PERSONAL TRAINING QUARTERLY

PTQ

VOLUME 5
ISSUE 2
June | 2018

NSCA®
NATIONAL STRENGTH AND CONDITIONING ASSOCIATION

PERSONAL TRAINING QUARTERLY

PTQ

VOLUME 5
ISSUE 2
June | 2018

ABOUT THIS PUBLICATION

Personal Training Quarterly (PTQ) publishes basic educational information for Associate and Professional Members of the NSCA specifically focusing on personal trainers and training enthusiasts. As a quarterly publication, this journal's mission is to publish peer-reviewed articles that provide basic, practical information that is research-based and applicable to personal trainers.

NSCA MISSION

As the worldwide authority on strength and conditioning, we support and disseminate research-based knowledge and its practical application, to improve athletic performance and fitness.

TALK TO US...

Share your questions and comments. We want to hear from you. Write to *Personal Training Quarterly* (PTQ) at NSCA Publications, 1885 Bob Johnson Drive, Colorado Springs, CO 80906, or send an email to matthew.sandstead@nsca.com.

CONTACT

Personal Training Quarterly (PTQ)
1885 Bob Johnson Drive Colorado Springs, CO 80906
phone: 800-815-6826
email: matthew.sandstead@nsca.com

ISSN 2376-0850

TABLE OF CONTENTS

LOW-CARBOHYDRATE KETOGENIC DIET FOR WEIGHT MANAGEMENT

CARMINE GRIECO, PHD, CSCS

INTRODUCTION

The concept of a low-carbohydrate diet (LCD) is not new (e.g., the *Atkins Diet Revolution* was first published in 1972), however, there has been a surge of public interest over the last decade in carbohydrate-restricting diets. One particular type of LCD, the ketogenic diet (KD), has shown promise for its purported ability to aid in weight management. Achieving and maintaining significant weight loss over the long-term remains a very elusive endeavor. Low-carbohydrate diets (LCD) have demonstrated promise in this regard and may hold certain advantages over traditional calorie-restricted dietary strategies.

The KD stands in stark contrast to current macronutrient recommendations for both health promotion, as well as enhancement of athletic performance (7,21). The KD is characterized by a macronutrient distribution ratio consisting of approximately 70 – 80% fat, 10 – 20% protein and <5% carbohydrate (CHO), with daily CHO intake limited to ≤50 grams. Two of the most prominent and vocal researchers of the KD, Jeff Volek, PhD and Stephen Phinney, MD, PhD, in their book *The Art and Science of Low Carbohydrate Performance*, recommend protein consumption of 0.6 – 1.0 grams per lb of lean body mass, a figure which almost perfectly matches the commonly recommended protein intake for athletes (i.e., 1.2 – 2.0 g/kg bodyweight) (21,26). With CHO intake radically restricted and protein within the commonly recommended range, fat becomes the primary macronutrient target for manipulation.

CARBOHYDRATE METABOLISM

The importance of dietary CHO is so well ingrained that the concept is taken for granted. In fact, basic macronutrient guidelines are predicated upon the idea that the central nervous system (CNS) requires a minimum of ~130 grams (~520 kcal) per day to function properly (i.e., to maintain optimal cognitive function). As a result, the minimum recommended daily intake of CHO reflects this idea (7). Similarly, most contemporary texts on sports nutrition emphasize the outsized role of CHO in optimizing both athletic performance and recovery (9). Frequently referred to as the "master fuel," recommendations range from 3 – 12 grams per kilogram of bodyweight, per day. As an example, the recommended daily intake for a 180-lb athlete would be 246 – 982 grams, with a caloric equivalent of 984 – 3,928 calories. In marked contrast, the KD would recommend a maximum of just 50 grams (~ 200 calories) per day for the same individual.

As ingested CHO is broken down by the stomach and absorbed through the small intestine, rising blood sugar creates a feedback loop which results in secretion of insulin. The primary role of insulin is to "dispose" of excess blood sugar by signaling tissues to "uptake" more glucose from the circulating supply. In this manner insulin serves a prominent role in glucose regulation. This concept also provides the basis for the glycemic index, a concept which attempts to quantify the impact CHO foods have on blood sugar response. For example, foods rich in simple CHO (i.e., "sugars"), which are absorbed quickly, trigger a rapid rise in blood sugar (and subsequently insulin response), whereas foods

rich in complex CHO, such as fiber-rich legumes, exert a relatively blunted response on blood glucose.

When dietary CHO is of sufficient quantity the body has the ability to store small amounts for later use. Stored CHO is referred to as glycogen. Body reserves of glycogen, however, are limited, with relatively small amounts stored in the liver and skeletal muscle. As CHO is the "go to" energy source for the CNS, as well as an important energy source for other tissues, the body must maintain a stable supply of circulating blood glucose. While this is a complex process, the liver is primarily responsible for either breaking down stored glycogen or manufacturing small amounts of glucose in a process known as gluconeogenesis. In this manner the liver is able to maintain circulating blood glucose levels under most conditions. If the liver is unable to supply a sufficient amount of glucose, blood sugar levels will fall and result in hypoglycemia, a condition characterized by hunger, fatigue, headache, nausea and impairments in cognitive ability. In sporting terms hypoglycemia is referred to as "bonking" or "hitting the wall" and significantly affects athletic performance. Therefore, it is easy to understand the perceived need for dietary CHO; in the absence of sufficient blood glucose, physiological function is rapidly compromised.

While CHO is almost universally regarded as necessary for both health and athletic performance, many studies have called into question the absolute necessity of dietary CHO. As early as 1930 there was evidence demonstrating the efficacy of long-term CHO restriction (14). In an audacious attempt to demonstrate proof-of-concept, arctic explorers Dr. Viljalmur Stefansson and K. Anderson, agreed to participate in a study that involved one year of eating a diet that consisted solely of "meat." The diet, which consisted of beef, pork, lamb, and chicken, also included significant portions of animal fat, as well as organ meat. This dietary regimen yielded a macronutrient distribution of approximately 81% fat, 18% protein and 1% CHO, over the course of 375 days. The subjects experienced a modest reduction in weight, which occurred during the first week; there were no restrictions on food portions, subjects ate to satisfy appetite. Interestingly, the researchers noted no vitamin deficiencies, no significant change in mental alertness or physical impairment, or any other deficit attributed to eating a high fat, all-meat diet.

WHAT IS KETOSIS?

Fat is an important energy source; however, it plays a secondary role as an energy substrate, particularly during exercise that exceeds moderate intensity. For example, one of the fundamental concepts of bioenergetics illustrates this point through the axiom "fat burns in a carbohydrate flame;" clearly emphasizing the important role of CHO in energy metabolism. In the absence of adequate CHO availability, as might occur during starvation, near the end of a long endurance event or CHO-restricting diet, the body must turn to an alternate source to maintain energy for all tissues. Under normal dietary conditions there is a steady supply of glucose which the body readily uses as a primary fuel.

In the absence of CHO, however, the body must shift to fat as the primary energy source. In this case, the body catabolizes stored triglycerides, which exist in abundance in even the leanest individual. In effect, the KD provokes a physiological stimulus, i.e., CHO restriction, that mimics starvation. Due to the limited ability to store or produce CHO during periods of starvation, the body thus switches to ketogenesis, the production of ketone bodies as a primary fuel source (3).

Ketogenesis results in the production of ketone bodies, a product of fatty acid catabolism performed primarily by the liver, in the absence of adequate CHO availability. Three primary ketone bodies are produced; acetone, acetoacetate and β-hydroxybutyrate. Even though trace amounts of ketones are always present in the blood, it is only during periods of inadequate CHO availability that significant ketone production will occur. This accumulation of ketone bodies in the blood is commonly referred to as ketosis.

The goal of the KD is to sufficiently deprive the body of CHO to achieve physiological or "nutritional ketosis," a metabolic state which is characterized by blood ketone levels between 0.5 and 3.0 mmol/L (26). This "switch over" point, however, is not seamless and may take up to several weeks for individuals to become "keto adapted" (18). Supporting this idea is a significant amount evidence indicating that a "keto adapted" body has little reliance on glucose for CNS function (8,14,16) or as a source of energy for exercise (17,18,25,27).

KD FOR WEIGHT MANAGEMENT

Weight loss is a common target for disease management, as well as health promotion. The prevalence of obesity remains high among U.S. adults (36.5%) (5), as well as children and adolescents (17%) (6). Importantly, obesity is a significant contributor to increased morbidity and mortality, as well as being a primary driver of increasing medical expenses (4). Despite much effort and cost, there has been little success on this front and obesity remains a public health crisis.

Given the lackluster success of commonly prescribed diets for the majority of individuals it is not surprising that there is interest in alternative strategies. Anecdotal evidence regarding KD abounds on the internet, with reports of "miraculous" weight loss commonplace. The reality of KD, however, may be less impressive.

Several studies have investigated the potential of LCD or KD on weight loss. For example, Brinkworth et al. (2) compared one year of low-fat (LF) vs. LCD diet in adults with abdominal obesity. Subjects were randomly assigned and diets were isocaloric, with moderate energy restriction. Both groups realized significant weight loss, however, there was no significant difference between groups, suggesting that a LCD was equally effective as a LF diet.

Moreover, two recent meta-analyses sought to investigate the effect of LCD on weight loss and cardiovascular disease risk. Sackner-Bernstein et al. (19) compared LCD to LF, among overweight and obese men and women. The authors found a significantly greater effect of weight loss in the LCD vs. the LF diets (-8.2 kg vs. -5.9 kg). The impact of diet on cardiovascular risk factors was split, with LCD resulting in significantly greater improvements in HDL cholesterol and triglycerides, while the LF resulted in significantly greater improvements in LDL and total cholesterol. From this the authors concluded that LCD were a viable alternative to LF diets and recommended "dietary recommendations for weight loss should be revisited to

consider this additional evidence of the benefits of [low] CHO diets." A significant limitation of this meta-analysis, however, was the authors' definition of low-carbohydrate as a daily CHO consumption less than 120 grams. This value, while well below the standard recommendation of daily CHO consumption, still far exceeds the strict recommendation of KD (≤50 g/day), therefore the results of this meta-analysis must be approached with caution.

Supporting these results, Naude et al. (15) found a similar outcome in obese adults with and without type 2 diabetes. This meta-analysis of 19 randomized, controlled trials compared dietary interventions using standard CHO recommendation (i.e., 45 – 65%), low-carbohydrate/high protein (LCHP) and low-carbohydrate/high fat (this group, although not specifically stated, met the criteria for KD). Results demonstrated significant weight loss among all groups in the short-term (3 – 6 months) and long-term (1 – 2 years), with no significant difference among dietary interventions. The authors concluded that weight loss interventions using CHO restriction are equally effective as isocaloric diets of standard CHO recommendation.

Most recently, Wilson et al. (27) investigated the effect of a 10-week KD on strength, body composition, blood lipids and hormonal response in resistance trained males, while following a periodized resistance training program. The investigation included a 2-week dietary adaptation period, and a control group, which followed a more traditional macronutrient ratio consisting of 55% CHO, 25% fat and 20% protein (WD). The 10-week dietary intervention was followed by a 1-week CHO re-introduction for the KD group. Average caloric consumption across the 11-week intervention was similar between groups. Blood lipids remained constant and were not significantly different between groups. The KD group did, however, elicit a significant increase in blood triglycerides during week 11, with the re-introduction of CHO. Total testosterone was significantly increased in the KD group, compared to WD, however, free testosterone was not significantly different between groups. While both groups saw increases in lean body mass, the KD group realized gains significantly greater than the WD group. Similarly, the KD group experienced significantly greater decreases in fat mass during the 10-week CHO restriction period. There were no significant differences in measures of strength or power between groups. From this, the authors concluded that the KD favorably impacted body composition, with no negative impact on blood lipids or muscular strength and power.

Providing additional support Paoli et al. (17) examined the effect of a modified KD diet (~55% fat, 41% protein, and 4.5% CHO) on performance and body composition in gymnasts. In a crossover design, researchers compared independent 30-day dietary regimens consisting of "normal diet" (WD; 46.8% CHO, 38.5% fat, and 14.7% protein) and modified KD in nine elite male gymnasts. There were no significant changes from pre to post during either dietary intervention for measures of physical performance, indicating the absence of significant dietary CHO did not negatively impact physical ability. The post-KD measurements, however, saw a significant decrease in fat mass (pre: 5.3; post: 3.4 kg), as well as a concomitant decrease in body fat percentage (pre: 7.6%; post: 5.0%). Moreover, there was a significant increase in lean body mass percentage (pre: 92.4%; post: 95.0%). In this 30-day modified KD elite male gymnasts, eating an ad libitum diet, improved body composition via both loss of bodyfat, as well as increasing lean mass.

Taken together, these results demonstrate a positive effect of LCD/KD on body composition. While KD may not be superior to other dietary strategies aimed at weight reduction, the evidence does suggest that it may be equally effective. Nevertheless, the International Society of Sports Nutritionists, in their Position Stand on the effects of diets on body composition, suggest the KD holds little benefit over higher CHO diets, with one notable exception; KD may enhance appetite control (1).

POSSIBLE MECHANISM OF ACTION

Nutritional ketosis has been proposed as a mechanism through which hunger may be suppressed. A recent meta-analysis investigated the impact of diet on appetite and shed some light on this possible phenomenon (11). The meta-analysis included 12 studies which investigated the effect of either a very low energy diet (VLED: defined as <800 calories per day) or ketogenic low-carbohydrate diet (KLCD: defined as CHO consumption of <10% of energy or <50 g/day, but ad libitum consumption of total energy, protein and fat). Interventions ranged from 4 – 12 weeks and weight loss was from 5.0 to 12.5 kg. In all studies nutritional ketosis was confirmed in VLED and KLCD via circulating levels of β-hydroxybutyrate. Interestingly, both groups reported decreases in appetite. The results of this meta-analysis are noteworthy in two regards. The VLED groups were clearly and significantly hypocaloric, suggesting a state in which hunger should be increased, not decreased. Similarly, the KLCD groups experienced simultaneous reductions in weight and appetite, while eating an ad libitum diet. The results of this meta-analysis provide support for the theory that nutritional ketosis may exert an appetite suppressing effect.

CAUTIONS AND POTENTIAL SIDE EFFECTS

Although the KD has shown promise as an alternative dietary strategy for weight management, it should be approached with caution. Acutely, the KD causes physiological changes which may manifest as the "keto flu," a set of symptoms which commonly includes headache, nausea, gastrointestinal upset and fatigue. A recent study by Urbain et al. (22) illustrates this point, as they state, "Consistent with other studies, our subjects complained about headache, gastrointestinal symptoms, and general weakness mainly during the 1-week metabolic adaptation phase to a KD." While these symptoms typically resolve within the first one to two weeks, this may present an unpleasant barrier for many individuals to overcome.

Over the long-term the KD poses possible risks as well, although the evidence remains unclear on this topic. Consumption of a high fat diet, particularly saturated fat, is associated with increased cardiovascular risk (23) and consumption of saturated fat has been shown to acutely induce insulin resistance and raise blood

triglyceride levels (12). Nevertheless, many KD studies have documented improvements in markers of cardiovascular risk, including improvements in vascular function (24) reduction in inflammatory markers (10), and other markers of cardiovascular health (13,20). Methodological issues, such as clear definitions of dietary interventions, may play a significant role in obscuring the underlying principles, however, it is clear that more targeted research is warranted.

