10 Lessons Sport Training Can Draw From Industrial Design

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I have always had a bit of an artistic interest. As a kid, my parents would always nurture my desire to paint and draw. My dad, a mathematician, would challenge me to make different polygons out of paper. My mom, a computer scientist, introduced me to Adobe Photoshop when I was still in elementary school. Growing up, I thought I would be an architect or in graphic design, but I guess my artistic side couldn't overtake my interest in sports.

These days, I try to fit in as much art as I can. Making infographics has given me a bit of a creative outlet, and I have a few friends with who I talk to about design and art. A few days ago, I came across an article from fastcodesign.com titled "What 10 Dieter Rams Products Reveal About The Principles Of Good Design" (http://www.fastcodesign.com/3047450/what-10-dieter-rams-products-reveal-about-the-principles-of-good-design), and that inspired me to re-read the 10 principles German award-winning industrial designer Dieter Rams came up with.

The parallels to sport performance were evident throughout (well, maybe for 90% of them), and they reinforced a very overarching principle I value in my coaching: The need for simplicity.

1. Good design is as little design as possible

Less, but better – because it concentrates on the essential aspects, and the products are not burdened with non-essentials. Back to purity, back to simplicity.

The human body moves in seemingly infinite degrees of freedom. The permutations of different biomechanical arrangements, movement velocities, demands, and types of contractions, have seen strength and conditioning coaches create a vast menu of exercises, and it's easy to think that in order to have a good training program, everything must be incorporated in some capacity. However, the result of including too much in your training program range from the obvious side-effects of over-training, and under-recovery, and extend to some that are not as obvious, such as redundancy, limited adaptations, and creating situations with competing adaptations.

It's also easy to get distracted and think that an exercise needs to be made more complex in order for it to be more effective, or "functional." However, in most cases, all it does is limit the output (and therefore the adaptation) of the exercise.

Most of the coaches who I still look to learn from have in one way or another arrived at the same conclusion, and are all striving to create adaptations with the minimal effective dose, and do so by both applying basic exercises, and putting their athletes in situations where they can be successful in their execution.

2. Good design is environmentally friendly

Design makes an important contribution to the preservation of the environment. It conserves resources and minimizes physical and visual pollution throughout the lifecycle of the product.

I see this principle as an extension to the first. We would like to design programs that fit together, and are conducive to goals for individual workouts and phases. We also want to ensure that everything is geared toward the ultimate goal on competition day. Unnecessary exercises implemented with convoluted reasoning (and often minimal or no benefit) only serve to create unneeded stress and soreness, and dilute the improvement of desired qualities.

I also see this principle applying to coaching style. For most athletes, playing their sport is far more enjoyable than training, but they understand that training is something that needs to be done. We all know athletes that complete workouts reluctantly. This is why I strive to create a positive environment in all my training sessions, praising effort and offering constructive feedback. This doesn't mean that I will hesitate to be stern when an athlete is giving lackluster effort or being disruptive, but in my experience, adopting that demeanor off the get-go usually results in lack of athlete engagement.

3. Good design is thorough down to the last detail

Nothing must be arbitrary or left to chance. Care and accuracy in the design process show respect towards the consumer.

This principle is a no-brainer for most coaches. A good program involves exercises, loads, rep ranges, and progressions that are cohesive and create a situation where the required adaptations can take place, while also identifying key times where physical preparation becomes a secondary priority. Choosing work for the sake of work, or arbitrary progressions, just serves to muddle the picture, diminish progress, and put your athletes in positions where they won't improve (at least at the rate they could be improving at), or worse, have them end up injured.

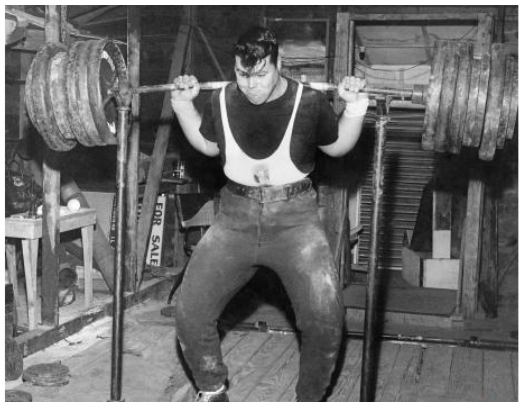
Although we are usually very thorough in the planning process, we are sometimes a little too tied to our plans, which always look great on paper. However, we know that there is the ideal situation, and then there is real life. Bearing that in mind, we must be flexible in our approach, acknowledging changes we may have not been aware of, and adjusting our programs accordingly. I recently had to make changes to the program for an athlete who due to car trouble was to start cycling 10km just to get to our training session. It was unfortunate, as we were making great progress with the current program, but there was no work-around, and I needed to ensure that his system remained adaptive.

Be thorough in your thought process (both in initial planning and adapting on-the-fly) as to how you made your choices as a coach. This will not only help ensure you're placing your athletes in a situation where they can succeed, but also allow you to confidently back up your programming if confronted about its details by an athlete, sport coach, or administrator.

4. Good design is long-lasting

It avoids being fashionable and therefore never appears antiquated. Unlike fashionable design, it lasts many years – even in today's throwaway society.

There is a reason why movements like sprinting, jumping, and throwing, as well as exercises like the Olympic lifts, and powerlifts, can be found in most training programs - They are timeless. Despite what sales pitch you may hear from many a guru, the efficacy of these modalities is understood by most sport performance professionals, and backed up with scientific literature. Their efficacy has been proven time and time again, and that is why they continue to appear in programs, while other fads have come and gone.

