pressured to play even when they know they have been injured.

3,000 athletes, coaches, and parents were surveyed as part of this research. Results indicated some very troubling statistics:

- 42 percent of young athletes claimed to have downplayed or hidden injuries in an effort to remain in the game and not risk being kicked off a team
- 53 percent of coaches said they have felt pressure to knowingly put injured players back in a game
- 62 percent of organized sports-related injuries occur during practice
- 33% of parents do not have their children take the same safety precautions at practice that they would during a game
- Roughly the same percentage of young athletes claimed it was "normal" to play rough during a game, in effect "sending a message" to the opposing team

While such problems in youth sports have been well publicized, this new research found that many young athletes are still putting themselves at unnecessary risk. Bob Ferraro, Senior CEO of the *National High School Coaches Association*, has this to say on the topic: "One of the biggest problems with youth sports is that they are unregulated. The *National High School Coaches Association* believes that there should be a standardization of rules that protect our young athletes when it comes to injuries…."

Pushing With Pressure
"Kids younger and younger are facing more pressure, and they are overdoing it and potentially causing long-term problems," said Dr. Mitch Robinson, a former University of Colorado tennis player and an orthopedic surgeon specializing in sports medicine at Panorama Orthopedics & Spine Center in Golden. "We want to get the message out that we as parents and coaches need to be more aware of the potential risks and know when young athletes need to rest and seek treatment." Robinson further expands upon this subject, explaining how the bodies of younger athletes are still "skeletally immature", placing them at different risks than adults, most notably the dangers of repetitive wear and tear without sufficient recovery time.

"We want to get the message out that we as parents and coaches need to be more aware of the potential risks and know when young athletes need to rest and seek treatment." Robinson further expands upon this subject, explaining how the bodies of younger athletes are still "skeletally immature", placing them at different risks than adults, most notably the dangers of repetitive wear and tear without sufficient recovery time.

The cultural message to play through pain is strong, claims Dr. Samantha O'Connell, a clinical psychologist who specializes in treating athletes. Kids are under pressure to play at a much higher level and with more intensity than they did decades ago. A pitcher who shows potential may play on two or three different teams during a single season.

As a result, pediatric orthopedic surgeons are seeing a disproportionate number of young athletes sustaining injuries as they continue to play through pain. "High school athletes, especially freshmen, can't always distinguish between the everyday soreness from workouts and practice and serious injury," says Jeri Connor, a high school athletic trainer with 20 years of experience.

Is Coach Enhancing Capability or Fostering Disability?
The good new is, according to the CDC, more than half of all sports injuries in children are *preventable*. We just need to make some changes. This begins with the parents of young athletes. Parents have the right to know a coach's credentials and experience levels, and to question coaches and trainers when it comes to a child's health, safety, and wellbeing. If a parent fears that a coach will not play his child if he questions his or her training methods, it is time to seek out a new coach.

There is often a concern on the part of a parent over merely suggesting to the coach that a child needs to rest or recover from a potential injury, for fear of the coach's reaction. Again, this is a red warning flag that he or she is the wrong coach for your budding athlete. Misconceptions about sports safety, on the part of both coaches and parents, are contributors to overuse injuries.

Continuing to play through an injury can exacerbate an already tenuous situation, placing a young athlete at a higher risk of sustaining another injury elsewhere in his body. Unfortunately, nearly 90% of parents tend to underestimate the amount of rest/recovery time required to fully heal a young body.

The Role of Parents
Parents, coaches, and athletic trainers can help teammates avoid injuries by teaching proper body mechanics techniques, and also by setting age-appropriate goals for their sports players. Dr. Carolyn Kienstra, a pediatrician at the University of Miami Health System who practices at Holtz Children's Hospital, reminds the public, "Don't expect a 10-year-old to play like a high school senior."

If trainers and coaches observe a fierce drive and passion in a student-athlete, there is a tendency to want to push him to his fullest potential. It is up to the responsible parents in such a child's life to pay attention, and know when to call a halt to a dangerous situation. Along with praising a child's determination and budding skills, be savvy enough to encourage a young athlete to stop playing as soon as he notices an injury, and seek out his coach or doctor. If prescribed, adhere to the schedule of rest and recovery until the doctor determines that an injury has fully healed. Student-athletes can help this process along by paying attention to sports nutrition, consuming healthy foods and plenty of fluids, not just during the game season but every day.

