Responsible Training

Being an expert coach is about improving fitness and safeguarding the health of one's clients. Keeping clients safe includes all the considerations raised in the Developing Virtuosity in Coaching article; i.e., knowing the movement points of performance and being able to identify and correct violations. However, client safety also includes multiple logistical factors, such as programming, specific needs for special populations, equipment layout and accurate representation of one's credentials. This article is meant to prime new Level 1 Trainers to responsibly train others while gaining expertise.

Mitigate Client's Risk Of Rhabdomyolysis

Rhabdomyolysis, while rare, can develop from high-intensity or high-volume exercise, including CrossFit or any other process that damages muscle cells. Rhabdomyolysis (often simply referred to as "rhabdo") is a medical condition that may arise from breakdown of muscle tissue and release of the muscle cells' contents into the bloodstream. This process can damage the kidneys and may lead to renal failure or death in rare cases. Rhabdo is diagnosed when a patient with an appropriate history has an elevated level of another molecule, creatine kinase, also known as CK or CPK. CPK is easier to measure in the blood than myoglobin and is generally used as a marker for rhabdo, even though it is the myoglobin that does the damage.

Treatment consists of generous amounts of intravenous fluids to dilute and flush the myoglobin through the kidneys. In the worst cases, patients may need dialysis while the kidneys recover. Death, though rare, can result when the kidney failure causes imbalances in the usual electrolytes, which may cause cardiac arrhythmias. Most patients make a complete recovery after being rehydrated with IV fluids over anywhere from several hours to a week or so, depending on the severity.

There are a few ways a CrossFit trainer can protect athletes from rhabdomyolysis:

- Follow the charter of mechanics, consistency, intensity.
- Know the movements that have a higher rate of rhabdomyolysis incidence (those that prolong the eccentric contraction), and be mindful of the total volume that is programmed with these exercises.
- Scale workouts for clients appropriately.
- Avoid progressive scaling.
- Educate clients on the symptoms of rhabdomyolysis and when it is appropriate to seek medical attention.

Following the mechanics-consistency-intensity charter is to best prepare the athlete for long-term success, but it is also a way to mitigate the potential of developing rhabdomyolysis (and other injuries). Slow and gradual increases in intensity and volume allow the body to acclimate to high-intensity and higher-volume exercise. Even athletes who quickly demonstrate sound mechanics still need a gradual increase in intensity and volume. When working with new athletes, trainers should focus on using modest loads, reducing volume and coaching the athlete on technique. At affiliates where there are "elements" or "on-ramp" classes that last a couple of weeks, athletes should still be heavily scaled beyond this introductory period to ensure adequate time to acclimate to CrossFit training. If there are no separate classes for beginners, treat the workouts as technique sessions for newer athletes–focus on their mechanics rather than speed or load. There is no set protocol for how quickly to increase intensity, but it is wise to err on the side of caution and work toward long-term fitness. Multiple months at scaled loads and volumes are well within a normal timeframe for even the best athletes, with gradual increases in intensity implemented after that. Trainers need to frequently check in with athletes to determine how the previous dose of exercise affected them. Although intensity is a significant part of CrossFit, each athlete has his or her entire life to continue to improve fitness and tolerance for intensity.

The second way to mitigate the risk of rhabdomyolysis is to know the movements associated with a higher rate of incidence. Beginner athletes should keep "negatives" (movements which prolong the eccentric phase) to a minimum. Although negatives can be an effective way to increase strength, they should not be used in high volumes with beginners. Athletes may increase the volume of negatives gradually over time.

While the eccentric phase of movements cannot and should not be avoided, there are movements in which people are more likely to prolong the eccentric phase. In CrossFit, these tend to be jumping pull-ups and full-range-of-motion Glute-Ham Developer (GHD) sit-ups. In the jumping pull-up, the athlete should not prolong the descent but should instead immediately drop to an extended-arm position once the chin has cleared the bar, absorbing the impact with the legs. Similarly, in the full-range-of-motion GHD sit-up, newer athletes should use fewer repetitions and potentially a shortened range of motion until capacity is developed. It is also prudent for trainers to scale the number of repetitions and the range of motion for athletes who do not routinely use GHD sit-ups regardless of their CrossFit experience. There are no exact rules for total volume, but beginners and new CrossFit athletes (and even advanced CrossFitters who have not been routinely using the GHD) should start with relatively low repetitions of the partial-range-of-motion GHD sit-up (i.e., to parallel) and gradually increase from there with consistent exposure.