CONCLUSION

Diet is the most important lifestyle factor for weight loss. In order to effect significant loss of weight it is necessary to create a consistent caloric deficit. This has the rather obvious side effect of leaving individuals feeling hungry and as though they are in a constant state of deprivation. Dieting is based upon this basic concept, which is the most likely reason why dieting is very likely to fail in the long-term. The ketogenic diet, while controversial and a highly polarizing subject, has demonstrated promise as an alternative dietary strategy for weight management. The KD may hold an advantage over traditional calorie-restricted diets, in that nutritional ketosis may enhance appetite control, and subsequently improve dietary adherence and long-term success. Nevertheless, the KD should be approached with caution, as there are both short- and long-term potential negative side effects. More research into this unique dietary strategy is warranted to fully investigate all potentially positive and negative aspects.

REFERENCES

1. Aragon AA, Schoenfeld BJ, Wildman R, Kleiner S, VanDusseldorp T, Taylor L, Earnest CP, Arciero PJ, Wilborn C, Kalman DS, Stout JR, Willoughby DS, Campbell B, Arent SM, Bannock L, Smith-Ryan AE, and Antonio J. International Society of Sports Nutritionists Position Stand: Diets and body composition. *Journal of the International Society of Sports Nutrition* 14:16, 2017.

2. Brinkworth GD, Noakes M, Buckley JD, Keogh JB, and Clifton PM. Long-term effects of a very-low-carbohydrate weight loss diet compared with an isocaloric low-fat diet after 12 mo. *American Journal of Clinical Nutrition* 90(1): 23-32, 2009.

3. Cahill GF. Fuel metabolism in starvation. *Annual Review of Nutrition* 26: 1-22, 2006.

4. Centers for Disease Control and Prevention. Adult Obesity Causes & Consequences. https://www.cdc.gov/obesity/data/prevalence-maps.html. Accessed on 10 March, 2018.

5. Centers for Disease Control and Prevention. Adult Obesity Prevalence Maps. https://www.cdc.gov/obesity/data/prevalence-maps.html. Accessed on 10 March, 2018.

6. Centers for Disease Control and Prevention. Childhood Obesity Facts. https://www.cdc.gov/obesity/data/prevalence-maps.html. Accessed on 10 March, 2018.

7. Dietary Guidelines for Americans 2015-2020 (8th ed.). https://health.gov/dietaryguidelines/2015/resources/2015-2020_Dietary_Guidelines.pdf. Accessed on 08 March, 2018.

8. Drenick EJ, Alvarez LC, Tamasi GC, and Brickman AS. Resistance to symptomatic insulin reactions after fasting. *The Journal of Clinical Investigation* 51(10): 2757-2762, 1972.

9. Fink HH and Mikesky AE. Practical Applications in Sports Nutrition (5th ed.). Jones and Bartlett Learning: Burlington, MA; 2018.

10. Forsythe CE, Phinney SD, Fernandez ML, Quann EE, Wood RJ, Bibus DM, Kraemer WJ, Feinmann RD, and Volek JS. Comparison of low fat and low carbohydrate diets on circulating fatty acid composition and markers of inflammation. *Lipids* 43(1): 65-77, 2008.

11. Gibson AA, Seimon RV, Lee MY, Ayre J, Franklin J, Markovic TP, Caterson ID, and Sainsbury A. Do ketogenic diets really suppress appetite? A systematic review and meta-analysis. *Obesity Reviews* 16(1): 64-76, 2015.

12. Hernandez EA, Kahl S, Seelig A, Begovatz P, Irmler M, Kupriyanova Y, Nowotny B, Nowotny P, Herder C, Barosa C, Carvalho F, Rozman J, Neschen S, Jones JG, Beckers J, de Angelis MH, and Roden M. Acute dietary fat initiates alterations in energy metabolism and insulin resistance. *The Journal of Clinical Investigation* 127(2): 695-708, 2017.

13. Hu T, Yao L, Reynolds K, Whelton PK, Niu T, Li S, He J, and Bazzano LA. The effects of a low-carbohydrate diet vs. a low-fat diet on novel cardiovascular risk factors: A randomized controlled trial. *Nutrients* 7(9): 7978-7994, 2015.

14. McClellan WS and Du Bois EF. Clinical calorimetry XLV. Prolonged meat diets with a study of kidney function and ketosis. *Journal of Biological Chemistry* 87: 651-668, 1930.

15. Naude CE, Schoones A, Senekal M, Young T, Garner P, and Volmink J. Low carbohydrate versus isoenergetic balanced diets for reducing weight and cardiovascular risk: A systematic review and meta-analysis. *PLoS One* 9(7): 2014.

16. Owen OE, Morgan AP, Kemp HG, Sullivan JM, Herrera MG, and Cahill Jr., GF. Brain metabolism during fasting. *The Journal of Clinical Investigation* 46(10): 1589-1595, 1967.

17. Paoli A, Grimaldi K, D'Agostino D, Cenci L, Moro T, Bianco A, and Palma A. Ketogenic diet does not affect strength performance in elite artistic gymnasts. *Journal of the International Society of Sports Nutrition* 9(1): 2012.

18. Phinney SD. Ketogenic diets and physical performance. *Nutrition & Metabolism* 1:2, 2004.

19. Sackner-Bernstein J, Kanter D, and Kaul S. Dietary intervention for overweight and obese adults: Comparison of low-carbohydrate and low-fat diets. A meta-analysis. *PLoS One* 10(10): 2015.

20. Santos FL, Esteves SS, da Costa Pereira A, Yancy Jr., WS, and Nunes JPL. Systematic review and meta-analysis of clinical trials of the effects of low carbohydrate diets on cardiovascular risk factors. *Obesity Reviews* 13(11): 1048-1066, 2012.

21. Thomas DT, Erdman KA, and Burke LM. American College of Sports Medicine Joint Position Statement. Nutrition and Athletic Performance. *Medicine and Science in Sports and Exercise* 48(3): 543-568, 2016.

22. Urbain P, Strom L, Morawski L, Wehrle A, Deibert P, and Bertz H. Impact of a 6-week non-energy-restricted ketogenic diet on physical fitness, body composition and biochemical parameters in healthy adults. *Nutrition and Metabolism* 14:17, 2017.

23. Vannice G and Rasmussen H. Position of the Academy of Nutrition and Dietetics: Dietary fatty acids for healthy adults. *Journal of the Academy of Nutrition and Dietetics* 114(1): 136-153, 2014.

24. Volek JS, Ballard KD, Silvestre R, Judelson DA, Quann EE, Forsythe CE, Fernandez ML, and Kraemer WJ. Effects of dietary carbohydrate restriction versus low-fat on flow-mediated dilation. *Metabolism* 58(12): 1769-1777, 2009.

25. Volek JS, Noakes T, and Phinney SD. Rethinking fat as a fuel for endurance exercise. *European Journal of Sport Science* 15(1): 13-20, 2015.

26. Volek JS and Phinney SD. The art and science of low carbohydrate performance. Beyond Obesity LLC; 2012.

27. Wilson JM, Lowery RP, Roberts MD, Sharp MH, Joy JM, Shields KA, Partl J, Volek JS, and D'Agostino D. The effects of ketogenic dieting on body composition, strength, power, and hormonal profiles in resistance training males. *Journal of Strength and Conditioning Research (in press)*.

ABOUT THE AUTHOR

Carmine Grieco received his Doctoral degree from Old Dominion University and is an Assistant Professor at Colorado Mesa University in Grand Junction, CO. A personal trainer with over 15 years training experience, he successfully made the transition from personal trainer to professor in 2012. Grieco is a past West Virginia State Director for the National Strength and Conditioning Association (NSCA) and also holds certifications as a yoga teacher, exercise physiologist, health coach, and Certified Strength and Conditioning Specialist® (CSCS®) through the National Strength and Conditioning Association (NSCA).

Here's to you for **loving what you do.**

Nationwide® salutes your commitment and passion for being a member of NSCA.

At Nationwide, we're passionate about making a difference, too. It's just one way we prove that we're more than a business. Another way is helping our members save money on their car insurance.

Learn more about our partnership and special discounts.

nationwide.com/nsca | Local Agent | (866)688-9144

Nationwide®

NSCA® NATIONAL STRENGTH AND CONDITIONING ASSOCIATION

4 KEYS TO DELIVERING AN UNFORGETTABLE EXPERIENCE

JOE DRAKE, MS, HKC, NSCA-CPT, USAW

The biggest challenge fitness professionals face is how do you stand out in an industry where there is no shortage of challenging workouts and ways to get in shape. The answer is to deliver an unforgettable experience that clients will not get with anyone else, and one that will keep them coming back long after their initial sign-up.

This is what many of the current popular franchises are doing right. Despite some of them having a lack of seasoned fitness professionals or structured training methods, they are delivering big on creating memorable experiences inside their walls. Clients are leaving feeling like they not only got a great workout but are a part of something special that they want to continue to come back to and tell their friends about.

The following 4 keys are a great way for gym owners and personal trainers to align their environment, training style, and processes to create a cohesive experience that clients are excited about and to better understand what goes into crafting your own unique experience and where there is room to stand out among the competition.

1. CUSTOMIZE THE EXPERIENCE

Customizing the experience at every level takes a deep understanding of people. From a macro perspective this means truly spending time identifying your avatar(s) and getting into their psychology. Think of your avatar as a character that you have created to represent your ideal customer. This means going beyond basic demographics and truly getting in their head.

What are they scared of? What are their biggest hopes and dreams? Where does working out fit into their hierarchy of priorities in life?

Only then can you begin to craft the kind of experience that speaks to them. Customizing the experience goes deeper than just what exercises they like and means having an understanding of how the program structure and coaching language are going to impact their output and overall feelings towards training.

More traditional clients might work the hardest and look forward to training sessions that are structured with reps and sets and include exercises like bench presses and squats (Figure 1). Adventurous clients may be the most excited about challenging themselves with tools like tires, kettlebells, and sledgehammers. Physiologically we can achieve great results for both but the structure of our programs and way in which they are delivered may seem drastically different.

The foundation of this is built off understanding the client types you would like to serve most and knowing where that fits into your personal coaching style. Fitness professionals who have one way of training and speaking to every client may fall short on their ability to customize the experience. This trainer centered focus takes a “my way or the highway” approach and places the focus on what the trainer wants (Figure 2). This may drive initial results but is far less likely to promote longevity with every client.

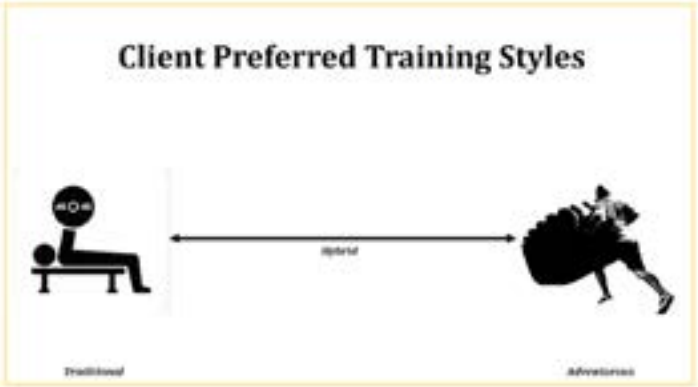


FIGURE 1. CLIENT PREFERRED TRAINING STYLES

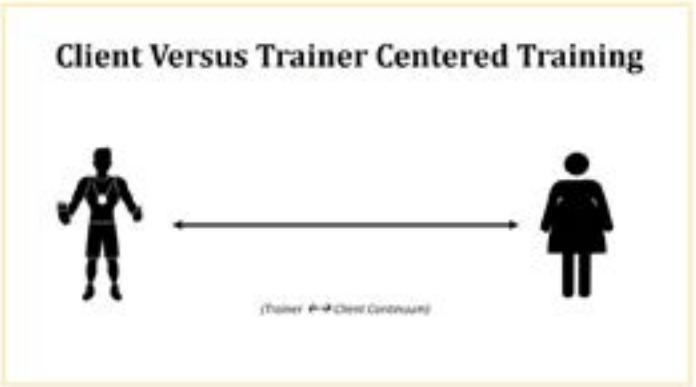


FIGURE 2. TRAINER—CLIENT CONTINUUM

A client centered approach takes into account personality style and motivational hot buttons. This does not mean shape-shifting your training philosophies for every person that walks through the door but understanding how programming variables (like doing reps versus time) and training explanations can create drastically different experiences for clients.

Some clients may love knowing exactly what muscles are firing and others just need for you to tell them where to put their hands. Neither one is right or wrong but each approach will speak more to certain people.

2. CONNECTION

Humans need to connect. Delivering memorable experiences means that clients leave feeling like they are a part of something special. This is the key that leads to five-star reviews and bragging on social media.

Few clients stay long term with a trainer only because they have great workouts. They love and value the workouts, but they stay because of the personal connection. Over-delivering for these clients means genuine and constant communication showing interest in who they are as people. This means sending them more than just training reminders and messages about being out of sessions.

Others crave to be a part of something larger. These are the clients you want to get involved in group training and special events. Facilitate interaction among these type of connectors in workouts with partner challenges and trade-offs that get them working out with others. This sense of comradery and group sacrifice speaks not only to former athletes craving a team environment but also those who may not have strong social connections outside of family and work. Feeling like they are a part of a special group will lead to higher output and superior accountability, as it becomes about more than just them.

Finally, for some clients they want to be a part of something that has a bigger purpose. As a consumer in any industry we like to feel good about the companies we do business with and having that purpose in mind when coming to work out every week can drastically enhance the experience and feelings about the business.

Getting involved in charities can be a part of creating this but the businesses that deliver here the most have it built into the fabric of who they are. It has to be genuine for people to really connect with it, so find something you truly believe in and get behind it.

In the end personal trainers and facilities can serve as a reflection of who clients are and how they want to identify themselves. Becoming a part of someone's self-image is powerful in retaining great clients but relies upon creating layers of connection for them within your business.

3. CONTEXT

Context in the fitness environment combines all of the circumstances that form the setting for an event (workout or training experience) as well as the terms in which to understand it. This is where the kind of environment created can have an enormous impact on the client experience. Take SoulCycle for example who purposefully packs bikes in close together and rides by candlelight.

This all feeds in to their focus on mind-body breakthroughs that give riders context to their life beyond the physical spin class they are taking. For those who love SoulCycle the context of the training session catapults the experience. Reverse engineering this level of experience for clients does not mean you have to use candle-light and club hits, but it does highlight the importance of environmental cues in creating context.

In facility design this could mean unique paint, flooring, and lighting in different areas of the facility to delineate the mindset clients should approach each area with. Perhaps strength, cardio, and sports performance training all have their own regions and clients learn to focus more intently in each space as they focus on the goals of each.

Having a strategic plan of how people move throughout a space during any given workout can enhance or detract from the experience and impact what they focus on throughout. Controlling the flow like this, and even changing it up can make the workout feel drastically different even if all other variables were kept the same. Facility and training session layouts have the ability to combine training physiology with the right mental state to get the most output and best experience possible.

On a smaller scale, constant contextual connection to client goals can also consistently create a more impactful experience. Lunges are just lunges until you create the mental connection to a client's hiking trip they want to finish without resting in three months. It is a simple tactic that we often forget, but we will get far greater output from clients if we can make what they are doing about more than just an exercise.