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It Is Not Just Child's Play
These same sensibilities apply to adults. Whether your client is a regular at the gym, or more of a weekend warrior, both you and he are no doubt acquainted with the old adage, *"No pain, No gain".* In an effort to

increase our levels of fitness, we often strive to out-perform what we accomplished during our last workout, raising the amount of weight we lifted or spending just a few more minutes on the treadmill. If we're sore the next day, we reason that we must have done things properly. If not, we figure that we probably didn't work hard enough. Sound familiar?

Recently a few of my clients have mentioned to me that they were not sore the day or two after our training session and that perhaps they were not tapping into their fullest potential. This is a myth that has been perpetuated far too long. While it is true that a strenuous workout may render you a bit sore and stiff the next day, it is not necessary to experience these sensations as you make great strides towards your fitness goals.

Understanding The Body's Mechanisms

When an individual who is deconditioned embarks upon a new workout regimen, there may be an increase in delayed-onset muscle soreness. This is due in large part to the fact that muscle groups which have never before been challenged are suddenly being asked to perform a new set of movements, with the addition of "time under tension". However, a seasoned athlete who changes his training every month or so probably will not feel this same acute level of discomfort, even if his weight load has been dramatically increased. A more conditioned body has firmly established neural pathways in place as well as highly developed musculature; as such, it will take quite a bit more leverage to elicit discomfort in such an individual.

Progress can be measured in several ways when assessing the success of a fitness program. *Painless* gains include such aspects as increases in self-efficacy, ease of movement through activities of daily living, heightened levels of energy, and an overall improvement in mood and self-esteem. It is these factors that will maximize adherence to a workout program, and that is the first step toward success and visible gains. If a little pain comes along for the ride at first, know that it is only temporary. If your clients don't experience post-workout soreness, assure them that their bodies are still responding in a very positive manner!

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Everything You Need to Know About Food Journals

As fitness professionals, our job is to help our clients achieve results. A large part of their success depends on their nutrition and although prescribing specific meal plans may not be in the scope of our practice, getting our clients in the habit of journaling their food intake is something we can all do to help our clients achieve positive outcomes.

A food journal can take many different forms and can be reviewed in a variety of ways. It is important to find which way works best for you and your clients.

Why Food Journaling Works

Awareness - One of the biggest misperceptions people have regarding their inability to lose weight is they underestimate how many calories they eat and overestimate how many calories they burn. Food journaling is a great way to show them exactly how many calories they are consuming during the course of the day. (In order to determine how many calories your clients are burning check out this article on BMR)

Oftentimes, when first starting a journal our clients will be shocked to learn how much they are actually eating and by simply adjusting the quantity of food they eat it will be easier for them to reach their goals.

Accountability - Another benefit of journaling is that it helps keep your clients accountable for what they are eating. There is a saying "if you bite it, write it" meaning if you eat something you need to write it in your journal. This helps prevent your clients from eating foods that they know are not in line with their dietary goals.

Knowing they have to put it in their journal will make them think twice about making poor choices.They will also know that their trainer will be reviewing their journal and they will be accountable not only to themselves but to you as well, for their nutritional choices.

Perception vs Reality – Often, people perceive their diets as being healthier than they are. I can't tell you how many times I've asked clients how many fruits and vegetables they eat and they tell me they eat a lot. I then had them journal for a week and they barely get 3-4 servings a day.

Putting their food intake on paper allows them to see for themselves they are not eating enough fruits and vegetables. This also relates to the above section on awareness, they become more mindful of what they are actually eating and where they are falling short or eating too much. Some clients don't think they eat a lot of sugar or processed carbs until we review the journal and discover that they make up a majority of their diets.

Types of Food Journals

They type of journal your clients use and how they log their food will be determined by their lifestyle, the type of client they are (in person vs online) and if they are old-school or tech-savvy. There are also many different factors and things that can be included in their food journals which we will discuss in the next section.

Written Journal - Some clients will prefer to write down their food in a notebook. This is one of the least efficient and more cumbersome ways of journaling because they will need to write down not only what they ate but how many grams of protein, fat, and carbs, as well as calories for each meal. This takes up a lot of time

and requires your clients to research the nutrition facts of foods, as well as do the math. For clients that are not analytical, this will often lead to frustration and incomplete information. It is also not ideal for online clients since it is more challenging to review for trainers.

However, a written journal (even if they don't write down all the nutrition info) is better than nothing. If this is the only way you can get your clients to journal, then, by all means, have them hand write it. This will still give you and your clients a general idea of their diet and will help you suggest some healthier alternatives.

