

**Striving to Sustain Active, Healthy Lifestyles for All:
Wisdom Derived from Evolution, Natural Law, and Demography**

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Abstract

Physical activity education and sports may uniquely contribute to the sufficiency economy, not just philosophically, but practically. Our chances of achieving this are optimized by understanding and applying wisdom-derived knowledge from evolution, natural law, and demography. In this presentation I hope to increase your understanding as to why regular physical activity engagement is so difficult for people and what might be done about it. I will address a range of topics including the national physical activity guidelines, the mismatch hypothesis between what our bodies were adapted for and modern-day living conditions in developed societies (including just how W.E.I.R.D. and unnatural “exercise” really is), revelations for overcoming this that might be gleaned from Newton’s Three Law’s of Motion, how the behavioral pathways associated with physical activity experiences might be better aligned to match what we know about affect, cognition, and psychomotor skill development, as well as other insights aimed at helping people live healthy, active lifestyles. Before concluding I will also address some demographic trends that showcase specific entrepreneurial opportunities.

Introduction

There is irrefutable evidence regarding the benefits of physical activity for health, human functioning, and wellbeing. Undeniably, optimal holistic human development is achieved by regularly engaging in physical activity. There is also a burgeoning amount of evidence supporting the value of physical activity on cognitive development, creativity, learning, and mental health, including mitigating decline in the later years of life and the *possibility* of staving off certain diseases.

Unfortunately, too few people experience these benefits because they are inactive. Physical *inactivity* is presently the 4th leading cause of death in the world. And, the situation may be getting worse rather than better.

Unquestionably we have our work cut out for us. We also have many opportunities to genuinely contribute to the betterment of humanity through our efforts. In fact, I propose that physical activity education and sports – when approached from an all-inclusive perspective – are primed to directly and indirectly contribute to the sufficiency economy philosophy as articulated by the Late King Bhumibol. That is, in an economy focused on long-term profitability and sustainability, health, longevity, physical activity, and wellbeing are desirable commodities.

The three core principles of the sufficiency economy philosophy are reasonableness (wisdom), moderation, and prudence, which best thrive under the conditions of knowledge and morality. In the spirit of these guiding principles and conditions, I have been seeking ideas for how to get and keep people physically active derived from evolution, Natural Law, and demography. Essentially, I am on a quest to better understand why more people don't "*Just Do It*". During this presentation I will share with you some of what I have discovered. My studies also have helped me to generate some sufficiency economy opportunities, which I think with

some creative thinking, interdisciplinary collaboration, and an entrepreneurial spirit can truly make a difference.

Human Evolution

Evolution is change over time. Our bodies can, do, and have adapted over time; so to have our cultures. Five of the most significant human transformations have been heritable (i.e., genetic or biological adaptations that have helped humans survive and to have better reproductive success than other species with whom we have had to compete for resources on the planet Earth) and two have been cultural (i.e., what gets taught and what is learned).

The first heritable human transformation was bipedalism. Walking upright freed up the hands, which could then be used for other purposes. The second heritable human transformation was open habitats. This allowed our evolving human ancestors to forage for food and it increased the availability of a larger variety of foods to be eaten. The third heritable human transformation was hunting and gathering. This was accompanied by an increase in brain size. All of this resulted in more energy being available, which subsequently resulted in even larger brains and larger bodies. This was the fourth heritable human transformation. The fifth heritable human transformation was even better brains. Better brains allowed our ancestors to develop the ability to communicate through cooperation, culture, and language. Humans ultimately dispersed around the world. Importantly, these transformations (i.e., adaptations) to the body occurred very slowly.

Two cultural transformations have also occurred. The first was the agricultural revolution. This is when people began farming their food. Hunting and gathering were no longer necessary. In today's world food is abundantly available and easily accessed by many people, though this is not an absolute given. The second was the industrial revolution. This is when machines replaced the work previously done by humans. Humans no longer had to

expend as much energy to survive. Unlike the five heritable transformations, the cultural transformations have occurred very rapidly.