Progressive scaling–the practice of continually adjusting the difficulty of a workout so that an exhausted athlete can keep moving–must be avoided with the beginner or even intermediate athlete. Allow these athletes to stop and take rest as needed to complete the workout. An example may be if the trainer keeps lowering the load so the athlete does not have to stop completing reps (e.g., 135-lb. barbell for thrusters dropped to 115 to 95 to 65 to 45 across the workout duration). Progressive scaling may be used, but it must be applied very cautiously even with the most advanced of athletes.

It is also wise to educate athletes about the potential risk for rhabdomyolysis, strategies to reduce the risk and the symptoms. This will help them understand the rationale for scaling their workouts, especially when they are zealous to perform a workout "as prescribed" ("Rx'd").

Alcohol and drug use increase the risk of rhabdomyolysis, and athletes should avoid heavy drinking, especially in proximity to training. Certain medications, including statins (cholesterol-lowering agents), increase the risk of rhabdomyolysis.

Symptoms of rhabdomyolysis include severe generalized muscle pain, nausea and vomiting, abdominal cramping, and, in severe cases, dark-red or cola-colored urine. The discoloration of the urine comes from the muscle's myoglobin, which is the same molecule that gives red meat its color. If these symptoms appear following a workout (or at any time with regard to dark-red urine), the athlete should seek medical attention immediately.

The athletes at highest risk seem to be those with a reasonable baseline level of fitness obtained through some non-CrossFit training, those who are returning to CrossFit after a layoff, or even experienced CrossFitters who reach volume or intensity significantly outside their established "norm." These athletes have sufficient muscle mass and conditioning to create enough intensity to hurt themselves. Generally, the most deconditioned seem to be at less risk (but not zero). It is suspected they do not have enough muscle mass or the capacity to generate high levels of intensity. This being said, athletes and trainers must properly scale and focus on mechanics with every client regardless of current capacity.

Minimize Equipment- And Spotting-Related Injuries

Beyond following the charter of mechanics, consistency and intensity, affiliate owners can further minimize risk of injury within their gym. Very real risks exist from equipment condition, use and arrangement, as well as from improper spotting of athletes during movements.

Equipment condition refers both to installation and day-to-day maintenance. Installation often applies to building pull-up rigs, hanging gymnastics rings, assembling a GHD, among other items. Professional

assistance should be used when an owner is inexperienced.

Pull-up-bar rigs and gymnastic rings and associated straps should be designed to bear a load far higher than the expected maximum weight to be supported. These structures need to be tested at maximum loading before regular client use.

Regularly scheduled maintenance of all equipment is paramount. Equipment that places the athlete's feet off the ground or inverts the athlete requires extra time and attention. Support pieces like straps, racks or bars and locking mechanisms need to be kept in working order and checked regularly for routine wear. Some may become compromised during use. Where there is a risk for handles or collars to come apart, dumbbells, kettlebells and even barbells need to be inspected regularly for integrity. Trainers must repair, replace, and discontinue use of faulty equipment immediately.

Arrangement refers to the layout of equipment and athletes during a class or workout. Each athlete needs enough space to perform the movements, with an additional buffer to account for the errant-moving equipment, missed attempts and safe passage of coaches or other athletes. Under no circumstances should a trainer permit extra equipment like bars, plates, boxes, etc. to be left lying around the workout area. This equipment may trip athletes or cause a ricochet if other equipment lands on it.