Apps or Online Logging

Using an app or online food journal is the most convenient way to track your client's nutrition. There are many great nutrition tracking apps and sites that will make it easier for you and your clients to review their nutrition. My favorite one is My Fitness Pal. These food journaling tools already have almost every food imaginable in their database so all your clients need to do is select the food and the serving size and the nutrition totals will be automatically populated for them. Most people always have their smartphones within reach, making these apps ideal.

Top Nutrition Tracking Apps

Technology has made tracking your nutrition easier and less complicated. Almost all of our clients have smartphones and these apps are some of the best for food journaling.

- MyFitnessPal - This app has been the standard go-to app for many trainers for a long time. It has one of the largest food databases and it's easy and fast to enter foods. It also saves your most frequent foods for easy access. It connects with many different apps and devices to track progress and also has a built-in step counter.
- Rise Up - This app not only allows you to track your food but also who you were with, where you where, and how you felt while eating. This can help identify if your client was emotional eating or eating socially rather than eating because they were hungry.
- See How You Eat - This app is a photo logging app where your client can take photos of their meals. This app does not track calories but is good for clients who are not analytical and don't want to get bogged down with the numbers.
- Lose It - This app allows your clients to take photos of their foods, track calories and nutrition, set goals, see serving sizes, plan meals ahead of time, and track weight and body measurements.

How to Review Your Client's Food Journal

There are many different ways you can review your client's food journals with them. You can sit down with them one-on-one during their training session, after their session (if you have the time), over the phone, via skype, or even through email if they are a distance client. For my in-person clients, I prefer to sit down with them face-to-face and review their journal during the last 15 minutes of their training session once per week. As a trainer, our time is money and usually, we'll have clients back-to-back so taking time after a session is not always an option.

The first thing I usually look at is their total number of calories for each day and see if it is in line with the targets that we set based on their BMR and activity levels. If they are consuming more calories than they are burning this is the first thing we will address. We'll look at the types of food, their macronutrient ratios, and

the portion sizes. Usually, the portion sizes are the easiest thing to modify. The serving sizes for foods has increased dramatically over the last 50 years and cutting down on portions is a quick and easy way to lose a few pounds.

Next, I'll look at the quality of foods they are eating. While it is true from a weight loss standpoint that calories in vs. calories out is the biggest factor, weight is just one part of the equation– we want our clients to be healthy inside and out. It's possible to lose weight eating 1,500 calories consisting of Twinkies if you're burning 2,000 calories. Simply monitoring calories is not a sustainable long-term strategy for our clients.

If there are meals logged that are out of line with their goals we will dig deeper and discuss where they were, who they were with, and why they ate them. People will eat foods outside their nutrition plan for a variety of reasons such as being bored, depressed, anxious and at social events. Sometimes it's hard to resist if everyone at work is eating birthday cake.

Once in a while, it is ok, but if our clients are going out to eat multiple times per week and eating things that are setting them back we need to address it and give them some strategies and options to make healthier choices. I've put together a series of nutrition handouts for all my clients and one of them has tips for staying on track while traveling and dining out.

Food Journaling Tips

1. Make it as easy as possible for your clients to food journal. If it becomes a hassle or feels like a chore they are less likely to comply. Teach them how to use the app if they aren't 100% sure on the ins and outs. This means we need to familiarize ourselves with the app we are recommending.
2. Give your clients encouragement and send them a message every now and then congratulating them on their great food choices or simply congratulate them for staying consistent with tracking their food. There will almost always be something positive they've done, comment on it and take the opportunity to encourage them.
3. Make sure they are honest and complete with their tracking. Sometimes, clients will be apprehensive to tell us that they unhealthy foods. Let them know that our job isn't to judge them and we are here to help. In order to help them, we need them to be comfortable enough with us to be 100% honest.

Food journaling is an effective tool for helping our clients reach their overall health and nutrition goals. Even if we are not dietitians or legally permitted to prescribe nutrition plans, we can still help our clients to become aware of what they are eating through the use of journaling. If you find that your clients need additional help or specific meal plans reach out to a licensed dietitian in your area for additional assistance.

Integrating Sleep and Exercise for Mutual Improvements

Can counting your ZZZ's benefit athletic performance, or does exercise facilitate a better night's sleep?

An inability to sleep and sleep well is a pervasive health concern in our society today. Although every scientific detail of how sleep regulates normal hormonal and metabolic processes is not yet completely understood, we must recognize the mounting evidence that physical exercise is an effective and drug-free way to manage both the quality and quantity of overnight rest.

