STRENGTH AND POWER HAVE been long-time human obsessions. Our preoccupation with strength can easily been seen in ancient Egyptian and Chinese art, in which men are depicted lifting heavy stones. Today, athletes have several competitions that are solely devoted to the strong man. When looking at hieroglyphs, the Charles Atlas workouts, or a strong-man competition, several commonalities are evident. None of the strength feats depicted require the support of resistance-training machines (RTMs); all use free-weight (FW) modalities; and all involve lifts or events that are dynamic, ground-based, and use multiple joints.

The evolution of RTMs might be traced back to the early 1900s. The initial move away from the vertical FW workout started with the use of pulleys, which allowed for horizontal resistance. Springs, wires, cables, and rubber items were constructed to offer resistance outside of gravity’s influence. After World War II, various motorized machines such as vibrating belts and electric fat rollers started appearing on the market. At about the same time, weight-stack lever systems (e.g., the Universal) became popular. In the 1970s Nautilus came out with the cam system. It was during this time that RTM manufacturers launched aggressive marketing campaigns. Some depicted FW training as dangerous. Manufacturers presented RTMs as the best and easiest way to develop strength and hypertrophy. RTMs continued to grow in popularity throughout the 1980s, which escalated further in the 1990s because of more aggressive designs and marketing campaigns. The growth of RTMs can be attributed to several factors: an increasing number of people exercising; an increasing number of facilities; and, of course, the never-ending quest to do things faster and easier. However, today things are beginning to change.

Currently, the strength and conditioning industry is experiencing a paradigm shift in training methodology. We are beginning to get back to basics with a return to FW training. For the sake of clarity, we will define FW training as any training that does not occur in the stabilized environment of a machine. This includes, but is not limited to, medicine balls, body weight, sand bags, and even bands. Some leaders in the field of performance enhancement are also promoting functional training with FW as a way to look better, feel better, and function better. Functional training, which includes much of FW training, effectively deals with our operational environment, an environment typified by multiple planes of motion and physical elements such as ground reaction forces, gravity, inertia, momentum, and impulse. Functional training with FW can address all of the performance components in a safe manner. Additionally, because of its strong neural component, it often provides results rapidly.

Why is there a certain shift away from RTMs to a more functional approach? Are RTMs ineffective? No, RTMs can be effective for some applications; however, most
of what can be done with an RTM can also be done with FW training, and often functional training with FW can do it more efficiently. Let’s look at some of the pros and cons of RTMs and how they compare with FW training.

RTMs may have an edge in an unsupervised environment where beginners may train without any professional supervision. However, unsupervised training should not be allowed in any training facility; it is a danger to the inexperienced trainee and a liability to the facility. The selector pin available in many RTMs allows one to change resistance quickly and safely. This could eliminate dropped weights and provide quick traffic flow in circuit training or when working in large groups of individuals. A little experience and proper program design can easily take care of this dilemma within FW training. RTMs are also very effective for isolating muscles. The reduced central nervous system and muscle-mass involvement allows more work to be directed to a specific muscle. This makes RTMs very effective for hypertrophy. Yet we must look beyond the isolated hypertrophy paradigm and realize that no muscle ever works isolated in real life—why train that way? Finally, the cost: a typical RTM will run between $2,000 and $4,000. For this amount one can outfit a 20- by 30-ft training area with the best FW equipment.

I believe the so-called advantages of RTMs are not always advantageous. If you are interested in general fitness and health, RTMs may offer significant conditioning gains. However, almost everyone who trains wants more than good results. Most people who take the time to train hard want optimum results. Optimum performance results are hard to get with a strict diet of RTMs. Take a look at our operational environment and see how RTMs stack up.

We live in a gravity-dominated, FW environment. Functional training and FW training address this environment perfectly. As a matter of fact, functional training uses this characteristic of our environment as the criteria by which it designs its training. FW training encourages us to use proper lifting and stabilization mechanics. By virtue of positioning, FW training can use more muscle groups, create a larger training stimulus, and may reduce the likelihood of injury because of its transfer of training to real-life activities and positions. The use of FW equipment allows for throwing or release maneuvers. This aspect of training can be extremely useful in power development. Finally, the variety of FW equipment and its wide application capabilities allows an individual to stay challenged and motivated.

RTMs have their place in the conditioning field. They can be effective if you are coaching a person who has some neurological condition that renders an FW exercise dangerous. New equipment manufacturers are now developing pulley systems that provide free movement of each extremity. The new pulley systems allow 1 machine (e.g., a chest-press machine) to perform numerous exercises, such as rowing, rotations, chops, extensions, and many others.

This certainly adds a new dimension to training on RTMs. These new designs are allowing movement patterns that were once the exclusive domain of FW training. Additionally, they provide a horizontal resistance vector that is absent from some of the traditional FW training modalities, such as dumbbells and barbells.

The overuse of RTMs is just another indicator of our “quick fix” society. We want to be strong and muscular with minimal effort. We want to increase VO2 and burn calories while reading the morning paper. Yet we complain when the results we get are short of our expectations. If the results promised by the RTM manufacturers were effective, there would be no need to discuss them. Everyone would know the results and we would all be perfect physical specimens.

I believe in an integrated approach to training. RTMs can be useful, especially with the new pulley designs. Training must be interesting and fun, and no single training methodology has it all. Use RTMs appropriately, and do not be afraid to try some new training methods (e.g., medicine balls, balancing, etc.). If you want optimum performance enhancement, use an integrated approach to training using all available tools appropriately. ▲