4. CREATE SURPRISE

On a service level this means truly going the extra mile and delivering something unexpected to clients. On a grandiose scale this can be done in instances of true surprise, but also has an element of simple consistency to it.

One of the least sexy, but effective strategies is maniacal follow-up. If you say you will email someone the schedule, then you better make sure it gets sent out. If you collect leads at an event, then follow-up the very next day. Someone comes to visit your facility and does not signup that day? Keep rotating between phone calls, emails, and texts for the next three months and you would be surprised by how many will come back! Many businesses do not follow-up within 24 hours and rarely do again after that initial attempt.

People need follow-up and will appreciate you helping them take action. They want it.

Create some simple systems to do so consistently and you will already be ahead of the game. In the digital age another simple surprise touch point is hand written notes. This could be "thank you" cards for potential new clients who inquired or birthday cards for regulars. Even just never-ending quality communication and education that arrives in their inbox from you every week. It all adds up and many fail to stay on top of it.

Over deliver on the small things. Not just follow-up and handwritten notes, but with cleanliness, timeliness, and professional communication. Clients are pleasantly surprised when they encounter fitness businesses and personal trainers that live up to these consistently, because they do not experience it elsewhere.

From a coaching perspective creating surprise and creating unforgettable experiences with clients comes from understanding our role. Our role as coaches is to help clients push the lines of (im)possibility and help them achieve more than they thought they were capable of.

This means edging the line without throwing them over the cliff. This will look different for every client, but think about how a female client who never thought she could do it feels after getting her first pull-up? Or an older client one day popping up off of a box squat without any pain. Those are the kinds of experiences that create clients for life and they happen from us helping clients get out of their own way and find success in their programs.

TYING IT TOGETHER

Creating life changing experiences takes time and does not often happen overnight. Sometimes it can be one mind-blowing experience but more often than not it is a series of great experiences delivered over a period of time that leads clients to settle on a fitness home and become raving fans.

It stems from a commitment to understanding people and valuing the cohesive potential that lives between human psychology and physiology. The best experiences make great use of both and do so in a unique way that is tied into the values and vision of the business.

Those who figure out how to have fun with it and focus on the 4 keys above consistently will be the winners in the end and have clients lining up to do business with them for a long time to come.

ABOUT THE AUTHOR

Joe Drake is co-owner of Gravity + Oxygen Fitness, a successful training studio in Boca Raton, FL. Drake is also co-owner of the Axiom Fitness Academy, where he works closely with new fitness professionals to go from getting certified to finding success in a competitive fitness market. Drake also holds a Master's degree in Exercise Physiology from Florida Atlantic University and is a Technogym Master Trainer.

CONSULT. DESIGN. INSTALL.

Whether you're opening a small personal training studio, sports performance and rehab facility or upgrading an existing room, our Facility Design Team will work with you from layout to installation to create the facility that will best meet your needs and budget. No job is too big or too small and our goal is to help make your vision become a reality.

Call us today for your free Guide to Facility Design.

PERFORM BETTER®

800-556-7464 PERFORMBETTER.com

IS A HIGHER PROTEIN INTAKE ASSOCIATED WITH HEALTH CONCERNS? EFFECT ON BONE AND KIDNEYS

MIKE NELSON, PHD, CSCS, CISSN

Protein gets a "bad rap" and often gets blamed for everything from kidney problems to bone loss. Are these statements really true? Is there a downside to consuming too much protein? This article will focus on two stubborn myths associated with increased protein intake and negative effects: kidney issues and bone loss.

KIDNEY ISSUES

The main theory that protein is potentially damaging to the kidneys is that too much protein can "overload" the kidney. The theory goes that since the kidneys are filtering your blood to pull out waste products and excrete them in your urine, increased protein intake also increases the filtering work of the kidneys which leads to damage from the increased work (4). If they kidneys are damaged, more waste products accumulate within the body compounding the issue. In short, eating more dietary protein could place too much work on them, resulting in kidney damage.

Is that true, though? Let's see what the research says:

"An examination of the statements made by both the Institute of Medicine in setting the protein RDA in North America, as well as the World Health Organization's report on protein intakes, indicates there is no evidence linking a higher protein diet to renal disease," (14).

It is true that more protein can result in more work performed by the kidneys. This is demonstrated by blood markers of kidney work such as creatinine, BUN (blood urea nitrogen), and GFR (glomerular filtration rate). It is true that as protein intake is increased, these markers of kidney work also go up (15). An important distinction is work vs. damage. While the kidneys may be working harder, it does not mean they are damaged.

Tipton stated, "Prolonged intake of a large amount of protein has been associated with potential dangers, such as bone mineral loss and kidney damage. In otherwise healthy individuals, there is little evidence that high protein intake is dangerous. However, kidney damage may be an issue for individuals with already existing kidney dysfunction," (17)

At the RDA level of dietary protein intake, there is no data to support the notion that dietary protein is dangerous to the kidney in healthy people and causes kidney damage. Healthy sedentary persons differ from athletes; however, in a number of ways (12) with one of the main differences being that athletes consume more than twice the RDA (or more) of protein (14) and perhaps are at an increased risk of kidney issues.

PROTEIN—STUDIES IN ATHLETES

One of the first studies to investigate the effects of higher dietary protein on kidney functions was conducted by Brandle and colleagues in 1996 (6). They studied 88 healthy subjects spread across a wide variety of diets (32 vegetarians, 12 bodybuilders with no protein supplements, 28 bodybuilders consuming protein supplements, and 16 subjects with no special diet) over 4 months. This investigation was the first to show that chronic oral protein accounted for a wide variability in GFR (a marker of kidney work) between groups, with higher numbers seen in the groups consuming more protein. Bie et al. even argued that a higher GFR, just like bigger muscles, may be a benefit (5).

Research from Poortmans and Dellalieux in 2000 speculated that excess protein/amino acid intake could be hazardous for kidney function, leading to progressive impairment of this organ (15). They investigated bodybuilders and other well-trained athletes with high and medium protein intake over the course of 7 days. While the bodybuilders ate more protein (2.8 g/kg of bodyweight), they had renal clearances of creatinine, urea, and albumin that were within the normal range.

In a randomized crossover design study with resistance-trained male subjects, Antonio and colleagues took protein intake to a whole new level of up to four times the RDA (2). For eight weeks the subjects consumed a high-protein diet at 3 grams per kilogram, per day. To put that in perspective, for a 100-kg person (about 220 lb), they would need to eat 300 g of dietary protein per day. The subjects were also not sedentary and had an average bench press of 126.4 kg, (278 lb). In the second half of the study, the same subjects completed another 8-week period where they consumed their normal, lower protein diet (2.6 g/kg/day of dietary

protein). They saw no changes in markers of kidney health under either the high or low protein group. As a side note, the subjects when consuming the high protein intake did not gain any body fat either despite eating more calories in the form of extra protein. The researchers conducted a subanalysis on two subjects who ate the most protein in the study (2). This subanalysis did not reveal any renal (kidney) issues despite their consuming of 483 – 724% over the RDA for protein.

PROTEIN—LONG TERM

A logical argument could be made that all of the studies mentioned above are acute and measured in terms of a few weeks. What would happen to your kidney function if you ate a higher protein diet for many months, which is common among athletes living outside the lab.

Antonio again in 2016 published a long-term study that lasted one year, which is the longest on record (3). They took 14 healthy resistance-trained men who had been training an average of almost nine years for a randomized crossover design study. They had them consume their normal diet altered with a high protein version (>3 g/kg/day) so that on average, each subject was on each version for 6 months (13). Even at a very high amount of protein (2.5 – 3.3 g/kg/day) for an entire year, there were no harmful effects on kidney function.

PROTEIN AND BONE

Can an increased consumption of protein reduce bone mass? It has been hypothesized that a higher protein intake (> 0.8 g/kg/day) is more acidic and therefore deleterious to bone mineral content. One study (9) done in a head tilt bed rest (which is an atrophy model), found that higher protein (1.45 g/kg/day protein) plus an additional 0.72 g branched-chain amino acids per day may increase markers of bone loss. They concluded that high-protein intake in bed rest may increase bone loss, although it was an acute study. This does not match any of the other data such as Kim et al. who indicated that total protein intake was positively correlated with an increase in bone mass in the femoral neck, which is a marker of overall bone health (10). Hallkvist et al. found that total dairy product consumption was associated with increased cross sectional area in the tibia independent of the dairy product type (8). Cao presented evidence that the negative effects of the acid load of protein on urinary calcium excretion was offset by the beneficial skeletal effects of high-protein intake on bone metabolism (7). A meta-analysis by Wallace examined the relationships between varying doses of protein intake at or above the current U.S. RDA (0.8 g/kg/day) from any source on fracture and bone mineral density (18). They concluded that dietary protein at levels above the current RDA may be beneficial in preventing hip fractures and BMD loss (18). This was supported by other studies also (11,16). The data in non-athletes, even when above the RDA, demonstrates that protein appears to be beneficial to bone health.

Currently, in athletes there is only one study done on 24 women over the course of six months (1). The control group in this study consumed their normal diet and the high-protein group consumed 2.2 g/kg/day of protein. They found that whole body bone mineral density and lumbar bone mineral density did not change in either the control or high-protein group (1). In addition, no changes were seen in whole body or lumbar t-scores in either group. While the current data is a bit split and there is a lack of data in athletes, increasing dietary protein does not appear to lead to any loss of bone mass and may even slightly increase it overall.

CONCLUSION

In summary, it appears that the hypothesis of increased protein damaging kidneys of healthy athletes is a myth as the data does not support it. While there is limited data in athletes in regards to higher protein consumption and bone health, the current data demonstrates protein is safe for kidney and bone function. Data in non-athletes shows that higher protein actually increases markers of bone health. Relax; have some protein. Your bones and kidneys will be just fine.

REFERENCES

1. Antonio, J, Ellerbroek, A, Evans, C, Silver, T, and Peacock, CA. High protein consumption in trained women: bad to the bone? *J Int Soc Sports Nutr* 15(6): 2018.

2. Antonio, J, Ellerbroek, A, Silver, T, Vargas, L, and Peacock, C. The effects of a high protein diet on indices of health and body composition - A crossover trial in resistance-trained men. *J Int Soc Sports Nutr* 13(3): 2016.

3. Antonio, J, Ellerbroek, A, Silver, T, Vargas, L, Tamayo, A, Buehn, R, and Peacock, CA. A high protein diet has no farmful effects: A one-year crossover study in resistance-trained males. *Journal of Nutrition and Metabolism* 9104792; 2016.

4. Berns, JS. Nutritional management of chronic kidney disease. *The New England Journal of Medicine* 378: 584, 2018.

5. Bie, P, and Astrup, A. Dietary protein and kidney function: when higher glomerular filtration rate is desirable. *Am J Clin Nutr* 102: 3-4, 2015.

6. Brandle, E, Sieberth, HG, and Hautmann, RE. Effect of chronic dietary protein intake on the renal function in healthy subjects. *European Journal of Clinical Nutrition* 50: 734-740, 1996.

7. Cao, JJ. High dietary protein intake and protein-related acid load on bone health. *Current Osteoporosis Reports* 15: 571-576, 2017.

8. Hallkvist, OM, Johansson, J, Nordstrom, A, Nordstrom, P, and Hult, A. Dairy product intake and bone properties in 70-year-old men and women. *Archives of Osteoporosis* 13(9): 2018.

9. Heer, M, Baecker, N, Frings-Meuthen, P, Graf, S, Zwart, SR, Biolo, G, and Smith, SM. Effects of high-protein intake on bone turnover in long-term bed rest in women. *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquee, Nutrition et Metabolisme* 42: 537-546, 2017.

10. Kim, BJ, Lee, SH, Isales, CM, Koh, JM, and Hamrick, MW. The positive association of total protein intake with femoral neck strength, KNHANES IV, Osteoporosis international: A journal established as result of cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA, 2018.

11. Langsetmo, L, Shikany, JM, Cawthon, PM, Cauley, JA, Taylor, BC, Vo, TN, Bauer, DC, Orwoll, ES, Schousboe, JT, and Ensrud, KE. The association between protein intake by source and osteoporotic fracture in older men: A prospective cohort study. *Journal of Bone and Mineral Research : The Official Journal of the American Society for Bone and Mineral Research* 32: 592-600, 2017.

12. Lowery, LM, and Devia, L. Dietary protein safety and resistance exercise: What do we really know? *J Int Soc Sports Nutr* 6(3): 2009.

13. Nelson, MT. The effects of eating truckloads of protein: The truth about high-protein diets. *Testosterone Nation* 2017.

14. Phillips, SM. A brief review of higher dietary protein diets in weight loss: A focus on athletes. *Sports Med* 44(suppl 2): S149-153, 2014.

15. Poortmans, JR, and Dellalieux, O. Do regular high protein diets have potential health risks on kidney function in athletes? *Int J Sport Nutr Exerc Metab* 10: 28-38, 2000.

16. Shams-White, MM, Chung, M., Du, M, Fu, Z, Insogna, KL, Karlsen, MC, LeBoff, MS, Shapses, SA, Sackey, J, Wallace, TC, et al. Dietary protein and bone health: A systematic review and meta-analysis from the National Osteoporosis Foundation. *Am J Clin Nutr* 105: 1528-1543, 2017.

17. Tipton, KD. Efficacy and consequences of very-high-protein diets for athletes and exercisers. *The Proceedings of the Nutrition Society* 70: 205-214, 2011.

18. Wallace, TC, and Frankenfeld, CL. Dietary protein intake above the current RDA and bone health: A systematic review and meta-analysis. *Journal of the American College of Nutrition* 36: 481-496, 2017.

ABOUT THE AUTHOR

Mike Nelson has spent 20 years of his life learning how the human body works, specifically focusing on how to increase the use of both fats and carbohydrates as fuel for performance. He has a PhD in Exercise Physiology, and a Master of Science degree in Mechanical Engineering (Biomechanics). Nelson is a faculty member for the Carrick Institute of Functional Neurology, university instructor at Rocky Mountain University of Health Professions, creator of the Flex Diet Certification, and has published research in both physiology and engineering journals. He's even been called in to share his techniques with top military agencies.


MELVIN GORDON | PRO RUNNiNG BACK
EAS
MYOPLEX
SHRED
42g
PROTEIN
1g
SUGAR
210
CALS
CHISELED CHOCOLATE
PROTEIN SHAKE
EAS
MYOPLEX
SHRED
30g
PROTEIN
CEREAL MILK
NET WT 2 LB (907 g) PROTEIN POWDER
NOW IN
POWDER
GET SHREDDED
SHRED CARBS. SHRED CALORIES.
AVAILABLE AT MAJOR RETAILERS NEAR YOU
FOLLOW US @EASMYOPLEX

FROM SUCCESSFUL TRAINER TO GYM OWNER— 9 STEPS TO OPEN YOUR FIRST FACILITY: PART 3

DAVID CRUMP, NSCA-CPT

INTRODUCTION

At some point in their career, almost every fitness professional will consider opening their own facility to grow their business and make their mark on the industry. However, what most of these coaches and trainers will quickly realize is that while they have spent countless hours honing their craft, they have not accumulated the knowledge to confidently open their own facility. The transition from trainer to facility owner can be very intimidating and full of surprises. This article series aims to prepare and guide fitness professionals through the nine essential steps to opening their first fitness facility. Each installment of this three-part series will feature three steps with actionable information that has helped multiple trainers successfully open their first gym. Featured in this third installment is the final phase of the process, "execute and open."