Despite the medical community's consensus that sufficient sleep and adequate exercise are pivotal in maintaining health, these behaviors within the typical American lifestyle are often not afforded the credence they so richly deserve. The Centers for Disease Control and Prevention estimate that nearly one-third of adults fail to attain the recommended seven hours of sleep per night, the amount experts have determined is needed for optimal health. The sleep deficit is even more of a concern in teenagers: roughly two-thirds of high-school students receive less than eight on school nights, when studies show that eight to ten hours would be more beneficial.

Alongside the lack of sleep, Americans have struggled to – or chosen not to — engage in the recommended amount of daily exercise. The 2015 National Health Interview Survey found that, from 1997 to 2015, over one-half of adults failed to meet the federal Physical Activity Guidelines for aerobic physical activity, and only one-fifth satisfied the federal Guidelines for both aerobic and muscle-strengthening activity. From 1988 to 2010, one study reported that the number of women who do not exercise recreationally jumped from 19.1% to 51.7%; their male counterparts' participation also skyrocketed from 11.4% to 43.5%. Considering that the medical community has repeatedly demonstrated how exercise can function as a first line of defense against over 30 chronic health conditions, most notably cardiovascular disease and related disorders, this drastic reduction in leisure-time physical activity may contribute to the prevalence of lifestyle diseases currently seen, including sleep disturbances.

Which Came First?

Similar to the age-old "chicken or the egg" debate, exercise and sleep often seem to have this interactive dynamic. Which aspect of health might be optimized first: exercising to facilitate deeper sleep at night, or sleeping more to enhance sports performance?
The RAND research group recently presented an intensive in-depth analysis of how sleep affects us and what sleep deprivation can do to us—and to the economy. They estimate that between lost work and poor performance at work from lack of sleep, the U.S. alone loses $411 billion each year. Imagine the loss in sponsorship and endorsements a professional athlete might incur as a result of poor sleep patterns!
A new study presented at the Radiological Society of North America's annual conference found that when individuals get an average of just three hours of sleep during a 24-hour period, their hearts suffer for it. The participants of this study revealed increases in contractility of their hearts, blood pressure, heart rate and levels of thyroid hormone and cortisol under such sleep-deprived conditions. Each of these factors can have a detrimental effect on physical performance in the gym, on the field, and in competitive events.

The Athlete's Angle

Sleep deprivation or partial sleep loss are common in athletes competing in events such as ultra-marathons or triathlons that require them to cross several time zones. Although it is well established that sleep loss has negative effects on mental performance, its effects on physical performance are too prevalent to ignore.

Time to exhaustion becomes lessened by sleep deprivation, wreaking havoc with one's endurance level, a key player in marathon-type races. Examination of the various hormonal /metabolic parameters that have been measured in multiple research studies reveals that the major metabolic disturbances accompanying sleep deprivation are an increase in insulin resistance and a decrease in glucose tolerance. This may explain the reduction in time to exhaustion observed in sleep-deprived subjects. If a client repeatedly finds himself unable to complete a set of repetitions, using a fairly comfortable weight load, it may be useful to inquire about his sleep habits.

Physical activity improves sleep quality and increases sleep duration. Engaging in active and purposeful movement throughout the day reduces stress and will typically cause fatigue by day's end. As little as 10 minutes of aerobic exercise, such as walking or cycling, can dramatically improve the quality of nighttime sleep, especially when done on a regular basis. Taking this a step further, exercising regularly may reduce one's risk for developing troublesome sleep disorders such as apnea and restless leg syndrome.
Daytime exercise may also help reset the sleep wake cycle by raising one's body temperature slightly, then allowing it to drop, thereby triggering sleepiness a few hours later.

The Link Continues As We Age

Seventeen sedentary adults aged 55 years and older who were plagued by insomnia participated in a randomized controlled trial comparing 16 weeks of aerobic physical exercise to non-physical activity. Eligibility included suffering from primary insomnia for at least 3 months, with habitual sleep duration less than 6.5 hours per night. The subjects who engaged in physical activity improved their quality of sleep and sleep efficiency in comparison to the control group. The exercising group also had less evidence of depression and daytime sleepiness, and saw improvements in their overall daily vitality. It appears, then, as though aerobic physical activity may be an effective treatment approach to improve sleep quality, mood and quality of life in older adults with chronic insomnia. Educating the senior demographic of these facts is one way in which personal trainers can be of enormous help.

Just as athletes need more calories to fuel their bodies for their sport, they also require additional sleep: physical activity places increased demands on muscles and tissues, and the body takes advantage of sleep to repair itself. Sleep not only helps the body recover but can prove to be surefire performance booster. Exactly how much sleep one requires for optimal functioning is dependent on both genetics and how much physical activity is channeled into the sport (most adults need seven to nine hours a night, and athletes might improve their performance with up to 10 hours a night). Visual stage-of-sleep analysis of the sleep EEGs of 10 college athletes under three different conditions of exercise suggests a general positive relationship between exercise and the amount of slow-wave (delta) sleep in a night's sleep.