It is also imperative for a trainer to prepare for falls during dynamic movements. It is possible that an athlete may lose his or her grip during a kip (pull-up or muscle-up). Trainers may encourage athletes to wrap their thumbs around any bar in an effort to provide additional feedback to the athlete. This is not foolproof, however, and can sometimes be even less secure particularly for athletes with small hands. Whatever the hand position chosen, it does not replace the necessity of the athlete to develop body awareness of when to end the movement if his or her grip is compromised (wrapping thumbs is always recommended for barbell and ring movements to help provide better balance and control, especially in higher-risk scenarios such as a bench press or muscle-up). Boxes and racks should not be beneath, behind or directly in front of these athletes. Adjustable rings should be lowered to the appropriate height. Where assistance boxes are necessary, they are best placed to the side of the working athlete (and not in an other athlete's way) to leave a clear path should an athlete leave the apparatus prematurely. A suggestion for trainers trying to manage these risks is to do a "dry run" of the workout before it begins: check the working space for each athlete for each of the proposed movements. This can be as simple as organizing the class to rotate stations on the trainer's call and perform a quick walk-through to check spacing and arrangement. Trainers can then instruct participants to move to the same spot during the workout to ensure safety.

Athletes also need instruction regarding how to bail safely from lifts and how to spot other athletes where appropriate. In most weightlifting movements, the athletes only need to learn how to bail safely. Trainers need to teach athletes this skill and allow them to practice it before any significant load is lifted. Trainers should also ensure enough empty space exists around a working athlete so a missed lift does not have a ricochet effect, as mentioned above. Spotting is not recommended for weightlifting movements, except for a bench press (where it is mandatory) and potentially a back squat (especially where a low-bar position is used). A trainer cannot assume athletes understand how to spot correctly, and again, instruction and practice at lighter loads are necessary.

Experienced trainers or athletes may also provide a spot for gymnastics movements. Trainers or athletes should employ a spot that minimizes risk to both spotter and athlete. Generally, gymnastics movements are spotted at the torso or hips to provide adequate support for the movement, but spotting at the hips or legs may be successful (e.g., handstands). The spotter may be to the rear of the athlete if the risk of getting hit is low (e.g., ring support, GHD sit-up), but often a position beside the athlete is best (e.g., handstand).

Trainers need to be sure equipment is cleaned regularly to reduce the chance of infection, and proper disinfectants and sterilizers, with clean cloths, should be staged near

the gym floor to clean blood off bars immediately. A blood-spill cleanup procedure can be found here.

Monitoring Athletes For Conditions That Need Medical Attention

Although a trainer is primarily there to instruct and improve athlete movements, he or she needs to monitor the level of exertion during the workout and ensure athlete health is protected. As CrossFit workouts use relatively high intensity, athletes are working at their physical and psychological tolerances. It is possible for athletes to push too hard, and confounding environmental factors may exacerbate certain situations.

Extreme temperature fluctuations, especially heat, can be problematic. Trainers should be ready in unseasonably hot and humid weather with sufficient water, and they should watch for common signs of overexertion (e.g., dizziness). Hot weather also increases the potential risk for rhabdomyolysis (although some cases have occurred in cold climates), and trainers should encourage athletes to stay hydrated (with the caveat that they should not be excessively hydrated. Current mainstream literature suggests rates of 1.2 L/hour, which are actually too high and can lead to overhydration). In the event of a potential heat stroke following a workout (e.g., athlete demonstrates an altered mental state), a trainer should remove excess clothing from the athlete and then douse him or her with cool water before medical attention arrives.

Weather aside, other conditions that may need medical attention. Symptoms such as numbness or chronic pain in joints and muscles should be referred to medical professionals. Medical attention is immediately necessary for any non-responsive athlete.

Trainers can be best prepared for medical emergencies by getting trained in cardio-pulmonary resuscitation (CPR) and the use of an automatic external defibrillator (AED), and by having an AED at the gym. Most states require this by law, and CrossFit trainers and affiliates should ensure they are in compliance with all state laws. CPR/AED credentials often last for one or two years depending on the organization (e.g., Red Cross, American Heart Association), and trainers should keep them current.

Hydration

Drink when you are thirsty, do not when you are not.

We advise against rehydration strategies that encourage consumption of fluids to prevent loss of body-weight during activity. Dehydration during physical activity is a normal physiological process, and the thirst mechanism is sufficient in regulating hydration and serum sodium concentration during exercise.

Drinking beyond thirst in an attempt to prevent body-weight loss during exercise offers no benefit to health or performance. It also presents a serious risk of exercise-associated hyponatremia (EAH), a potentially deadly dilution of the body's serum sodium concentration. EAH is caused by overconsumption of fluid, and can be viewed as an iatrogenic condition due to the prevailing belief that exercising athletes should drink "as much fluid as tolerable" during training.