Up until this point, most of the gym opening process is focused on preparation and planning. However, in this final stage of the process everything starts to feel very real. Now that a location has been chosen, the next steps are to negotiate and sign a lease, create an opening timeline, and plan the grand opening event for the facility. From the moment that the ink dries on the lease, the clock is ticking and it is imperative that the new gym owner moves fast and efficiently until the ribbon is cut.

STEP 7: NEGOTIATE AND SIGN A LEASE

One of the most challenging and stressful steps of opening a fitness facility is negotiating and signing a lease. With it not being uncommon to see commercial leases being an average of 5 years, the importance of getting the right deal and only having one shot at it cannot be overstated. Therefore, a coach or trainer should enlist the assistance of professionals, learn the common terms used in lease agreements, and familiarize themselves with best practices prior to signing any documents. This will ensure a smooth transition into their first location while limiting the inevitable surprises that will present themselves in the first year.

ENLIST A TEAM OF PROFESSIONALS

With any large undertaking or project outside of a fitness professional's expertise, it is always a good idea to hire an advisor or two; a lease negotiation certainly falls into this category. This is where a knowledgeable realtor and real estate attorney can be of great benefit.

As noted in the previous installment of this series, hiring a great realtor can be an intelligent move when searching for a location, however, this can also payoff when it comes to the negotiating process as well. A savvy realtor will have a good feel for the market and be able to add some insight into what a fair rental rate should be, what concessions are standard in this type of negotiation, and how to create leverage in the deal based on the comps (similar listings) in the area. Additionally, hiring a realtor will not break the bank because they usually get paid by the lessor when a deal gets done. Should a coach or trainer decide to proceed without a real estate agent, they should spend some time educating themselves thoroughly on the local market and negotiation strategies. However, in some states such as Utah, there may not be a choice to be made since using an agent is required by law.

After the terms of a lease are solidified, a fitness professional should then hire a real estate attorney to look over the agreement prior to the signing. The language used in legal documents can be very confusing for individuals that are not familiar with the terminology and an attorney can quickly identify any lease clauses that may present a problem or create unwanted liability for the potential facility owner. Most attorneys should be able to provide this service for a couple hundred dollars or less, which pales in comparison to the thousands of dollars a bad deal could cost.

LEASE TERMS, CONDITIONS, AND AREAS OF NEGOTIATION

The most successful lease negotiations are the ones where both parties, lessee and lessor, feel like they got a fair deal. In order to understand that dynamic, it is critical for a fitness professional to recognize that the lessor looks at a lease as an investment and will be asking himself one simple question: "how much money will this make me over the term and what is the risk?" That means that almost anything can be negotiated in a lease as long as a viable return on investment can be shown for the property owner.

A trainer or coach should familiarize themselves with the common lease terms and conditions outlined below. Next, they should identify exactly what they need out of the deal to create an ideal situation for their new business; whether it be a lower rent, funds to renovate the space, or simply rent abatement for the first months. This will allow them to submit an agreement that will be appealing for all parties involved and move one step closer to becoming a gym owner.

LETTER OF INTENT (LOI)

A letter of intent is a non-binding proposal that precedes an actual lease. Its purpose is to indicate the desire to lease a property and provide details of an initial offer from the potential lessee. Submitting an LOI is the first step of the lease negotiation process and will help determine the viability of making a deal with a property's landlord or owner.

A typical LOI will be 1 – 2 pages in length and outline the base rental rate, lease length, and any special terms that a tenant would like if they were to enter into a lease agreement.

LEASE TERM

The term of a lease simply refers to the length of said lease. As mentioned in the previous installment of this series, the typical length of a commercial lease can vary from 1 to 20 years. It cannot be advised, however, that a first-time facility owner commit to anything longer than 5 years.

The reason that the length of a lease is important during negotiation is that the longer the term, typically the more bargaining power a potential lessee has. Negotiation is almost unheard of on a one-year lease, but at five years there tends to be quite a bit of wiggle room.

MONTHLY RATE

As discussed in the previous installment of this article series, most commercial leases are "triple-net." That means that the tenant will pay base rent, their portion of building operating expenses and insurance, and tax. With that in mind, most leases will explicitly state the base rent in solid figures, but often represent the other costs as percentages. Understanding these distinctions is important, because base rent is usually the only portion that can be negotiated.

When negotiating the base rent portion of their lease, a new facility owner has a lot of options and should consider factors such as their current cashflow and growth opportunities in their new location. For example, it may be in their best interest to suggest a lower base rent in the first year with escalations over the following years as the business picks up steam.

RENT ABATEMENT

Also referred to as "free rent," rent abatement is the term used to indicate months of the lease where the lessee is relieved of paying rent while still being able to occupy the property.

Rent abatement usually takes place at the beginning of a lease term and can be incredibly valuable for a coach or trainer opening their first facility. Due to the heavy financial obligations of purchasing equipment, performing renovations, and funding the down payment and security deposit of a commercial location, having a significantly reduced rent payment can significantly improve cashflow for a business just starting out.

While fitness business owners should almost always negotiate some rent abatement into their lease, it is important to clarify that those months are not actually "free." Since most commercial leases are "triple net" leases, the abatement will only apply to the base rent. Lessees will still be responsible for paying their portion of the building insurance and operating expenses and should plan accordingly.

TENANT IMPROVEMENT ALLOWANCE (TIA)

A tenant improvement allowance is the amount of money that a landlord is willing to contribute to a build-out or renovation to make the property suitable for the lessee's business.

For example, a coach or trainer may find a suitable retail location that was previously a doctor's office and therefore has many walls to create multiple rooms. Since that type of layout is not conducive to a fitness facility, the trainer may request that the landlord pay to remove all the dividing walls and any other construction up to a certain amount as part of the lease negotiation.

While the tenant improvement allowance typically refers to an established amount of money, it should also be noted that it can often make better sense for both parties to simply agree on the work to be completed by the landlord and allow them to secure their own contractor. This arrangement can typically save the landlord a little more money since they likely have a good relationship with a particular contractor and it will also release the lessee from having to vet and hire the contractor themselves.

EXCLUSIVITY CLAUSE

Often forgotten when negotiating a lease, an exclusivity clause can prevent multiple competing businesses from opening in the same building or retail center.

One of the biggest challenges that fitness facilities face is a saturated market with many competitors in close proximity to their location. Including an exclusivity clause in a lease should always be considered, but it is important to understand that the devil is in the details. In this case, the specific language used will define the level of protection a business owner may receive.

For example, a lease that excludes other "personal training facilities" or "sports performance centers" could still potentially allow a big box gym to open next door. With this in mind, a coach or trainer should certainly consider working with a lawyer to develop terminology that offers appropriate protection.

PARKING

Most leases will contain a section describing the lessee's rights to parking spaces in front or adjacent to the building being rented. Often, this will detail how many spaces will be allotted to the tenant based on square footage. Additionally, the lease will also specify whether parking spaces can be assigned or not, meaning that even though there may be an adequate number of spaces in the entire lot, that does not guarantee that customers for each business will always be able to park in a convenient space relative to the business they are visiting. This can be problematic if one or two of the adjacent businesses is a grocery store or other type of high traffic business.

A trainer should evaluate the parking availability of a potential location by comparing it to the business model of their facility. While a personal training only facility will likely need only a few convenient parking spaces, a gym that specializes in group training will need to plan on having a space for each participant in a large group class. This should not be overlooked since a lack of accessibility can be a deterrent to new customers.

HVAC WARRANTY

In a commercial lease, HVAC (Heating, Ventilation, and Cooling) regular maintenance and repairs are almost always the responsibility of the tenant after delivery of the property. While normal preventive maintenance procedures should be considered as part of the cost of doing business, if an air conditioning unit completely failed and required replacement it could cost close to $10,000 and possibly bankrupt a brand-new business.

In order to protect themselves from this type of situation, a coach or trainer should attempt to negotiate that the building owner cover any repair or replacement costs associated with the HVAC for the first year. If this is not possible, then having a licensed professional thoroughly inspect the entire system for potential issues prior to lease execution is an absolute must.

RENEWAL OPTION

A renewal option is a section of the lease that guarantees the tenant an option to extend their current lease under the same conditions with specified restrictions. This can be very beneficial for business owners that find themselves thriving in their current location and do not want to relocate or be subject to significant rate increases at the end of their lease.

While it may impossible to predict where a business may be in 1, 3, or even 5 years, including a renewal option in a lease acts as a safety net. It is best to request a lease renewal for the same term with a cap on the rate increase. The industry standard tends to be 3% base rate escalation every year.

TRANSFER OPTION

This is used to allow a lease to be transferred from one party to another and could be necessary in a variety of situations. The most important reason to have this included in a lease would be to allow for an easy sale of the business. While obviously not something most trainers are considering when opening their first facility, plans can change, and it is best to have options in order to keep pursuing new opportunities as a fitness professional.

STEP 8: CREATING YOUR TIMELINE

Once a lease is signed, the clock starts ticking and the race to get the doors open is on. Between coordinating renovations, equipment delivery, and utility installation, it would be easy for any fitness professional to get overwhelmed. However, the key to success is simply to build a project timeline with detailed dates and manage it appropriately; knowing that each delay could prove costly.

Knowing that most gyms will take anywhere from 4 – 10 weeks to go from lease finalization to soft opening, the most efficient way to begin building a timeline is to use the lease commencement date as a start point and set an ideal, but realistic, date to begin daily operation (soft opening). From there, assigning weekly targets based on lead and completion times is critical. A sample 6-week outline is detailed below:

SIX WEEKS FROM OPENING

This is when renovations should be assessed by a contractor (if needed) and initialized. The process will begin with any potential demolition followed by new construction and any prep work needed to get the unit ready for paint. This is also a good time to consider placing an order for any selectorized or cardio equipment that has a 4 – 6 week lead time. Finally, electric service should be established at the facility.

FIVE WEEKS FROM OPENING

Renovations should be moving along or complete. If complete, then walls should be ready for paint and colors should be chosen. Next, the floor should be measured to estimate the dimensions and determine which materials will need to be ordered, the quantity, and the exact layout. Since it can take up to 14 business days to receive the flooring materials, it would be a good idea to order them at this point.

This is also a good week to explore signage options. The two most common sign locations are "façade signs" which are typically mounted on the face of the building over the storefront and "marquis signs" which are mounted on a monument near the roadway and display the directory of the businesses in a retail center. Most commercial signs will take about 4 weeks to go from design to installation.

FOUR WEEKS FROM OPENING

This week is an opportunistic time to order any equipment that is usually in stock, but will need to be shipped via freight. This includes items such as weight benches, power and half racks, dumbbell sets, kettlebells, and any weight plates. This type of equipment often has a lead time of 7 – 10 business days depending on how fast the order can be filled and shipped. Not to mention, that much of this equipment will have to be assembled upon delivery.

If the facility will have mirrors, then it would be recommended to get a couple quotes from local glass companies at this time. It is likely that the companies will want to send out an employee to measure and quote the project which will take a couple days. After choosing a mirror source, a 10 – 14 business day lead time can be expected for installation. This should be perfect, however, because the walls should be painted and the flooring should be installed by that point.

THREE WEEKS FROM OPENING

By this point, things will start to feel like they are coming together and the next big move is to install the flooring material upon arrival. Most gyms will use rubber rolls or rectangular rubber mats to cover the largest area of the floor with some facilities opting to include a section of turf. The flooring installation should be expected to take the better part of a day with large facilities possibly stretching into 2 days based on the layout complexity.

After the flooring is complete, having internet and phone installed at the facility would be a great use of the remainder of the week as well as ordering any small apparatus equipment that is needed. Items like resistance bands, medicine balls, and suspension straps are often in stock with suppliers which means they can be received within a couple of days.

TWO WEEKS FROM OPENING

Renovations are complete, the floor is down, and there is a sea of boxes containing fitness equipment strewn about the facility. It is time to open all of those boxes and start assembling the equipment that is inside of them. Once put together, finding the right location for everything to support the best flow of training is paramount. There is a good chance that the equipment will be moved around a couple times before determining its ideal spot.

Now that the equipment is assembled and staged, the mirror installation should be scheduled for this week as well as installing the sound system that will be used in the facility. This is also the best week to purchase and install any office furniture, seating, and storage areas for members.

ONE WEEK FROM OPENING

The final days leading up to the soft opening are best spent making sure all office, bathroom, and cleaning supplies are stocked and all fitness equipment is ready for use. If the facility is ready to go, then the focus shifts to marketing.

Creating a large buzz just prior to opening is a critical piece of the process in executing a soft opening. One of the most successful ways to get former, current, and potential clients or members excited about seeing the new facility is to host a VIP event. This could be a limited access sneak preview where only special guests are invited to see the space for the first time or be the first group to workout before the public is invited. Alternatively, it could simply be an invite-only party for current clients to show your appreciation and allow them to bring one guest that might be interested in joining. Regardless of the type of event chosen, the primary goal is to bring awareness to the community and generate new interest.

TABLE 1. TIMELINE ITEM GUIDELINES

LIST ITEM	TIME NEEDED FOR COMPLETION
Renovations (Demolition/ Painting/Electrical)	10 – 21 business days based on the scope of work
Flooring (Rubber and/or Turf)	7 – 14 business days to order and ship 1 – 2 business days to install
Building Signage	4 – 5 weeks from ordering to installation
Large Equipment (selectorized machines and cardio pieces)	4 – 6 weeks from ordering to delivery and installation Can vary based on production/availability
Small Equipment (bolt together racks, functional pieces, and bands/suspension straps, etc.)	3 – 10 business days based on supplier and shipping distance
Mirrors	1 – 5 business days to measure and quote 10 – 14 business days to cut and install

STEP 9: PLANNING, MARKETING, AND HOSTING THE GRAND OPENING

The doors may be open, but there is still one more step left in the process of moving from successful personal trainer to gym owner; conducting a grand opening. While it may seem trivial, a grand opening event is actually very important for a new business to get off the ground. When working as an independent trainer, the cost of doing business is typically quite low in comparison to running a studio. With the increase in costs for a fitness professional, more clients will be needed for a brick and mortar business to survive and a grand opening is a great opportunity to get new leads, educate the community on the value of training, and demonstrate differentiation in the local market.

PLANNING

The two primary goals of a grand opening are to show off the new facility and to encourage people to want to train there. It should also be noted, that a secondary goal is to celebrate all the hard work that has gone into bringing a coach's dream to reality. The best timing for the event is typically 4 – 6 weeks after the official soft opening to keep the momentum going. This will allow the business owner to work out most of the kinks in the process and layout that are inevitable in the first month. Additionally, it is best to plan the event for a Saturday when most people will be off work and confirm that the date does not fall on a holiday weekend in order to maximize attendance.

Once a date is set, a list of activities should be made. These activities should be engaging for those attending and offer some value to ensure a good turnout. Activities that seem to do well are free workouts, educational workshops, and raffles that offer free or heavily discounted items from local vendors/sponsors. Ribbon cutting ceremonies can also be a lot of fun because people enjoy being part of seeing a friend or colleague become a small business owner.