Benefits Abound

If a client seems satisfied with the status quo of his workouts, it may come as a surprise when you reveal the multitude of positive results he might observe with just a few more hours of sleep each night. Here are a few of these benefits:

SPEED – Basketball players who can add an extra two hours of sleep a night boost their speed by five percent—and their accuracy by nine percent. Optimal slumber leads to faster reflexes reaction times.

INTENSITY – Athletes getting at least nine hours of sleep a night are more likely to do – and excel at — higher-intensity workouts such as weight lifting, biking, or running.

CEREBRAL STRENGTH – Training and competition can call for just as much mental strength as physical strength, and adequate sleep is a benefit here too. Well-rested athletes receive a boost in alertness and mood, which are both key for optimal performance.
COORDINATION – Sleep helps the body better consolidate memories linked to motor skills. In fact, adequate rest is vital for cementing recall linked to body movements. If an athlete's goal is to be able to repeat that perfect tennis backhand from yesterday's practice or hone his skills when shifting gears on a bike, sleep may be just as important as physical training sessions.

We can continue to debate where to begin this process of increased exercise/adequate sleep forever. Since benefits are observed on both sides of the fence, perhaps it is prudent to embark on this quest simultaneously. Work hard, play harder, and sweet dreams will come!

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Get More Personal Training Clients – Communicate Better!

Effective communication goes beyond talking and listening. It takes into account the situation and the specific person you are in conversation with. Personalized communication can build business and customer loyalty or break it down. Poor service or lack of results isn't always what sends clients screaming for the exit. It's often the quality (or lack of quality) communication that robs a business of a healthy bottom line.

Let's take a look at why communication is important for personal trainers and how to improve upon the skills you already have.

Essential Communication Skills for Personal Trainers
Helping clients succeed in their health and fitness goals requires strong communication skills because they are the building blocks for:

- Building rapport and relationship trust
- Client motivation and longevity
- Client education and skill development
- Professional networking relationships
- Public and private presentations
- Marketing and recruiting efforts
- Leadership roles

And that's just the short list.

In defining effective communication, we cannot overlook the fact that communication includes more than sending a message; it's also about receiving a message and how we listen and respond. Communication encompasses elements of the following:

- Active and reflective listening
- Verbal and nonverbal communication (body language)
- Interpersonal communication
- Written communication

What Is Effective Communication?
Clients are our business. If we don't understand our clients, we don't understand the business – and that's a problem. When I say understand our clients, I mean working beyond identifying goals for health and fitness. To effectively communicate, we have to know what makes each person "tick".

The first step is understanding how communication takes place. I recommend keeping Lasswell's (1953) words in mind: Communication is about "who says what in which channel to whom with what effect?"

Let's break it down:

- Who = who is communicating the message
- Says What = the message itself
- In Which Channel = the medium (or how the message is delivered – i.e., text, YouTube, Voxer, email, etc.)

- To Whom = the one who receives the message
- With What Effect = the outcome or effect/impact of the message

The second step is to observe each client's personality type, which will allow you to gain an understanding of how each client communicates and how you can communicate with him or her based on their individual preferences. I like to use the DISC Model (Marston, 1928) because I have achieved success in with its application. DISC stands for Dominant, Inspiring, Supportive, Cautious. Each personality type communicates in different ways and prefers to be communicated with in different ways.

The Dominant personality (D) is direct, results-oriented, and works fast. These people prefer to know the "what". In other words, get to the point, focus on the outcome, and provide choices or options.

The Inspirational personality (I) is people-oriented, so they like to know the "who". These types can lose focus but are great decision-makers. With this type of individual, your best bet is to show enthusiasm and provide feedback as well as make personal connections by sharing stories and asking about the client's family and happenings in his or her life.

The Supportive personality (S) enjoys helping and has a focus on quality relationships. An S personality prefers to know the "how" of a situation. These individuals are not interested in facts, data, etc. unlike the D personality. Working with these clients requires a gentle approach to communication. In other words, don't push these types toward decisions in an aggressive way.

The Cautious (C) personality is laid back and task-oriented, but are not emotion-driven. While a C person enjoys facts and data, they want to know the "why" of a situation. These clients respond well to logical communication supported by third-party sources to validate the information their trainer gives them.
Of course, all this means you must also know your personality and what affinities you have for one method over another and adjust according to what your clients need – not what makes you comfortable. This is about growth, after all.