5. Good design is honest

It does not make a product appear more innovative, powerful or valuable than it really is. It does not attempt to manipulate the consumer with promises that cannot be kept.

We all have our own biases. As coaches, we gravitate toward what we're comfortable with coaching and using. This is how labels get started - How many times have we heard things like, "that coach is a powerlifting guy," or, "that school is a HIIT school." Sometimes these labels are unwarranted and only present a snapshot of what the coach implements. However, at times, these labels come to be because someone hangs on to a small facet of training, placing a higher value than warranted on that particular modality, overstating its benefit to performance or their program.

When I first started working with collegiate soccer, getting some of my athletes to understand why we were doing certain things was one hurdle I came across. Rather than make false promises, I was frank in my explanation: First off, the exercises will probably not do anything to improve your *skill* as a soccer

player. However, if I can make you that much more resilient to injury, you can miss less practice time, and spend more time refining your soccer skills. Secondly, also by minimizing how much time you miss, you can spend more time on the field, making an impact, and getting noticed by your coach or by scouts. My explanation made no promises about performance outcomes, but the players respected my honesty regarding their skill, and then were always very coachable when the topic of increasing performance came up.

There is no one magic program or exercise that always produces the desired result regardless of situation. Present your programs for what they are - a process.

6. Good design is unobtrusive

Products fulfilling a purpose are like tools. They are neither decorative objects nor works of art. Their design should therefore be both neutral and restrained, to leave room for the user's self-expression.

Again, the idea of keeping what is useful and discarding what isn't comes to light. The value of allowing for individual variations of movement execution is often understated, especially as the quest for the abstract construct of perfect symmetry gains more popularity. With this in mind, and our awareness of individual variation of limb segment length, and muscle and joint architecture, should we be looking for all of our athletes' movements to fit the same mold? In cases where I have witnessed this, I have seen more instances of sloppy movement execution - The type where you see it once, and without taking the time to analyze the root of the issue, you just know it looks awkward.

Over-cueing also creates an obtrusive environment, where too many thoughts compete for the athlete's attention, and thus limits the efficacy of their movement. This also holds true for the type of cueing - We know that internal cueing creates more co-contraction about a joint, which can impact the fluidity of the movement.

7. Good design makes a product understandable

It clarifies the product's structure. Better still, it can make the product clearly express its function by making use of the user's intuition. At best, it is self-explanatory.

At the risk of sounding like a broken record, this principle can be seen as an extension of the first and fourth. The basic exercises can provide adequate stimulus, and are recognized internationally, yet sometimes coaches feel the need to include exercises with several adjectives in their name, and involve just as many toys. Once again, these exercises don't serve to provide much value in training.

Furthermore, your athletes can innately understand a rational progression (i.e. exercises ordered from complex to simple, and in terms of decreasing demand) to your training sessions, and can spot over-complication for the sake of over-complication. My good friend Cedric Unholz once told me: " most athletes are keen observers, like the rest of us. They will be able to sniff out any B.S. in your program."

8. Good design is aesthetic

The aesthetic quality of a product is integral to its usefulness because products are used every day and have an effect on people and their well-being. Only well-executed objects can be beautiful.

The last sentence behind that principle is the one that stands out to me the most. Seeing a well-executed Olympic lift or a sprinter run a sub 10-second in what seems like full relaxation leaves us all in awe. These athletes are always put in situations where they can best execute the movement, understanding that their fluidity in movement allows for a better output and performance. We borrow

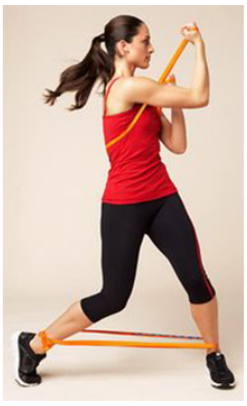
these elements from their sport in order to train non-weightlifters and non-sprinters, yet at times completely overlook principles which have enabled those athletes to reach a that level of performance.

For example, chasing tendo numbers during the lifts may be ok once in a while, but doing so all time almost certainly results in the breakdown of movement, as the numbers become more important than the execution. The same happens when chasing weight. We all know that gradually increasing load will ensure that we provide a sufficient stimulus - But at what cost? And does the compromise of quality for instant gratification set us up for a quicker plateau down the road?

9. Good design makes a product useful

A product is bought to be used. It has to satisfy not only functional, but also psychological and aesthetic criteria. Good design emphasizes the usefulness of a product whilst disregarding anything that could detract from it.

At this stage, the design principles are starting to deliver their intended message. How do we refine our programming and coaching, getting rid of what is useless, while keeping what is ultimately actually making a difference?


10. Good design is innovative

The possibilities for progression are not, by any means, exhausted. Technological development is always offering new opportunities for original designs. But imaginative design always develops in tandem with improving technology, and can never be an end in itself.

This point was they reason I reversed the order Ram's 10 principles are usually presented. In most ways, I believe that we have reached pretty close to the end point of what we know about training itself. Our anatomy and physiology have not changed in several thousand years, and I have not come across any research that has opposed basic training principles as a whole. Our common tools for training have withstood the test of time for generations (see principle 4). It is my personal opinion that innovation in the field of sport performance will likely not come from the creation of a new exercise, or a magic approach.

However, this does not mean that I believe innovation is impossible. I believe that innovation in sport performance will come from those who will take basic principles, use technology to best apply these principles, and implement them in a manner which best serves their particular situation. With the use of sport technology becoming more prevalent, there is a lot of data being generated, and their output is being filtered. As we manage to further hone into that ideal scenario, we will start to separate signal from noise, whittling away the unnecessary, and arriving back at point number one in this article.