MARKETING

Marketing a grand opening celebration is different than marketing training services or a gym membership. It is actually a bit easier since the task is just to show up and check out the facility, as opposed to convincing someone to buy. The aspect that does not change, however, is that there still needs to be some type of value offered for those that take action. Using a multi-pronged approach including social media and neighboring business relationships will elicit the best results.

It is no secret that social media currently garners a lot of attention and can increase the reach of a business' message, but targeting can be a challenge. One best practice is to create an "event page" on Facebook to house all the details of the grand opening. Once complete, inviting current clients, friends, and local family members can be done easily from that page. This allows people to RSVP for the event so that a business owner can start to estimate attendance. The other benefit of creating the event page is that it can also utilize paid advertising on the Facebook platform and other social media outlets to specifically target those that are local and already exhibit interest in fitness or working out.

While social media can be a great tool in advertising, it should not be a sole source of advertising. Instead, a trainer should leverage their relationship with local businesses that are related to fitness and create partnerships. Some of the best correlated businesses or individuals include physical therapists and chiropractors, running and/or shoe stores, meal prep companies or healthy restaurants, and even supplement stores. There is a strong likelihood that these vendors would love to offer prizes for a raffle and potentially even like to setup a table at the grand opening to talk about their business offerings thereby getting themselves more exposure as well allowing both parties to benefit. Once committed to participating, these businesses would be happy to share the news of the event and should be open to posting information in their store or office.

HOSTING

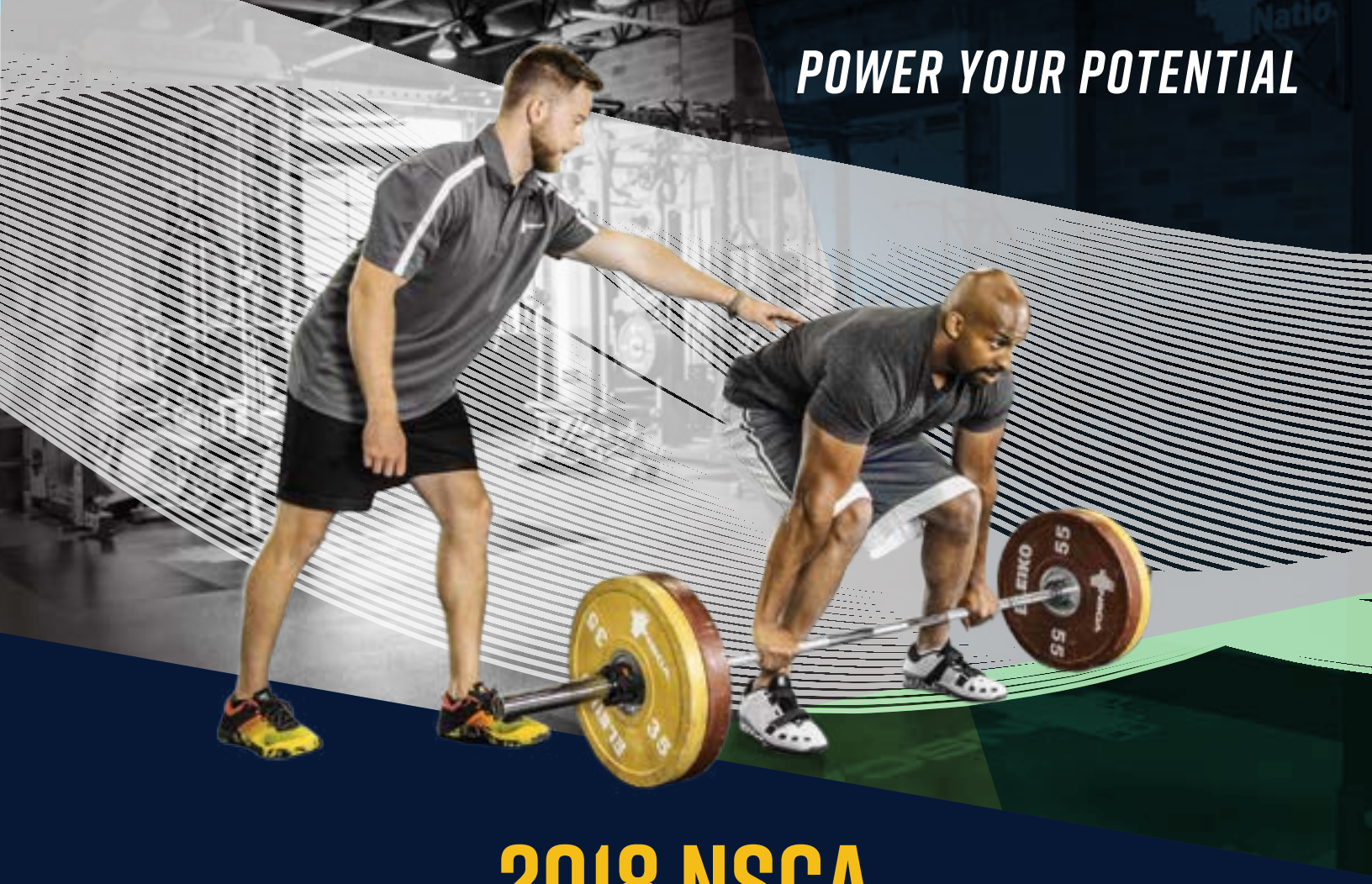
Hosting the grand opening will prove to be the easiest part of the process. The primary focus of a business owner should be to educate, engage, and inspire those that show up. While the day will go by quickly, it is imperative to collect contact information from guests in order to follow up with them at a later time; especially if they are interested in becoming a client/member. This process can be simplified by having a sign-in sheet that requires, at minimum, a name and email address for those that wish to participate in any of the activities such as the raffle. This will allow for easy follow-up the next week to thank guests for attending and attempt to schedule a consultation or sales appointment.

CONCLUSION

The final three steps of opening a facility can be the most daunting since they tend to be filled with tasks outside the area of expertise for most fitness professionals. Signing and negotiating a lease, managing renovations, and even planning and marketing a grand opening event; all while still trying to maintain normal work hours. That is why even the most ambitious coaches and trainers should enlist the help of professionals, create a timeline, and leverage their network to clear the final mountain of work to open their facility. After the ribbon is cut and the dust settles, they will find themselves in a position most only dream of.

ABOUT THE AUTHOR

David Crump is an entrepreneur, fitness business consultant, and personal trainer. Since entering the fitness industry in 2006, he has climbed the ranks of corporate management, opened multiple fitness facilities, and helped hundreds of clients improve their lives. Crump has been featured in PFP Magazine, Personal Training Quarterly, and is a regular contributor to The Personal Trainer Development Center. Additionally, he currently owns and operates Spark Fitness, a personal training studio in Orlando, FL, and works with trainers around the country to help them achieve their dream of opening their own gym.



2018 NSCA PERSONAL TRAINERS CONFERENCE

OCTOBER 5 – 7, 2018 | BALTIMORE, MD | CEUs 2.0

The **2018 NSCA Personal Trainers Conference** is more than just an event—it's an experience that will power your potential. Join the industry's forward-thinking innovators and influencers in Baltimore, MD or online via Live Stream. Enjoy a weekend filled with cutting-edge science and application designed to advance fitness professionals. Rise up to a new level in your career with knowledge, skills, and confidence that can only be found here.

NSCA®
NATIONAL STRENGTH AND CONDITIONING ASSOCIATION

NSCA.COM/PTCON2018

POST-REHABILITATION PROGRAMMING— LATERAL ANKLE SPRAINS

CAMERON YUEN, PT, DPT, CSCS

In an ideal world, clients are coming to personal trainers without pain or a history of injuries. However, this is rarely the case. Instead, personal trainers often see clients with injuries who either never saw a medical professional, never completed rehabilitation, or still have nagging limitations and pain that have to be managed.

This article will focus on training clients who have a history of lateral ankle sprains, beginning with the relevant anatomy and mechanisms of injury, proceeding to assessment, and finishing with programming and exercise prescription.

This article will not address acute sprains, as the early stages of treatment depend on the amount of ligament disruption, pain, swelling, and range of motion deficits. If the personal trainer encounters a client with a recent (0 – 6 weeks) sprain that is still painful, swollen, and restricted, the trainer should refer the client to an appropriate medical professional.

THE ANKLE-FOOT COMPLEX

Lateral ankle sprain specifically refers to a sprain of the ligaments on the outside of the foot and ankle, but muscles, tendons, and nerves are often affected as well (5). The relevant anatomy is described in the following sections.

JOINT MECHANICS

The talocrural, or ankle joint, is made up of the tibia, fibula, and talus and functions as a hinge to perform the motions of dorsiflexion and plantar flexion. In dorsiflexion, the mortise formed by the tibia and fibula form a strong bony constraint around the talus. In plantar flexion, there is a weaker constraint around the talus as it glides anteriorly.

Moving distally, the talus also articulates with the calcaneus to form the subtalar joint. Inversion and eversion occur at the subtalar joint, with a greater amount of inversion available due to the position of the lateral malleolus.

LIGAMENTS

On the medial aspect of the ankle, just distal to the medial malleolus are a collection of ligaments referred to as the deltoid ligament. This strong band of connective tissue runs from the medial malleolus to the talus, calcaneus, and navicular bones. Though rare, this ligament is damaged during an eversion sprain.

The more commonly injured ligaments on the lateral aspect of the ankle are the anterior talofibular ligament (ATFL), calcaneofibular ligament (CFL), and the posterior talofibular ligament (PTFL). These ligaments are often stretched or ruptured during inversion sprains (3).

MUSCLES AND TENDONS

Relevant muscles that may be involved include the extensor hallucis group, extensor digitorum group, tibialis anterior, peroneal group, gastrocnemius, soleus, and posterior tibialis. The peroneals are often the most affected as their action resists inversion.

NERVES

The sural nerve and superficial peroneal nerve travel near the lateral ankle, and can be involved in a severe lateral ankle sprain. If the patient is experiencing numbness, tingling, or weakness, it is important to refer out to a medical professional for examination.

MECHANISM OF INJURY

Inversion sprains refer to a stretch or disruption of the lateral ankle ligaments. In most cases, this occurs when one is weight bearing or landing on a plantar flexed ankle that rolls inward towards midline.

Lateral ankle sprains are most commonly seen in sports with quick lateral movements when the peroneals fail to keep the ankle from inverting. These sprains are also common in sports that involve jumping and landing where one lands on a plantar flexed ankle. In certain sports, such as in martial arts, ankles may be forcefully turned in.

Ankle sprains are graded according to structural damage and functional impairments (4). Grade I refers to a sprain with no loss of function, no ligament laxity, a decrease in total ankle range of motion of less than 5 degrees, and little to no bruising or tenderness.

A grade II sprain refers to some loss of function, ATFL laxity, a decrease in total ankle range of motion between 5 and 10 degrees, and some bruising and tenderness.

Grade III sprains refer to a near total loss of function, ATFL and CFL laxity, a decrease in total ankle range of motion greater than 10 degrees, and marked bruising and tenderness.

Clients who have sprained ankles in the past are likely to sprain the same ankle again. This can lead to chronic ankle instability as ligaments continue to get stretched and sensorimotor function decreases (1). Though it is difficult to prevent sprains, it is possible to decrease the impairments associated with them, and hopefully reduce the likelihood of future sprains.

ASSESSMENT—WHAT TO LOOK FOR

When assessing clients, personal trainers will want to compare the affected side to the unaffected side. It is important to remember that slight asymmetry is normal, and assessment should focus on glaring deficits.

The trainer should begin with a subjective assessment by asking the client about their history of ankle sprains. The following questions should help narrow the objective assessment: When was the sprain? How did it happen? Did the client complete their rehabilitation program? Do they have an extensive history of ankle sprains? If the client has an extensive history of sprains, without rehabilitation addressing both strength and sensorimotor deficits, the client may need a more comprehensive ankle focused program, and a referral to a rehabilitation professional may be warranted.

For the objective assessment, the trainer should check both active and passive range of motion. These should be similar in range of motion for dorsiflexion, plantar flexion, inversion, and eversion. Moving up the chain, it is important to look at hip and knee range of motion as well.

Next, strength tests in these motions can be performed. A hand-held dynamometer is ideal for strength tests, but utilizing manual resistance or elastic bands to a pre-determined length for maximum repetitions will work as well. For the plantar flexors, single-leg calf raises can be performed standardizing for tempo and range of motion. Again, deficits should be noted.

There are many tests and measures available to assess balance and sensorimotor ability (2). Before looking at hops and change of direction, dynamic balance should be assessed with the Star Excursion Balance Test or the Y Balance Test.

PROGRAMMING

If your assessment revealed glaring deficits in range of motion, strength, or balance, the client's exercise program should reflect this and be designed to restore and increase these abilities.

If ankle range of motion is restricted, especially into dorsiflexion, foam rolling and stretching to the calf musculature may be helpful. It is important to remember that the gastrocnemius crosses the knee joint, so stretching should be performed with both a straight and bent knee. Limited hip and knee range of motion should be addressed as well, as restrictions lead to a decrease in degrees of freedom available for movement and balance.

If strength deficits are noted in the ankle, they should be addressed in isolation and in exercises that integrate them into movements. Exercises should not be isolated to the ankle, however. It is important to address hip, trunk, and knee strength as well as the entire kinetic chain which may contribute to a sprain.

Sensorimotor training should involve exercises that are initially static and progress towards more dynamic unilateral exercises with changes in direction. Forward, backwards, and lateral hopping variations can be helpful in addressing this deficit.

EXERCISE PRESCRIPTION

The following exercises can be used to supplement the program of a client with a history of lateral ankle sprains. These exercises emphasize strengthening the peroneal muscles of the ankle and the lateral gluteal muscles in both open and closed chain positions.

ANKLE EVERSION (FIGURES 1 AND 2)

Place the desired ankle inside the loop of a resistance band hooked to a stationary anchor. Control the ankle towards inversion during the eccentric, and towards eversion with the concentric. To begin building strength, these can be performed for 3 sets of 10 with at least 60 s of rest in between.

LATERAL BAND WALKS (FIGURES 3 AND 4)

Place a mini-band around the metatarsal heads of both feet. Stand in an athletic position, and begin walking laterally with an emphasis on keeping the toes pointed straight ahead with the knees in line with the toes. This can be performed in isolation, or as part of a warm-up. As a warm-up, perform 3 sets of 20 steps in each direction without rest.

FIGURE 1. ANKLE EVERSION

FIGURE 3. LATERAL BAND WALK

FIGURE 2. ANKLE EVERSION

FIGURE 4. LATERAL BAND WALK

STANDING FIRE HYDRANT (FIGURES 5 AND 6)
Place a mini-band around the knees. Keep the knee of the planted foot in line with the foot, with a slight bend. With the free leg, kick back at a 45 degree angle with slight hip external rotation. Emphasize that the stationary knee does not move. To build strength with this exercise, perform 3 sets of 10 repetitions with at least 60 s of rest in between.

FIGURE 5. STANDING FIRE HYDRANT

FIGURE 6. STANDING FIRE HYDRANT

CONCLUSION

Ankle sprains are an extremely common injury of both sports and everyday life. In the post-rehabilitation setting, it is important to first identify and then address deficits in ankle, hip, and knee range of motion and strength. Exercises should move from isolated to integrated, with the progression into sensorimotor training as well.