Although there are individual differences we must honor and respect, there are some basic rules we can use to make communication of a message quality.

Crookes (1991) described the following attributes that every message or communication effort we make include the following:

- Clarity. Is the message simple and understandable?
- Concise. Is the point communicated swiftly without "off target" fluff?
- Correct. Is the information correct?
- Complete. Does the message give the client what he or she needs to understand next steps for action?
- Courteous. Is the tone friendly and open? Could it be interpreted as an insult or threat?
- Constructive. Is the feedback positive and focused on what's right?

I like to add one more step: Closure. Did you close the loop? Follow-up? Answer any remaining questions or address concerns?

What Channels Can a Trainer Use to Communicate

I advocate for using all that is at your disposal – phone, email, Voxer, video-chat, texting to send motivational messages, etc. Communication is really about building relationships and overcoming barriers. Don't let a lack of communication diminish the return on your services or business. There are many barriers to building a business – available space, initial funding sources, logo creation, and others. Communication – an act that is an inherent desire for humans – shouldn't be one of them. Build your skills, build your business.

Ankle Anatomy – Fibularis and Peroneus Muscles

The words peroneus and fibularis are used interchangeably in anatomy. But, who needs an extra word to learn when you're already trying to remember 600 muscles in the human body!? Not you. Not me.

Let's pick one word - fibularis and learn about the three muscles that make up this group of lower leg muscles so you can get to training them effectively.

Where are the fibularis muscles?

Using the word fibularis makes more sense to me than peroneus because the three muscles that we are talking about all attach to the fibula, which is the smaller of the two bones in your lower leg. The fibula looks like the bow for a violin.

Once you learn about the fibula bone you're set, you've actually learned one less word. Now we're talkin'!

All three fibularis muscles attach to the fibula on one side and to the foot in different places on the other, which is how they help the ankle move and stretch.

Find each of these muscles on yourself as we review the attachments.

Fibularis Tertius attachments - This is the smallest muscle of the three. It begins at the lowest (inferior) portion of the fibula and connects into the top of the 5th metatarsal. This makes it great at dorsiflexion and eversion of the ankle.

Fibularis Brevis attachments - This muscle attaches in the middle of the fibula and attaches to the outside (lateral) portion of the 5th metatarsal giving it more advantage toward ankle eversion and the ability to dorsiflex or plantarflex the ankle depending on starting position.

Fibularis Longus attachments - As the name states, it's the longest, attaching to the most upper (superior) portion of the fibula. The other side wraps around under the outside (lateral) edge of the foot to the 1st metatarsal and cuneiform. This gives the longus the ability to influence eversion from a position of plantarflexion.

What do the fibularis muscles do?

Aside from the specific motions described above, these three muscles as a whole support the outside (lateral) ankle. On the contrary, when a client rolls their ankle, it's usually one of these three muscles that get overstretched and injured.

The fibularis muscles evert, plantarflex and dorsiflex your ankle when walking, squatting, running, lunging, etc. making their mobility and stability both very important! Everything you do starts from your feet, so keep that base of support strong.

Once we know where a muscle attaches and the movements it creates, it's fairly simple to design an exercise to strengthen that muscle.

Fibularis Tertius Exercise - Have your client dorsiflex and evert their ankle using just gravity or by attaching a resistance band around their midfoot to add additional resistance.

Fibularis Brevis Exercise - Have your client dorsiflex with more abduction than for tertius. Use a resistance band to challenge the eversion component.

Fibularis Longus Exercise - Have your client plantarflex, abduct and evert their ankle, using a resistance band or your hand (if comfortable with it) to create force.

Fibularis study tip

To remember these muscles better, find the attachment points on yourself. Evert, dorsiflex and plantarflex your ankle while placing your hand where the attachment sites are to feel the contraction of the muscles. Using a balloon or rubber band is a way to bring the muscle to the outside of the skin so you can better visualize what it doesn't.

When you're walking, pay attention to the role that these muscles have in every step you take.

Learning anatomy and muscle attachments enable you as a personal trainer to create effective exercises and cue proper form with your clients. Keeping bodies strong and your business healthy. It's important to strengthen these muscles with the same emphasis you place on the pectoral group or the abdominals.

Learn more about anatomy with NFPT's Anatomy Fundamentals Video Course. Each muscle is demonstrated on a skeleton and on the body using balloons, colored string, and pipe cleaners to help you find it more easily. Exercises included!

