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The Truth on Fitness:
FUNCTIONAL TRAINING

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Trends in the fitness industry swing back and forth like a virtual pendulum, reaching the limits of their popularity before reversing, and gaining momentum in a new direction. For the latest craze, however, the pendulum has become stuck, with more and more people weighing in to keep it firmly in the minds of the exercising public. That trend, of course, is the fascination with functional training; today's hot button topic.

In fact, the fervor over this topic has become so great, it has prompted one internet author (Scott, 2002) to cite the teachings of "the country's best-known functional fitness evangelist." Indeed, as suggested by this statement, functional exercise has taken on near religious proportions. On the surface, the concept of functional training is perfectly reasonable. After all, who wouldn't want to exercise in a manner that promotes functional gains? But the religious aspect of this is not so much couched in the fact that there are so many followers of this philosophy, but in the fact that the movement is largely driven by opinions and beliefs, rather than by empirical scientific evidence.

Enter a gym today and you'll witness a veritable circus act, as members leap, tumble, balance on highly unstable surfaces, yank on cables, pull on bands, toss balls, and throw punching bags. To paraphrase the English poet Samuel Coleridge, "function, function everywhere, but no one stops to think." What are these people actually trying to do? More fundamentally, what is a functional exercise? To this end, there is no lack of opinion, but the scientific evidence is not so clear.

Bryant (2008), for example, in his treatise on functional training, argues that isolated joint strengthening fails to deliver functional benefits. Citing a lack of a transfer effect, the author claims that leg extensions would be less effective at improving one's ability to rise from a sofa than squats. This may be true, but where is the evidence for this claim?

The implication here is that the central nervous system is incapable of managing the increased strength of specific muscles around a joint. Is this really true? By contrast, people seem very capable of developing compensatory strategies when there is a muscular deficit. Why then can't we make use of muscular improvements? The scientific evidence suggests we can. In studies conducted by Newman and colleagues (2004) and Tagesson et al (2007), subjects who did leg extension exercises were stronger and faster than those who did not. Thus, there is evidence that joint isolation may lead to functional gains.

To some (Kashubara, 2007; Greenfield, 2005) functional exercise is a process involving hundreds of muscles in a coordinated effort to move the body through space. Greenfield suggests that free-moving functional exercises are superior to machines because they permit movement through "countless planes of motion." This is a curious statement, since there are actually only three planes of motion, and the exercise will naturally occur through one of them, leaving only two through which additional motion may occur. Some exercises, like the bent-over dumbbell row, involve stable equilibrium of the weight. Thus, it is highly unlikely that the object will ever deviate out of its single plane of motion. Even during those exercises in which there is unstable equilibrium of the load — as in overhead presses — the extent to which the object deviates from its intended movement path is extremely small. Is there any evidence that this is significantly more effective than exercises using fixed paths? Or is this just an opinion?

Kashubara claims that functional exercises should be performed on an unstable surface, in order to promote balance. This is a very common approach to training equilibrium, whereby the emphasis is placed on proprioceptive sensitivity and core stability. While it seems, superficially, to be an obvious method of choice, it is actually counterproductive to real functional stability. The irony in these methods is that the property that is introduced to try to enhance balance control — an unstable surface — is the very element that prevents the nervous system from correcting for postural deviations.

Equilibrium is maintained through the application of force into the ground. As the center of gravity shifts over the base of support, force is applied through the feet in order to re-center the center of gravity. The inherent problem with labile surfaces is that the objective of the exercise is to avoid displacing the surface. In other words, the goal is to keep the surface from moving. To do this, the subject must actually resist applying force to the surface, and therefore, is being trained not to exert force. This practice would have a dubious effect on balance control.

Furthermore, this type of balance training involves static balance control, in which motion of the center of gravity is severely restricted. Hamilton and colleagues (2008), quite interestingly, report no correlation between static balance control and hopping capability, a very dynamic stability problem, and one of those "highly functional" movement skills.

What does seem to aid in balance control is increased muscular strength and power. Research demonstrates evidence of a direct correlation between muscular strength and power, and the ability to maintain balance (Orr, et al, 2006, Santos and Liu, 2008). Butler and associates (2008) have even determined that insufficient strength in the ankle musculature results in a reduction of proprioceptive acuity. Conversely, increased muscle force capacity contributes to enhanced proprioceptive capability. Arguably, equilibrium may be enhanced

through a simple process of muscle strength development that promotes force application. This may, in fact, be accomplished on a leg press.

This phenomenon is not limited to the ankle joint. Suprak et al, (2007) suggest that shoulder joint position sense improves under conditions of increased external loading, particularly in the plane of the external force. Thus, lifting heavier weights, even with a machine, will tend to improve the proprioceptive acuity of the shoulder joint, with significant functional implications.

There are, in fact, countless applications that are promoted under the mantle of functional training, which can be challenged from any number of perspectives. Over time, we will endeavor to discuss as many of these as possible. In addressing these specific arguments over functional outcomes, however, one is left to wonder what it is that we're trying to accomplish with these physical challenges? More importantly, what is function in the first place? In reality, function is another term for goal acquisition. If we're truly functional, then we are able to accomplish our movement goals under a variety of conditions, through an equal variety of movement strategies.

Is this achieved by developing effective core stability, or possessing integrated movement skills, or balance? The answer is yes, or perhaps no. True function is entirely dependent on the context in which a skill or set of skills is being performed. The functional requirements of hitting a baseball are entirely different from those of rising from a chair. Thus, the exercises that promote either may be vastly different. Goal acquisition may be difficult if one has specific muscular strength deficits or imbalances. Accordingly, one may need to isolate those muscles in a controlled environment in order to become functional. Conversely, one may need forceful plantar flexion capability in order to run or jump. But squatting on a wobble board may actually inhibit plantar flexion, thereby prompting functional losses. Which, then, is the more functional solution?

So, one is still left with the question; what is a functional exercise? The truth is, that any exercise is functional if it helps one to achieve their movement goal. The real challenge is in understanding what those goals are, the context in which those goals must be met, and the specific exercises which will help to produce them.

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