REFERENCES

1. Beynnon, BD, Murphy, DF, and Alosa, DM. Predictive factors for lateral ankle sprains: A literature review. *Journal of Athletic Training* 37(4): 376-380, 2002.

2. Caffrey, E, Docherty, CL, Schrader, J, and Klossner, J. The ability of 4 single-limb hopping tests to detect functional performance deficits in individuals with functional ankle instability. *Journal of Orthopedic Sports Physical Therapy* 39(11): 799-806, 2009.

3. Doherty, C, Delahunt, E, Caulfield, B, Hertel, J, Ryan, J, and Bleakley, C. The incidence and prevalence of ankle sprain injury: A systematic review and meta-analysis of prospective epidemiological studies. *Sports Medicine* 44(1): 123-40, 2014.

4. Lynch, SA. Assessment of the injured ankle in the athlete. *Journal of Athletic Training* 37(4): 406-412, 2002.

5. Martin, RL, Davenport, TE, Paulseth, S, Wukich, DK, and Godges, JJ. Ankle stability and movement coordination impairments: Ankle ligament sprains. *Journal of Orthopedic Sports Physical Therapy* 43(9): A1-40, 2013.

ABOUT THE AUTHOR

Cameron Yuen is a licensed Physical Therapist at Bespoke Treatments in New York, NY. Yuen is a Certified Strength and Conditioning Specialist® (CSCS®) through the National Strength and Conditioning Association (NSCA). Prior to becoming a physical therapist, Yuen coached at University of California, San Diego. While attending New York University for his doctorate degree, he also worked as a research assistant at Lehman College's Human Performance Laboratory, where he studied resistance training dosages. He has been featured in books and magazines including Human Kinetics, Women's Health, and Runner's World.

SIMPLICITY IS KEY—STRATEGIES FOR IMPROVING YOUR COACHING AND COMMUNICATION

DANIEL FLAHIE, MSED, CSCS

INTRODUCTION

The ability to communicate effectively and efficiently is vital to the success of our training programs, and our relationship with our clients. In this article, you will learn simple and effective communication and coaching strategies that you can immediately implement for building more trust and buy in from your client. Our clients are bombarded daily on social media and television. Claims of the "best new exercise" or that new flashy piece of equipment guaranteed to "melt fat" faster than the competition. Sifting through all of this and trying to separate what is based on science and what is a marketing ploy can, and often is, exhausting. Not only for our clients, but for us as well. Sometimes it can be annoying, but when we lose valuable time with them to explain why we are not doing what they saw on television, it can become a serious detriment to their training. What is my point? My point is that these sources are incredibly effective at influencing people with their specific and tailored language. We must do the same, but in an authentic and meaningful way. Not to sell them a product, but to sell them their health, backed by sound research and presented in a simplified way that resonates with them. Bruce Lee said, "Simplicity is the key to brilliance," and I tend to agree with him. Following these wise words, I will keep this simple, concise, and broken into three easily understandable sections with the intention to allow you to easily and immediately implement these concepts into your practice.

COMMUNICATION

Simplicity wins the day. What does this mean? In terms of communication, it means we must meet our clients at their level. This can and should be taken in two separate ways: The first is to physically meet them on their level of vision, and the second is to speak to them in language they are familiar with. It should be "personal training 101" to be at the level your client is at, at least for a portion of any given exercise. If your client is on the ground performing push-ups or planks, spend some time down on one knee or crouching with them. It shows you are invested in them more so than standing and hovering above them while they are performing an exercise (3). This is especially true for children. If you take the time to get on the same eye level as them, they will often feel much more comfortable with, and be more responsive to you. This has worked wonders for me, especially during the first few training sessions with clients that are new to training.

After physically getting on your client's level, the next step is to bring your experience to their knowledge level. Do not try to impress your clients with fancy scientific terms for movements and muscles. They do not care about a glenohumeral abduction, they care about a shoulder side raise to make their shoulder stronger and look better. Rattling off terms and acronyms they are not familiar with will not make you seem smarter to them, it will make you seem arrogant and annoying. Always start with basic layman terms with new clients. Later, if they show a real interest in the science behind what you are doing with them, then you can expand your vocabulary and show off your knowledge. Until that point, stick to the basics. The results you will produce with your

clientele will speak for themselves. This concept again holds true for children and adolescents. We do not need to explain in detail why we are teaching them to squat and jump properly for peak athletic development potential. Simply say, "We are doing this to be like Lebron James," and you will likely increase their interest and attention, with the caveat that they will not automatically be as good as said athlete but the visual or example could provide increased buy-in. It will be important to make the communication age-and knowledge-level specific and appropriate (6).

CREATING CONTEXT

Right now in my career, I primarily work with high school and collegiate athletes, which can be both a blessing and a curse. It is a blessing because the raw athletic ability in some kids is a pure joy to work with, but it can also be a curse because many kids do not like training in the weight room. They do not see the point, or the "why" behind the lifting and conditioning drills. Similarly, in the personal training world, you may have clients who are referred to you by a physical therapist or chiropractor, or they have been told they must make a lifestyle change and hesitantly found their way into your gym. How do you motivate these otherwise skeptical and reluctant clients? You create context. By creating context and relating everything you do with them to something they already know and love to do, you will not only increase their willingness to get invested (2), but you will most likely increase your client retention rate as well.

For example: You have an elderly client who has never done anything but walk on the treadmill. Her son or daughter has told her the benefits of strength training, but maybe she is not quite sold on it yet. What do you do? You tell her, "Look, doing squats and hip bending exercises is going to make it easier for you to move around and play with your grandkids at the park." I do not know about you, but I have never met a grandparent who wished they could do less with their grandkids. Finding something they most certainly love to do (play with their grandkids) and relating that to the movements in the gym will help them enjoy their experience, and potentially work harder. Here is another example: you have a construction worker who suffers from chronic low back pain, which affects about 80 percent of Americans at some point in their life (8) and is the most common source of pain among young construction workers (7). While diagnosing and treating injuries is out of our scope of practice as personal trainers, you can work with other medical providers to get him moving pain free once again. Our job, once he is cleared to train, is to relate to him how learning to move properly under loads in the weight room will transfer to a safer and less painful work environment.

It is important to remain authentic and never lie to your clients. Sure, you can put a clever spin on how a certain exercise relates to what they love or need to do outside of the gym, but never lie to them to get them to buy into an exercise. Sometimes they will not buy in, and that is okay. Do not fill their heads with grandiose ideas about what weight training could potentially do for them. Instead, be real, be sincere, and simplify the experience for them. In Steven Covey's The 7 Habits of Highly Effective People, he writes about his fifth habit, saying to "use empathetic listening to genuinely understand a person, which compels them to reciprocate the listening and take an open mind to being influenced by you. This creates an atmosphere of caring, and positive problem solving" (4,5).

EXERCISE SELECTION

Essentially all movements in life and sport come down to some variation and combination of the following: upper body push, upper body pull, squat (knee dominant pattern), hinge (hip dominant pattern), walking/running (loaded carry), rotation, and resisting rotation. There are many other lists available if you search "common movement patterns" online, but these seven are the most important. You can create the fanciest program you want, but when you break it down to its basics, the bulk of the program should be variations of those seven patterns. Herein lies the problem many trainers (myself included) face: How do I stay in business using a simple, research based, and often un-flashy program when the gym down the street looks like the Cirque du Soleil is in town? I wish I had a magic answer for that question, but I don't. However, one of the best marketing strategies out there is simply generating results (1). If your clients see results and their friends and family see results, the word of your ability will spread, and word of mouth is incredibly effective.

A movement-based program seems bland and generic, right? It does not have to be. There are dozens of variations you can implement with this movement-based training approach. And yes, you can and should still add in single joint exercises such as leg extensions and curls, bicep curls, and triceps extensions, as they have been shown to have benefits as well (9). Typically, I program cardio work for my clients to do on their own, as it is a waste of my time and their money to stand and watch him/her run on a treadmill or ride a bike. In my experience, I am only usually able to meet with clients two, maybe three, times a week for 30 minutes to an hour per session. That is not a lot of time, especially if they are not training on their own. The movement-based approach is highly efficient and allows me to hit every common movement pattern twice per week. If you are able to meet with your clients more frequently, consider yourself extremely lucky.

For a two day per week program, on the first day I simply select one exercise from each of the seven movement patterns, along with two or three single joint exercises to finish with. On day two I do the same, but with different exercise selection. The three-day per week program is similar, but with an extra day I can add in more exercises for each movement pattern. For example: day 1, focus on horizontal pressing and pulling (bench press and rows) along with knee dominant movement patterns (squats) and quads for the single joint exercises; day 2, focus on core work utilizing rotational, anti-rotational, and loaded carries, along with single joint upper body exercises such as shoulder raises, and arm exercises; and day 3, focus on vertical pressing and pulling (shoulder press and pull-ups or lat pulldowns) along with hip dominant movement patterns (deadlifts or Romanian deadlifts) and hamstrings for the single-joint exercises.

This is a very basic program and designed with a beginner client in mind. If you are reading PTQ, you are most likely already established as a personal trainer and are familiar with this type of training. This is just tip of the iceberg in terms of what you can do with this type of programming style and I hope you consider using it with your clients.

SUMMARY

At the end of the day, our job is to make our clients' lives better. Establishing a relationship and communicating with them in simplified terms that they can understand is a critical aspect of the training process. If you are not taking the time to do this, start now, and it will make the whole experience better for everyone involved. Creating context and relating what you are asking of them to activities outside of the gym that they are passionate about will not only increase their willingness to do what you ask of them, but it can very well increase your client retention rates as well. Lastly, keep the exercise selection and progressions simple and relevant to their needs in life. There is no need to create flashy and potentially dangerous exercises just to impress or excite your clients. Stick to the tried and true basics, and your results will speak for themselves.

REFERENCES

1. Bartholomew, B. *Conscious Coaching: The art & science of building buy-in*. Omaha, NE: Bartholomew Strength LLC; 228, 2017.

2. Bartholomew, B. *Conscious Coaching: The art & science of building buy-in*. Omaha, NE: Bartholomew Strength LLC; 231-234, 2017.

3. Baum, N. *Communication tools to enhance your relationship with your patients*. Retrieved January, 2018 from https://www.healthcaresuccess.com/blog/medical-marketing-advertising/communication-tools-to-enhance-your-relationship-with-your-patients.html. 2014.

4. Bilanich, B. *My tribute to Stephen Covey*. Retrieved February, 2018 from http://www.budbilanich.com/my-tribute-to-stephen-covey/. 2018.

5. Covey, S. *The 7 habits of highly effective people*. New York, NY: Simon & Schuster, 1989.

6. Kolucki, B., & Lemish, D. *Communicating with Children: Principles and practices to nurture, inspire, excite, educate and heal*. Retrieved February, 2018 from https://www.unicef.org/cwc/files/CwC_Final_Nov-2011(1).pdf. 2011.

7. Merlino, LA, Rosecrance, JC, Anton, D, and Cook, TM. Symptoms of musculoskeletal disorders among apprentice construction workers. *Applied Occupational and Environmental Hygiene* 18(1): 57-64, 2003.

8. National Institute of Neurological Disorders and Stroke. (2017). *Low back pain fact sheet*. Retrieved February, 2018 from https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Low-Back-Pain-Fact-Sheet. 2017.

9. Tumminello, N. Are the seated leg extension, leg curl, and adduction machine exercises non-functional or risky? *Personal Training Quarterly* 4(4): 50-53, 2017.

ABOUT THE AUTHOR

Daniel Flahie is currently the Instructor of Exercise Science and Health and volunteer assistant track and field coach at Mount Marty College. In the summers he works as a Performance Coach for Mark Roozen's sports performance in Yankton, SD. Flahie holds Bachelor of Science and Master of Science in Education degrees in Exercise Science. He is a Certified Strength and Conditioning Specialist® (CSCS®), Certified Speed and Agility Coach (CSAC), Functional Movement Screen (FMS) Level 1, Y- Balance Test (YBT), and Reflexive Performance Reset (RPR) Level 1 certified. Flahie has over five years of experience as a personal trainer and over three years of experience as a strength and conditioning coach for high school and collegiate athletes. Flahie's work has also appeared in the Nebraska Coach magazine.

UNIVERSIDAD EUROPEA - SCHOOL OF SPORTS SCIENCE

6th NSCA INTERNATIONAL CONFERENCE MADRID 2018

26-29 SEPTEMBER, 2018
MADRID, SPAIN

KEYNOTE SPEAKERS - WORKSHOPS
PRESENTATIONS & POSTERS

LINKING SPORT SCIENCE AND APPLICATION

KEYNOTE SPEAKERS

LARS ANDERSEN
Physical exercise as treatment for work-related pain

JUAN JOSÉ G. BADILLO
The role of the velocity control in resistance training

TRAVIS TRIPLETT
Resistance training program design for collegiate athletes

PEDRO ALCARAZ
Resistance circuit-based trainning

GREGORY HAFF
Long-Term athlete development

JULIO CALLEJA
The art of the recovery in sports

WORKSHOPS

DAVID MARCHANTE
Strategies to optimize training of strength

VICENTE CLEMENTE
High intensity Interval training applied to tactical athletes

MELISSA KANNIKE
Add fun, agility and diversity to your workouts

FRANCESC COS
Blood Flow Restriction: from rehabilitation to performance

NACHO COQUE
Strength training focuses on injury prevention

SPECIAL CREDITS FOR NSCA MEMBERS/CERTIFIED

The participant is awarded 2.0 CEU of continuing education for the CSCS, CSPS, NSCA-CPT, or TSAC-F certifications according to the guidelines set forth by the National Strength and Conditioning Association for completion of the 6th NSCA International Conference, Madrid 2018

ONLINE REGISTRATION

info@nsca2018.com **www.nsca2018.com**

NSCA ISPAIN NATIONAL STRENGTH AND CONDITIONING ASSOCIATION
Escuela Universitaria Real Madrid Universidad Europea
Universidad Europea
NSCA CEU APPROVED

EXERCISE AND PERSISTENT MUSCULOSKELETAL PAIN—A REVIEW AND RECOMMENDATIONS FOR PERSONAL TRAINERS

GARY STEBBING, PGDIP, CSCS

Many personal trainers work with clients who are dealing with musculoskeletal pain. This can have negative consequences both on the client's ability to exercise and their activities of daily living. This article will firstly discuss the different types of pain, and then describe targeted approaches for training clients with persistent musculoskeletal pain.

WHAT IS PAIN?

Pain has been defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage," (9).

Current pain neuroscience suggests pain is part of a complex protection mechanism involving a multi-system response to a perceived threat (10). Though pain is an important evolutionary phenomenon key to survival, its presence as a long-term symptom of many pathological disorders presents a serious challenge (5).

Pain can functionally be subdivided into acute and persistent pain. Each type has a different physiological mechanism and therefore requires different management approaches (6). Acute short term, or intermittent pain is a common symptom of many conditions and generally clears quickly. It serves a clear biological purpose and is normally confined to the area affected (6). For some individuals however pain does not resolve, becomes more persistent, and begins to have a serious impact on functional ability (3). This type of pain is described as persistent or chronic pain.

Persistent pain is pain that lasts beyond the expected healing and recovery time frame for a given injury (1). It is a feature of a number of conditions (e.g., osteoarthritis, fibromyalgia, chronic low back pain, headache and chronic fatigue) and has both physical and psychological effects on quality of life (4).