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SELF – TEST: December 2017

1. In the United States alone, approximately how many people suffer a stroke each year?
    a. 70,000
    b. 700,000
    c. 7,000,000
    d. We don't have an accurate measure of this because so many go unreported.

2. Which of the following is the correct order concerning goal-oriented rehabilitation?
    a. Preventing complications of prolonged inactivity, decreasing stroke and cardiovascular events, and increasing aerobic fitness
    b. Increasing aerobic fitness, decreasing stroke and cardiovascular events, and preventing complications of prolonged inactivity
    c. Preventing complications of prolonged inactivity, increasing aerobic fitness, and decreasing stroke and cardiovascular events
    d. Increasing aerobic fitness, preventing complications of prolonged inactivity, and decreasing stroke and cardiovascular events

3. Which of the following equations is true?
    a. Stroke recovery = neuroplasticity
    b. Stroke recovery = repetition + consistency
    c. Stroke recovery = neuroplasticity + repetition + consistency
    d. Stroke recovery + neuroplasticity = repetition + consistency

4. When sucrose is chemically altered into sucralose, which carcinogenic atom is substituted for three hydroxyl groups?
    a. Chlorine
    b. Benzene
    c. Ethanol
    d. Sulfur

5. Which of the following is not a prominent health risk with the consumption of sucralose?
    a. Disruption of the endocrine (hormonal) system
    b. Development of toxic buildup in the body, most notably in the brain
    c. Unhealthy weight loss and cancer
    d. Damage to the "good" bacteria within the gut

6. Extra weight in belly area, bloating, skin irritations/itching, swollen hands and feet, occasional headaches, joint stiffness, and clouded/unclear thinking are signs of what?
    a. Toxic buildup of sugar
    b. Toxic buildup of artificial sweeteners
    c. Toxic buildup of carcinogens
    d. Toxic buildup of protein

7. What is the primary function of cortisol?
    a. Control how our body creates and utilizes energy
    b. Protect us from everyday stress
    c. Control weight
    d. Aid in muscle recovery

8. What causes a release of excessive amounts of cortisol, eventually catabolizing a dangerous excess of proteins?
    a. Not exercising enough
    b. Lifting too heavy
    c. Overtraining
    d. Aerobic endurance training

9. 1 additional gram of what vitamin per day improved testosterone to cortisol level by over 20% in a study done on 17 junior elite weightlifters?
    a. Vitamin A
    b. Vitamin B
    c. Vitamin C
    d. Vitamin D

10. Meniere's disease is most likely caused by an abnormality of fluid where?
    a. Inner ear
    b. Middle ear
    c. Outer ear
    d. Entire ear

11. Which of the following is NOT a coping strategy for Meniere's disease?
    a. Increase caffeine
    b. Decrease salt
    c. Decrease MSG
    d. Stress management

12. Since Meniere's disease is considered a problem within the vestibular system, it can also lead to what challenge?
    a. Cognitive functioning
    b. Vision
    c. Posture
    d. All of the above

13. Which of the following diets is a holistic diet from India translates to "the science of life?"
    a. Ketogenic
    b. Ayuurveda
    c. Paleo
    d. Vegan

14. Which diet was first recognized in the 1920s to help control epileptic seizures?
    a. Ketogenic
    b. Ayurveda
    c. Paleo
    d. Low FODMAP

15. Which diet has a high price tag because of the high quality meats?
    a. Ketogenic
    b. Ayurveda
    c. Low FODMAP
    d. Paleo

16. What is the goal of mirror therapy?
    a. By watching the limb move, we can control it better
    b. To trick the brain into thinking movement has occurred
    c. By watching the limb move, we can see the progress which boosts confidence and mood
    d. To give the brain positive reinforcement because seeing is believing

17. What are the key players in mirror therapy?
    a. Unipolar
    b. Mirror
    c. Bipolar
    d. Reflective

18. Which is true of bacterial cells and animal cells?
    a. The human body consists of a greater number of bacterial cells than animal cells.
    b. The human body consists of a greater number of animal cells than bacterial cells.
    c. The human body consists of a somewhat similar number of animal cells and bacterial cells.
    d. We have no clue how many actual bacterial cells and animal cells that the human body has.

19. Ferments foods are packed with good bacteria that live in the intestinal tract called what?
    a. Antibiotics
    b. Prebiotics
    c. Probiotics
    d. Biotics

20. Which of the following is not true concerning traditional fermented food?
    a. They help balance the production of stomach acid.
    b. They help the body produce acetylcholine.
    c. They hold an extra benefit for individuals living with and managing diabetes.
    d. They produce numerous compounds that promote the growth of pathogenic bacteria.