These evolutionary changes have resulted in the mismatch hypothesis. That is there is a mismatch between the environments our bodies were adapted for (i.e., hunter-gatherer) and the environments in which most people presently live (i.e., urban or suburban lifestyles of abundance, convenience, and excess [at least for some]). Importantly, from an evolutionary perspective, it does not appear that humans evolved to make rational decisions about what to eat or how much physical activity to obtain in environments of abundance and convenience. For much of human existence, scarcity was the norm. As such, our brains evolved, “To solve problems in an unstable environment in almost constant motion” (Medina, 2008).

Furthermore, given the hunter-gatherer lifestyle, rest played an important function in people’s lives. That is, given how difficult it was to obtain energy (e.g., the energy associated with hunting, gathering, and preparing food), it was important to conserve energy as much as possible. Rest is a biological necessity. It is also natural. So is sleep.

On the other hand, “exercise” as we know it/do it today is quite *unnatural*, perhaps even W.E.I.R.D. (i.e., Western, Educated, Industrialized, Rich, and Democratic). One exception to this is play. Play is natural. In fact, it is W.E.I.R.D. not to play!

Physical activity refers to, “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen, Powell, & Christenson, 1985, p. 126). It is performed for different purposes, and different types of physical activities produce different types of results. Embedded within physical activity is, of course, play (i.e., **physical activity**).

Remembering that play is natural and exercise – as promulgated by many in today’s modern world – is unnatural, is an important “take away” message from this presentation.

This evolutionary understanding is important as we try to encourage and nudge sedentary and insufficiently active people toward engaging in healthy, active living on a regular basis, as well as continuing to support those who are already physically active on a regular basis. That said, there may be natural laws at work that hinder our progress in this area; however, I hope to demonstrate how these same natural laws might also be used help our progress.

Natural Law

Nature refers to the inherent qualities of the physical world. Laws create order in the world. Newton's Three Laws of Motion are examples of natural laws. Within the realm of physical activity education and sports the Three Laws of Motion have typically been applied within the context of the sub-discipline of biomechanics. However, I believe they can serve to help social and behavioral scientists and practitioners working in physical activity education and sports as well. One caveat is that I have not directly tested these ideas out using traditional research methods. Regardless, the ideas that I will share with you do have indirect empirical support and I think you will also recognize their intuitive basis. Essentially, what I will share with you are propositions based on many years of academic study and my own practical experiences and observations.

Newton's first law is inertia. It states that, "Every object persists in its state of rest or uniform motion in a straight line unless it is compelled to change that state by forces impressed on it." What that means is that objects keep on doing what they are doing unless something intervenes. Remember, an object (or person) at rest will tend to stay at rest. Likewise, an object (or person) in motion will tend to stay in motion. As contributors to a sufficiency economy, one of our primary purposes is to help people stay in motion.

Newton's second law is expressed by the mathematical formula: ($F=ma$). In other words, "Force is equal to the change in momentum (mV) per change in time. For a constant mass, force equals mass times acceleration." This means that force, mass, and speed are related. For example, if you or I were to kick a brick wall, it would hurt. We might even injure ourselves. The mass is too much. However, if you or I were to kick a soccer ball, the ball would fly off. It would be (or could be) fun – perhaps even playful – to experience.

Enjoyment has long been recognized as an important feature of sustainable physical activity education and sports programs. As contributors to a sufficiency economy, another one of our primary purposes is to help create fun and enjoyable forms of physical activity for all people to experience.

Newton's third law is that, "For every action there is an equal and opposite re-action." In other words, "For every force there is a reaction force that is equal in size, but opposite in direction." This means that when you push an object, it pushes back. As contributors to a sufficiency economy, and applying Newton's third law to people, we must continually keep in mind that people are resistant to change, particularly when the changes being proposed seem *unnatural* and perhaps even W.E.I.R.D. – such as some of the forms of exercise that we construct and ask people to do.

Behavioral Strategies Derived From Evolution and Natural Law

Given our evolved (and evolving) biological impulses and traits, and the laws of nature, can behaviors such as physical activity be successfully and permanently changed? If so, how?