Acute pain seems a relatively straight forward process to understand, and can be considered via the structural-pathology model where the pain response is an accurate indicator of the state of the tissues (11). In acute musculoskeletal pain treatment targets the damaged tissues and focuses on encouraging healing and recovery. In contrast, the biology of persistent pain is not so clear and for some the structural-pathology model does not explain their pain experience. Recent pain neuroscience research suggests a picture where: a) the pain does not reflect the tissue state; b) pain is modulated by factors including somatic, psychological and social domains; c) as pain persists, this relationship between pain and tissue state is more difficult to predict; and d) pain may be considered as a "conscious correlate" of perception of danger to the tissues, in other words, pain comes into existence as a lived experience when the brain concludes that tissues are in danger (11).

When musculoskeletal pain becomes persistent treatment strategies are now moving away from just joints and muscles. Functional MRI studies have shown structural/functional changes in the brains of persistent pain sufferers and these changes may lead to a "chronic pain state." Interventions therefore focus on the brain and nervous system rather than dysfunction in the musculoskeletal system (12,15).

PERSISTENT PAIN MANAGEMENT—PREPARING FOR EXERCISE

Preparation for the exercise intervention should begin well before the trainer meets the client and will be supervised by members of the client's pain management team. Key physical therapy techniques designed to modulate the central nervous system include education, stress management, body awareness training, graded motor imagery as well as initial exposure to exercise (10). Pain education aims to help the client understand their pain, answering questions such as what is persistent pain? and why do people have it? Stress management techniques may include mindfulness, meditation, and breathing exercises; in graded motor imagery clients work on left/right discrimination, visualizations of performing movement and mirror therapy (14). Body awareness training targets possible distortions in proprioception and a person's awareness of the position of their limbs in space. It is important the personal trainer becomes familiar with these approaches and able to understand the treatment objectives on which the supporting exercise is to be introduced. Sessions jointly supervised by the physical therapist and trainer are an excellent way to develop this understanding and are also an excellent way

to "transition" the client out of physical therapy and into more mainstream exercise training sessions.

Goal setting and close monitoring may be of particular importance in this client group as evidence suggests that goal pursuit increases sensitivity to relevant information, and potentially might decrease pain sensitivity over time (3). In particular, trainers must focus on making goals realistic and process orientated (3), and importantly client driven (12). Below are a range of possible outcome objectives which can be individualized based on client discussion (2):

- Quality of life or functional independence
- Activities of daily living
- Return to work
- Pain intensity
- Decreased symptoms of fatigue
- Decrease symptoms of stiffness
- Health benefits (e.g., improved bone density, increased muscle mass)
- Improving physical function (e.g., strength, endurance, range of motion or mobility)
- Decreasing number of adverse events
- Achieving targeted levels of exercise participation

In addition, benefits such as improved mood, improved energy levels, improved expectation regarding pain and/or exercise, improved self-efficacy, and decreases in negative stress or anxiety are legitimate objectives and can be as important in the overall client experience.

PERSISTENT PAIN MANAGEMENT—THE APPLICATION OF EXERCISE

A wide range of guidelines exist for the management of persistent pain, with exercise often seen as a central component (4). Precise information regarding most affective exercises, sets, reps and rest periods have yet to be established; this is not surprising given the range of conditions affected by persistent pain and the variation in individual patient pain experiences. Currently, no specific mode of exercise appears superior to any other with cardio-vascular, resistance or water-based exercise all valid options.

Working successfully with persistent pain patients blends classic personal training skills, (e.g., teaching sound technique, setting and monitoring intensities), with exercise psychology, and lifestyle and wellness coaching skills.

Communication skills may take on particular importance with this group. A Socratic rather than lecturing style has been recommended, whereby the trainer focuses less on advising and providing answers, and more on empowering the client through enquiry and questioning (12). Creating a "safe learning environment" is also important, allowing the client to exercise without fear of judgement or negative appraisal, and be comfortable feeding back regarding fears and perceptions. The importance of the therapeutic effect of training cannot be over-emphasized, and the trainer should ensure where possible that each session provides a positive experience for the client.

There are rarely any absolute exercise contraindications for clients with persistent musculoskeletal pain, however the trainer should always seek advice from the physician or physical therapist before designing exercise, or if ever unsure when working with the client.

Adherence strategies such as logbooks, journals and activity contracts can be utilized (1). As always trainers must focus on technique when teaching, and some clients may benefit from video footage of them performing exercises with correct technique and coaching feedback (1). Trainers working with persistent pain sufferers should also have a thorough understanding of graded activity and be adaptable in their exercise selection (12). Supervised training should be supplemented with a home program where possible (7), and client preferences should also be included in program design if this supports participation and adherence (1).

KINESIOPHOBIA

Memories related to particular movements or activities that have previously provoked pain are likely to mean clients have adopted protective behaviors, developed avoidance strategies and these may have led to altered motor control (12,13,15). Movement avoidance may also lead to increased disability, decreased functional capacity and an overall physical de-conditioning (3). Although these movements may now be safe to perform the brain/nervous system has linked them to danger or threat (12). Their pain is not reflective of tissue state but drives behaviors to protect those tissues.

TIME CONTINGENT TRAINING

Since persistent musculoskeletal pain can be present without tissue damage or can be disproportionate to damage, the trainer can work with the client to modify pain beliefs, improve confidence in abilities, and decrease the threat stress of movement. Time contingent training has been proposed as one approach to addressing these items (13). In this approach, the client and trainer agree to a specific number of repetitions to be performed in a set, and the set is completed even if the client feels pain. The trainer allows the client to continue despite reports of pain without stepping in to modify, adapt or discontinue the exercise. On completion of the set, the trainer and client discuss the success and difference between prior expectation and actual performance reality. In this model, exercise aimed at desensitization and gradual repeated exposure to fearful movements targets the development of positive new movement related memories (12,13).

COGNITIVE TARGETED EXERCISE

An expansion of the time contingent exercise approach in persistent musculoskeletal pain is cognitive targeted exercise (12). Through targeting client perceptions and movement based pain memories, the goal is to decrease the anticipated threat of the exercise and build confidence inability to perform movement; this is referred to as the "exposure without danger" principle (12). As with time contingent exercise, it is important that this approach has been previously discussed between the client and physical therapy or pain management team. The trainer should be confident in its application with the client. "Hurt does not

mean harm" can be a difficult concept to take on, so the trainer needs to be reassuring, and carefully disconfirm beliefs during activity exposure (3).

An example scenario is shown below:

- Begin the training session with non-threatening exercise that the client can perform comfortably and confidently. Gradually progress toward movements that the client fears most (i.e., from more general exercise to highly individualized exercise selection).
- Before starting the individualized exercise *discuss the movement* with the client and explain carefully *based on the pain education they have been given*. The discussion is aimed at decreasing perception of danger and fear, affirming safety and building confidence.
- Allow the client to visualize successful completion of the exercise if they wish.
- Perform the movement using the time contingent approach.
- On completion, review the movement with the client, allowing them to share their experience. Explore the potential mismatch between prior expectation and reality.

Even if pain is present during the exercise the goal is that the threatening nature diminishes over time and this exposure without danger challenges the brain to develop new memories. The longer term objective is that the client can progress these previously challenging movements from simple performance, to conditions where they can be completed under stress or increased load without concern.

IMPORTANCE OF MONITORING RECOVERY

All exercise is continually monitored by the neuro-endocrine system. Careful monitoring of training intensity, impact, and recovery are important, as extended exposures of exercise at particular intensities may disrupt neuro-endocrine regulation in this group (8). Trainers need to be mindful of factors that influence short and long term recovery because the therapeutic window for exercise can be small in relation to pain symptoms (4). The consequences of nervous system sensitization and on-going pain are that the client is exposed to almost continuous stress which may lead to alterations in the hypothalamo-pituitary-adrenal axis and hyperactivity of the sympathetic nervous system (4). Since exercise is a further stressor, monitoring recovery both during and between sessions is an important consideration.

SUMMARY

Musculoskeletal pain can functionally be subdivided into acute and persistent. In acute pain treatment targets the damaged tissues and focuses on encouraging healing and recovery, whereas in persistent pain treatment strategies focus less on joints and muscles and more on decreasing nervous system sensitivity. When working with persistent pain clients, goal setting and strong communication skills are important, as poor adherence and kinesiophobia are serious challenges to success. Trainers should familiarize themselves with techniques such as time contingent training and cognitive based training, which need to be practiced, developed and applied in conjunction with physical therapists and other medical professionals. The importance of recovery cannot be overstated and the trainer's expertise in balancing training load and recovery will be a huge asset to the client and support team.

REFERENCES

1. Aitken, D, Buchbinder, R, Jones, G, and Winzenberg, T. Interventions to improve adherence to exercise for chronic musculoskeletal pain in adults. *Australian Family Physician* 44(1-2): 2015.

2. Bidonde, J, Busch, AJ, Schacter, CL, Overend, TJ, Kim, SY, et al. Aerobic exercise training for adults with fibromyalgia. *Cochrane Database of Systematic Reviews*, Issue 6. Art. No.: CD012700.DOI: 10.1002/14651858.CD012700. 2017.

3. Crombez, G, Eccleston, C, Van Damme, S, Vlaeyaen, JWS, and Karoly, P. Fear-avoidance model of chronic pain the next generation. *Clinical Journal of Pain* 28(6): 475-483, 2012.

4. Daenen, L, Varkey, E, Kellman, M, and Nijs, J. Exercise, not to exercise, or how to exercise patients with chronic pain? Applying science to practice. *Clinical Journal of Pain* 31:108-114, 2015.

5. Gangadharan, V, and Kuner, R. Pain hypersensitivity mechanisms at a glance. *Disease Models & Mechanisms* 6: 889-895, 2013.

6. Helms, JE, and Barone, CP. Physiology and treatment of pain. *Critical Care Nurse* 28(6): 38-49, 2008.

7. Hoffman, TC, Maher, CG, Briffa, T, Sherrington, C, Bennell, K, et al. Prescribing exercise interventions for patients with chronic conditions. *CMAJ* 188(7): 2016.

8. Hoover, DL, VanWye, WR, and Judge, LW. Periodisation and physical therapy: Bridging the gap between training and rehabilitation. *Physical Therapy in Sport* 1-20, 2015.

9. International Association for the Study of Pain (IASP) https://www.iasp-pain.org/Taxonomy#Pain retrieved 08.03.2018.

10. Jones, LE, and O'Shaughnessy, DFP. The pain and movement reasoning model: Introduction to a simple tool for integrated pain assessment. *Manual Therapy* 19: 270-276, 2014.

11. Moseley, GL. Reconceptualising pain according to modern pain science. *Physical Therapy Reviews* 12: 169-178, 2007.

12. Nijs, J, Girbes, EL, Lundberg, M, Malfliet, A, and Sterling, M. Exercise therapy for chronic musculoskeletal pain: Innovation by altering pain memories. *Manual Therapy* 20: 216-220, 2015.

13. Nijs, J, Clark, J, Malfliet, A, Ickmans, K, Voogt, L, et al. In the spine of in the brain? Recent advances in pain neuroscience applied in the intervention for low back pain. *Clinical and Experimental Rheumatology* 35(suppl 107): S108-S115, 2017.

14. Walz, AD, Usichenko, T, Moseley, GL, and Lotze, M. Graded motor imagery and the impact on pain processing in a case of CRPS. *Clinical Journal of Pain* 1-4, 2012.

15. Wand, BM, Parkitny, L, O'Connell, NE, Luomajoki, H, McAuley, JH, Thacker, M, and Moseley, GL. Cortical changes in chronic low back pain: Current state of the art and implications for clinical practice. Manual Therapy 16: 15-20, 2011.

ABOUT THE AUTHOR

Gary Stebbing is a specialist in physical training and mental skills preparation. He studied sport and exercise science at the undergraduate level and sport and performance psychology at the postgraduate level. He has been a Certified Strength and Conditioning Specialist® (CSCS®) through the National Strength and Conditioning Association (NSCA) since 2002. He has published and lectured in fitness training and coaching in the United Kingdom, United States of America, and Australia, and is a visiting lecturer on the postgraduate physiotherapy program at University College London.

PROGRAMING THE GENERAL POPULATION FOR OPTIMAL FITNESS—10 IMPORTANT MOVEMENT PATTERNS

KEVIN MULLINS, CSCS

The discipline of personal training is one which demands tremendous versatility built on top of solid scientific foundations. Much of training is based upon proven concepts and practices that are utilized by all of the best professionals. Yet, not every problem requires the same tool and so a personal trainer must learn to be versatile and adapt to their client, especially if they are considered general population.

For the purposes of this article, a general population (GP) client is someone who does not present any specific needs in relation to aesthetic and athletic performance, injury prevention/recovery, or health intervention. They will possess common goals regarding looking better, feeling better, and doing a little more with their body, but will often view health and wellness as a luxury and not a necessity. These individuals will comprise the bulk of a personal trainer's book of clients.

General population clientele often lack specific goals regarding performance and human conditioning, which can make developing an appropriate and challenging program difficult for a trainer used to working towards specific outcomes. A checklist is a great place to start for such clients. But, the checklist that proposes seven major movement patterns is not always complete for a GP client.

They require a greater attention to detail in addition to a greater variability in movement selection. Therefore, expanding the current list to a total of ten movements by including gait, anti-movements, and cross pollination will ensure a more complete training experience for a general population client.

The purpose of this article is to briefly review the primary seven movements that have been proposed (1) as well as provide a rationale for three additional movement patterns that can be added to a program for clients of varying abilities.

THE PRIMARY 7 (1)

1. **Hinge** – hip-dominant movements (deadlift variations, swing patterns, bridges)

2. **Knee-Dominant** – bilateral/unilateral knee-dominant movements (squat variations, split squats, multi-planar squats, and all lunge variations)

3. **Rotation** – the active rotation of the core of the body with effects up and down the kinetic chain (medicine ball throws, cable chops)

4. **Horizontal Push** – movements that push a resistance away from our center of mass utilizing the chest musculature (bench press, push-ups)

5. **Horizontal Pull** – movements that pull a resistance towards our center of mass with use of our back musculature (rowing variations, face pulls)

6. **Vertical Push** – movements that push a resistance above our heads utilizing the shoulder musculature (overhead press, military press, handstands)

7. **Vertical Pull** – movements that pull a resistance from above our head towards our center of mass utilizing the back musculature (pull-ups, chin-ups, pulldowns)

THE FUNCTIONAL 3

8. **Stability (or anti-movements)** – prevent motion, anti-flexion, anti-extension, anti-rotation (deadlifts, planks, and Paloff presses)

9. **Gait** – Movements that are unloaded and move us through space (crawl, walk, run, sprint, and bound)

10. **Cross Pollination** – knee-dominant movements with addition of locomotion (walking lunges, reverse lunges, side lunges)

With the formal introduction out of the way, let's explore each of these three additional movements more in depth to understand their value to a personal trainer.

STABILITY (THE ANTI-MOVEMENTS)

The core's stability patterns are simply the "anti" of its movement capabilities; anti-flexion, anti-extension, anti-lateral flexion, and anti-rotation. Emphasizing the ability of the body to resist external forces can help develop deep core muscles such as the transverse abdominus, internal and external obliques, serratus, and the pelvic floor. Core stability is imperative to athletic performance and longevity (4).