21. What is the philosophy of Krav Maga?
    a. To finish a fight as quickly and aggressively as possible
    b. To make the fight last as long as possible to inflict the most harm possible
    c. To finish a fight as quickly as possible by holding person down
    d. To make the fight last as long as possible giving the authorities more time to arrive

22. Which of the following does Krav Maga most closely resemble?
    a. Strength training
    b. Cardio
    c. HIIT
    d. None of the above

23. Which of the following might you need to take into consideration when training a client from a different culture?
    a. Differences in clothing
    b. Differences in music
    c. Differences in faith
    d. All of the above

24. How often is a child taken to the emergency room for a sports injury?
    a. Every 25 seconds
    b. Every 25 minutes
    c. Every 25 hours
    d. Every 25 days

25. What percentage of all sports injuries in children are preventable?
    a. 10%
    b. 25%
    c. More than 50%
    d. Injuries in children playing sports are not preventable

26. Which of the following is not a painless gain?
    a. Self-efficacy
    b. Ease of movement through activities of daily living
    c. Less energy because of good workouts
    d. Overall improvement in mood and self-esteem

27. Which of the following is a reason why food journals work?
    a. Awareness
    b. Accountability
    c. Perception vs Reality
    d. All of the above

28. What is recommended to look at first when reviewing your client's food journal?
    a. total number of calories
    b. frequency of meals
    c. if they ate donuts
    d. how many calories in their biggest meal

29. What tip below will make food journaling a more successful part of your practice?
    a. Make sure your client is honest and complete
    b. Give your client encouragement
    c. Make it as easy as possible
    d. All of the above will help make journaling more successful

30. What is the recommended number of hours of sleep per night that adults should be getting?
    a. 5
    b. 7
    c. 9
    d. any amount of sleep is okay as long as you feel rested

31. A sleep deficit occurs more prominently in which of the following groups:
    a. infants
    b. elderly
    c. teenagers
    d. adults

32. What effect does lost work and poor performance at work from lack of sleep have on the US economy?
    a. $41 billion
    b. $114 billion
    c. $141 billion
    d. $411 billion

33. Daytime exercise can help reset the sleep wake cycle, triggering sleepiness by:
    a. Raising body temperature slightly, then allowing it to drop
    b. Lowering body temperature slightly, then allowing it to rise
    c. Exhausting the body, putting it in a sleepy state
    d. Exhausting the mental capacities, making the mind tired

34. Benefits of getting good quality and quantity of sleep include:
    a. Better coordination
    b. Improved Cerebral Strength
    c. Faster reaction times
    d. All of the above are benefits

35. Which personality type wants to know the "why" of a situation? They respond well to logical communication supported by third-party sources to validate the information their trainer gives them.
    a. Dominant
    b. Inspirational
    c. Supportive
    d. Cautious

36. Strong communication skills are the building blocks for:
    a. Building rapport and relationship trust
    b. Being able to 'fake it till you make it'
    c. Understanding yourself and others
    d. Knowing when to be submissive when necessary

37. Communication encompasses which of the following:
    a. Active listening
    b. Interpersonal communication
    c. Written communication
    d. All of the above

38. How many different muscles make up the Fibularis?
    a. 1
    b. 2
    c. 3
    d. 4

39. Which attachment is the smallest muscle of the three and is great at dorsiflexion and eversion of the ankle?
    a. Fibularis Tertius
    b. Fibularis Brevis
    c. Fibularis Longus
    d. Fibularis Dorsis

40. The Fibularis muscles, as a whole, support the:
    a. Knees
    b. Ankle
    c. Glutes
    d. Hip

SIDE 1

RESCORE | MARK ✓ | TOTAL ONLY/BOTH SIDES

	T	F			
1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E
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	T	F			
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46	A	B	C	D	E
47	A	B	C	D	E
48	A	B	C	D	E
49	A	B	C	D	E
50	A	B	C	D	E

KEY ITEM COUNT

0	0	0
1	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9

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NFPT ID

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1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

MARKING INSTRUCTIONS

Use a No. 2 Pencil

Ⓐ ● Ⓒ Ⓓ Ⓔ
Fill circle completely

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
Erase cleanly

SCORE		# CORRECT
		% CORRECT
RESCORE		# CORRECT
		% CORRECT
ROSTER NUMBER		SCORE
		RESCORE

NAME _____

SUBJECT **December 2017 Self Test**

PERIOD _____ DATE _____

TEST ANSWER SHEET B
Form No. 19641

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