"Fluid" that can contribute to EAH includes electrolyte-enhanced sports drinks. Contrary to popular belief, these commercial beverages do not reduce risk of hyponatremia. Because of flavoring and sugar content, these drinks may present greater risk for overconsumption of fluid than water alone, increasing the risk of potentially deadly EAH in athletes.

Special Populations

Any potential athlete with a medical condition needs to be cleared by a physician for exercise before a trainer recommends a fitness regime. A medical-history form can be a useful tool for a trainer to assess any potential issues, although trainers are also encouraged to ask questions regarding medical status and be aware of common medical conditions that need clearance (e.g., diabetes, prescription medications).

Common special populations include pregnant athletes, and a trainer should still request medical clearance and guidelines from the physician once the condition is known. The CrossFit Journal contains many resources regarding scaling for pregnant athletes. A trainer should be especially aware of reducing the risk of potential falls in workouts (e.g., box jumps, rope climbs), and be observant

for complaints of calf pain or swelling, which can be signs of more serious issues.

Many athletes have found improved recovery while staying active after surgery. While CrossFit workouts are indeed scalable for these athletes, trainers should seek clearance from the surgeon before restarting a workout regime with these athletes.

A trainer's scope of practice allows promotion of any individual's desire to participate in exercise and provision of direction; this does not extend to diagnosing or treating any medical condition.

Legal Use Of The "CrossFit Level 1 Trainer" Credential

Passing the exam at the Level 1 Certificate Course earns an individual the designation of CrossFit Level 1 Trainer, which can be abbreviated "CF-L1 Trainer." The American National Standards Institute (ANSI), the third party through which the course is accredited, has approved this title.

It is important for CrossFit trainers to:

- Use the correct terminology for the credential.
- Act in accordance with the Trainer Licensing Agreement.

Each participant accepted this Trainer Licensing Agreement during registration for the Level 1 Course.

A CrossFit Level 1 Trainer holds the Level 1 Certificate. The Certificate is valid for a period of five years. See the Participant Handbook for details regarding maintaining an active trainer status. CrossFit's public Trainer Directory can be used to verify any individual's credentials. Those who pass the exam should not use the term "certified." While the distinction in terminology appears minor, the use of "Level 1 Certified" is a misrepresentation of the credential and not endorsed by CrossFit. A "Certificate Course," such as the Level 1 Certificate Course, is a course with learning objectives and a test that is tied to those specific objectives. It includes both an educational or "training" component, as well as a test to determine if the participant has learned the course material. A "certification," such as the Certified CrossFit Trainer or Certified CrossFit Coach credentials, is only a test with no educational component. Certifications are designed to assess competency across an entire profession. Preparation work for the certifications is done on the applicant's own time and under his or her own guidance. In layman's terms, and in the case for the CrossFit credentials, a certification generally demonstrates a greater scope of professional competency than a certificate.

The CrossFit Level 1 Trainer credential may be used next to one's name similar to other educational credentials (e.g., M.S., R.N., D.C.). It may be used on a website with a biography or on a business card. It does not allow use of the name "CrossFit" to market services (e.g., personal CrossFit training, CrossFit classes). To market services, a trainer must first apply to run a CrossFit affiliate.

During the Level 1 Course, participants were exposed to a large amount of knowledge. Much of it can be found elsewhere free to the public and is commonly known to or accepted by the fitness industry in some form. However, this knowledge is not found so organized and packaged outside the Level 1 Course. This defines the CrossFit method. An individual can use the CrossFit method to train himself or herself and friends and family without charge. However, to use the CrossFit name or logo (i.e., the CrossFit brand) to market services (e.g., training), a Level 1 Trainer must affiliate. An individual is not permitted to advertise, market, promote or solicit, in business or service, without licensing the CrossFit name. Licensing the CrossFit name is called "affiliation." More information regarding affiliation can be found here.

The risk-to-benefit ratio for CrossFit participants is very low; however, it is also the trainer's responsibility to maintain the low risk for his or her clients. The guidance presented here should serve as a resource for new CrossFit trainers to help best keep clients safe in the gym.

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