Many movements that address one aspect of stability will also address another. The goal in any of the following patterns is the same: To maintain a neutral spine and braced core throughout the entirety of the exercise.

- **Anti-rotation movements** such as the Paloff press, the chop-and-lift, landmine switch presses and bear crawls are examples of exercises that can be used for developing stronger obliques, serratus anterior, lats, and transverse abdominus.
- **Anti-extension movements** such as the plank, loaded carries, push-up, bird dog, dead bug, and even the shoulder press can be used for transverse activation. Otherwise, the spine will go into lumbar lordosis, the pelvis into anterior tilt, and the lower back extensors will exhaust from overuse.
- **Anti-flexion movements** such as the plank, loaded carries, deadlift, squat, and many versions of the row can be used to keep the lumbar spine in a neutral position under stress. Strengthening the glutes, transverse abdominus, and the deep muscles of the pelvis are necessary to keep the lower core strong and capable under load.
- **Anti-lateral flexion movements** such as single-arm carries, and suitcase deadlifts can be used for strengthening the obliques (internal and external) to prevent the lateral collapse of the spine. Single-sided waiter carries are an excellent add for new parents who must become accustomed to holding a child on one side of their body for extended periods of time.

In a program these movements should take place in every workout. Their importance, and the importance of the core, cannot be forgotten. They can be utilized as corrective exercises, activation techniques, primary exercises, and accessory movements. Regardless of where they are placed in a program, a personal trainer must respect the integrity of the exercise to achieve optimal results and ensure client safety.

GAIT

In theory all your clients should be able to crawl, lunge, jog, and possibly even sprint. These movements are on a gradient when considering age and dysfunction, but their importance remains the same. So long as we remain bipedal animals gait shall remain an important training directive.

For the purposes of this paper we will only discuss standing posture and walking as an exploration of jogging, sprinting, and crawling would require a much more in-depth dive into the subtle elements of human locomotion, individual biomechanics, and requisite fitness.

STANDING POSTURE

The flaws a client presents while standing still will be indicative of the issues that will likely occur once they begin walking. A standing assessment should always be part of a personal trainer's assessment protocol, during which one might look for:

- Unequal weight distribution at hip causing a drop or rotation of the A.S.I.S.
- Lumbar extension, anterior pelvic tilt, locked knees (lumbar lordosis, anterior pelvic tilt, posterior pelvic tilt, and sway back)
- Rounding of the shoulders, winging of the scapula (thoracic kyphosis)
- External rotation of the femurs, tibias, and feet

WALKING

As your client progresses through corrective and strengthening exercises that allow their body to stand properly you will look to expand into their walking patterns Some clients may never sprint, jog, or crawl, but most should be able to walk so you can improve their quality of life.

In a very serious, but specific example, walking training has even been shown to aid in the quality of life for Parkinson's patients (3). Not all coaches will encounter this but understanding that simply improving someone's walking pattern could be a life-changing experience is important.

Here are some key mechanics found in walking:

- Arm swing that is contralateral to the driving leg
- Pressure through the ball of the foot that translates from the inside of the foot towards the outside
- A strong, but fluid core that maintains center of mass, but allows for natural drive of the legs and arms
- Relaxed shoulders and head posture that eliminates "bunching" in the upper body
- A natural stride length that allows for full extension of the leg without overstride

CROSS POLLINATION

This final pattern is simply combining the other nine movement patterns together into series. Human movement does not occur in singularity. In both life and athletics, movement is a series of movement patterns strung together with fluid transitions and subconscious action, loaded and unloaded (2).

Think of it is this way:

- Do you contemplate how you are going to play with a child or do you just play?
- Does an athlete pause after a cut to contemplate whether they should hinge, squat, or lunge with their next step?

The answer to both examples is emphatically no. The subconscious takes over and the job gets done, even if the requisite movement patterns are not perfect. It is why people get hurt lifting their friend's couch on moving day, or why they feel a twinge in their knee playing backyard football with their kids. Their exercise regimen does not prepare them for activities of daily living.

It is those unfortunate outcomes that bring our tenth movement pattern into existence. Once a client has shown relative mastery of the previous nine patterns, then it is imperative for them to start mixing and matching them in ways that life and sport may ask. Many disciplines have integrated "flows" to improve an individual's ability to navigate space with essential movement patterns.

Some examples:

- Walking lunge with core rotation at the bottom and overhead press during the stand
- Sprint in place to drop squat
- Squat to push up (incorporates forward and backwards crawling)
- Hinge to row to curl and press (add a high knee march at press lockout to incorporate gait)

PUTTING IT TOGETHER IN PROGRAMMING

Developing a program is the core "homework" for a personal trainer. Utilizing the information from a questionnaire, assessments, and (or) previous training cycles is the first step in developing an appropriate, but challenging, exercise program.

Barring any significant injuries or medical conditions most clients should be put into a program that addresses their specific needs while consistently addressing each of the ten movement patterns. Each client may have a unique progression or regression based upon their abilities and goals, but it is recommended that they should be training the essential ten patterns.

How a trainer incorporates these patterns into a weekly training program is based upon one major factor: client training frequency. Put simply, a client who trains frequently will split up the ten patterns into multiple sessions whereas someone who only works with you once a week would need to address as many of the movements as possible in that one hour. A more in-depth breakdown and sample programs are provided in the Tables 1 – 3.

Determining how to order the patterns is the next essential step in developing a training program. Randomness serves no one, especially when we consider that the body works in complimentary ways. As a result, certain patterns will group better with others whereas others may conflict. The art of grouping movement patterns to optimize the effects of a training session is a subject all its own. Examples of some complimentary patterns are:

- gait, hinge, overhead push, anti-movement
- gait, knee-dominant, vertical pull, anti-movement
- horizontal push, horizontal pull, cross pollination, rotation

Each of these groupings respect the need for balance in a GP program. Too much of one pattern could create an imbalance, or worse an injury that makes training a challenge altogether. Any training program for a general population client can follow a format of non-competitive, complimentary movement patterns.

CLOSING

Developing a program for a general population client requires understanding their movement needs prior to addressing the standard fare of goals. A client who moves better typically exercises more often, which is the real secret behind body composition and performance changes—the goals of most personal training clients. Expand your training programs by implementing all ten of the major human movement patterns. Be sure to utilize each with appropriate intensity at the appropriate times to maximize results.

REFERENCES

1. Boyle, M. *Functional Training for Sports 1st Edition*, Champaign, IL: Human Kinetics; 21-25, 2003.

2. Dalcourt, M. Loaded movement training: A missing link in today's training protocols. PTontheNET.com. Accessed on November 22, 2017 from http://www.ptonthenet.com/articles/loaded-movement-training-a-missing-link-in-todays-training-protocols-3787.

3. Herman, T, Giladi, N, Gruendlinger, L, and Hausdorff, JM. Six weeks of intensive treadmill training improves gait and quality of life in patients with Parkinson's disease: A pilot study, *Archives of Physical Medicine and Rehabilitation* 88(9): 1154-1158, 2007.

4. Kibler, WB, Press, J, and Sciascia, A. The role of core stability in athletic function. *Sports Medicine* 36(3): 189-198, 2006.

ABOUT THE AUTHOR

Kevin Mullins is a Master Instructor for Equinox Sports Club in Washington, D.C. Mullins graduated with a Bachelor of Science degree in Kinesiology from the University of Maryland, College Park in 2010 and has since become certified by Precision Nutrition, United States of America Weightlifting (USAW), International Sports Science Association (ISSA), and Schwinn Cycle. Twice named one of Men's Health Magazine's Top Trainers, Mullins has also spoken at the Achieving Optimal Health Conference at Georgetown University, and serves as an ambassador for PTontheNET.

SAMPLE PROGRAMS

TABLE 1. ONE DAY PER WEEK PROGRAM

CLIENT FREQUENCY: 1 DAY/WEEK				DAY 1	
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Running Drills, Agility (sprints*)		As needed		Gait
	Ballistic Squat (Drop Squat/Box Jump*)	3	3 to 5		Knee Dominant
Group 1	Trap Bar Deadlift	4	8 to 12		Hip Dominant
	Half Kneeling Overhead Press	4	8 to 12		Overhead Push
	Plank Hold	4		30 s	Anti-Flex/Ext
Group 2	Reverse DB Lunges to Lateral Fly	4	8 to 12		Cross Pollination
	Bent-Over DB 2-Hand Row	4	8 to 12		Horizontal Pull
	Pallof Press	4	8 to 12		Anti-Rotation
Group 3	Push-Up	3	8 to 12		Horizontal Push
	Lat Pulldown	3	8 to 12		Vertical Pull
	Single-Leg Hip Bridge	3	8 to 12		Unilateral Hinge
	Single DB Farmer's Carries	3		30 s	Anti-Lateral Flex
	Medicine Ball Chops-to-Wall	3	8 to 12		Rotation

**A client may require a modification to make an exercise unique and appropriate for them.*

TABLE 2. TWO DAYS PER WEEK PROGRAM

CLIENT FREQUENCY: 2 DAYS/WEEK				DAY 1	
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Running Drills, Agility (sprints*)		As needed		Gait
	Kettlebell Swing	3	3 to 5		Hip Dominant
Group 1	Barbell Sumo Stance Deadlift	4	8 to 12		Hip Dominant
	Push-Ups	4	8 to 12		Horizontal Push
	Medicine Ball Chops-to-Wall	4		30 s	Rotation
Group 2	DB Squat to Overhead Press	4	8 to 12		Cross Pollination
	DB Romanian Deadlift to Row	4	8 to 12		Cross Pollination
	High-Low Kneeling Chop	4	8 to 12		Anti-Rotation
Group 3	Plank Saw	3	8 to 12		Anti-Flex/Ext
	Lat Pulldown	3	8 to 12		Vertical Pull
	Barbell Hip Thrusts	3	8 to 12		Unilateral Hip Dominant
	Seated Cable Rows	3	8 to 12		Horizontal Row
	Side Plank	3		30 s ea	Anti-Rotation

**A client may require a modification to make an exercise unique and appropriate for them.*

CLIENT FREQUENCY: 2 DAYS/WEEK				DAY 2	
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Bear Crawls		As needed		Gait
	Paloff Press	3	3 to 5		Knee Dominant
Group 1	DB Bench Press	4	8 to 12		Horizontal Push
	DB Goblet Squat	4	8 to 12		Knee Dominant
	Plank Hold	4		30 s	Anti-Flex/Ext
Group 2	Incline Fly to Press (DB)	4	8 to 12		Horizontal Push
	Standing DB Push Press	4	8 to 12		Vertical Push
	Walking Bodyweight Lunges	4	8 to 12		Knee Dominant
Group 3	Push-Up	3	8 to 12		Horizontal Push
	Suitcase Deadlift	3	8 to 12		Anti-Lateral Flex
	Dumbbell Squat to Curl	3	8 to 12		Cross Pollination
	Romanian Deadlift to Rear Fly	3	8 to 12		Cross Pollination
	Medicine Ball Chops-to-Wall	3	8 to 12		Rotation

TABLE 3. THREE DAYS PER WEEK PROGRAM

CLIENT FREQUENCY: 3 DAYS/WEEK				DAY 1	
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Running Drills, Agility (sprints*)		As needed		Gait
	Kettlebell Swing	3	3 to 5		Hip Dominant
Group 1	Trap Bar Deadlift	4	8 to 12		Hip Dominant
	Half Kneeling Overhead Press	4	8 to 12		Overhead Push
	Plank Hold	4		30 s	Anti-Flex/Ext
Group 2	Dumbbell Romanian Deadlift	4	8 to 12		Hip Dominant
	Lateral Lunge-to-Curl and Press	4	8 to 12		Cross Pollination
	Glute Bridges	4	8 to 12		Hip Dominant
Group 3	Assisted Pull-Ups	3	8 to 12		Vertical Pull
	Bent-Over DB Rear Delt Fly	3	8 to 12		Horizontal Pull
	Plank Saws	3	8 to 12		Anti-Flex/Ext
	Loaded Farmer's Carries	3	30s		Anti-Flex/Ext
	Incline Walk for Time				Gait

**A client may require a modification to make an exercise unique and appropriate for them.*

CLIENT FREQUENCY: 3 DAYS/WEEK				DAY 2	
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Running Drills, Agility (sprints*)		As needed		Gait
	Ballistic Squat (Drop Squat/Box Jump*)	3	3 to 5		Knee Dominant
Group 1	DB Goblet Squat	4	8 to 12		Knee Dominant
	Incline DB Row	4	8 to 12		Horizontal Pull
	Pallof Press	4		30 s	Anti-Rotation
Group 2	Reverse DB Lunges with Shrug	4	8 to 12		Cross Pollination
	Single-Arm DB Row	4	8 to 12		Horizontal Pull
	Bodyweight Squat Hold	4		30 s	Knee Dominant
Group 3	Lat Pulldown Wide	3	8 to 12		Vertical Pull
	Lat Pulldown (Chin-Up Grip)	3	8 to 12		Vertical Pull
	Single-Leg Hip Bridge	3	8 to 12		Unilateral Hinge
	Single DB Farmer's Carries	3		30 s	Anti-Lateral Flex
	Medicine Ball Chops-to-Wall	3	8 to 12		Rotation

**A client may require a modification to make an exercise unique and appropriate for them.*

TABLE 3. THREE DAYS PER WEEK PROGRAM (CONTINUED)

CLIENT FREQUENCY: 3 DAYS/WEEK	DAY 3				
	Exercise	**Sets**	**Reps**	**Time**	**Movement Pattern**
Warm-Up	Mobility/Activation/Correctives		As needed		N/A
	Bear Crawl		As needed		Gait
	Plyometric Medicine Ball Chest Pass	3	3 to 5		Horizontal Push
Group 1	DB Bench Press	4	8 to 12		Horizontal Push
	Assisted Pull-Ups	4	8 to 12		Vertical Pull
	Plank Hold	4		30 s	Anti-Flex/Ext
Group 2	Standing Military Press	4	8 to 12		Vertical Push
	Cable Step-and-Chop	4	8 to 12		Rotation
	Face Pull	4	8 to 12		Horizontal Pull
Group 3	Push-Up	3	8 to 12		Horizontal Push
	Close-Grip Pulldown	3	8 to 12		Vertical Pull
	Lateral Lunge-to-Curl and Press	3	8 to 12		Cross Pollination
	Waiter Carries	3		30 s	Anti-Flex/Ext
	Incline Sprints*	3	2 to 5		Gait

**A client may require a modification to make an exercise unique and appropriate for them.*

NSCA®
NATIONAL STRENGTH AND CONDITIONING ASSOCIATION

NSCA NATIONAL CONFERENCE

JULY 11 – 14, 2018 INDIANAPOLIS, IN

Learn with top strength and conditioning professionals at the 41st Annual **NSCA National Conference** as your career paths come together to prepare for the road(s) ahead. Be a part of the unrivaled knowledge sharing and networking—guaranteed to leave your career feeling more elevated.

SAVE $25 ON REGISTRATION WITH PROMO CODE TC18

NSCA.com/NSCAconference

1885 BOB JOHNSON DRIVE | COLORADO SPRINGS, CO 80906
PH: 719 632-6722 | TF: 800 815-6826 | FX: 719 632-6367
NSCA.com