Two immediate ideas come to mind. First, make physical activity necessary (i.e., not W.E.I.R.D.). Second, make physical activity fun and enjoyable. "Joy" is "a feeling of great pleasure and happiness." Is this how most people experience physical activity education? I suggest not.

Consider the modern-day treadmill. It has served multiple purposes throughout history, including being used to grind grain, pump water, and power boats. It was also used as a means of forced physical labor and punishment for prisoners in Britain throughout much of the 19th century and into the 20th century.

Sir William Cubbit invented the penal treadmill in 1817 as a means of tormenting and punishing evildoers. The penal treadmill had characteristics in common with the modern-day Stairmaster machine. It introduced prisoners to hard physical labor and forced them to “grind air” pointlessly hour after hour, day after day. In 1902 it was abolished from the penal system for being cruel and unusual punishment. Today, though, we see the treadmill used as a clinical and research tool, as well as a self-inflicted form of exercise! Is it any wonder that some people are skeptical of the device or our recommendations to use it?

Physical activity should not be used as punishment. Period!

We also have to be careful with our physical activity messages. If people find certain activities pleasurable, and we try to convince them otherwise, particularly if they associate displeasure or fear with our recommended substitutions, we are fighting an uphill battle. They may also experience it as “victim blaming,” which does little to help our cause. As we attempt to move people toward autonomous and self-sufficient physical activity behaviors, we have to employ the full spectrum of psychological tools, including paying attention to how people learn.

Quality physical activity education and sport educators aiming to encourage and promote sustained physical activity behavior understand and apply the learning domains as expressed by Bloom in his taxonomy. That is, cognitive (i.e., knowledge, to know), psychomotor (i.e., skills, to do), and affective (i.e., attitude, to feel). More often than not, physical activity educators, sport leaders, personal trainers, and other health professionals try to convey, convince, or otherwise cajole people to be physically active on the basis of physical activity’s

instrumental values (e.g., avoiding disease, losing weight, prolonging life). The approach is cognitive-based and rational. It is also authoritative, deliberate, and slow. Not surprisingly, the approach is often met with resistance (recall Newton's first and third laws in particular). In other words, it doesn't seem to work very well.

A potentially more inspiring approach is to work through the affective (emotional) domain. Here, though, you have to be careful. While this domain can work fast, it does not always work in predictable ways. If you are not careful, past negative experiences can be triggered. As contributors to a sufficiency economy, one of our aims should be to provide emotionally appealing, consistent, and diverse campaigns, messages, and settings for people to positively experience physical activity. The nudging approach (recall Newton's second law) whereby "baby steps" are systematically implemented can further facilitate progress in this area.

It is also important to acknowledge that everyone does not respond the same way to even the most stringent of physical activity regimens, which can result in disappointment and frustration. Quality physical activity education and sport educators understand this and they can compassionately and empathetically (i.e., affectively) assist others understand that there is more to physical activity than the commonly expressed end-game, instrumental values (i.e., the process of doing physical activity is important, not just the end product of achieving a specific outcome). This is another limitation of the cognitive-rational approach. In a nutshell, the more physical activity can be made necessary and/or fun – more akin to play than to work – the better (Table 1).

Table 1. Characteristics of play versus work.^a

Play	Work
Informal	Formal
Voluntary, freely chosen	Obligatory, coerced
Orientation: Means > Ends; Process > Product	Output or performance-based orientation
Rules and structure emanate from the players	Rules and structure emanate from authorities
Engaging, but not mentally stressful	Can be mentally and physically stressful
Energizing	Exhausting

^a Not an exhaustive list.

Demography

In looking at some of the earlier physical activity trends, and with an eye toward contributing to a sufficiency economy, demography must also be considered within the realm of physical activity, physical activity education, and sports.

Demography gives us an understanding of human populations. It can point out overlooked societal sectors, predict future needs, and suggest opportunities ranging from private sector, entrepreneurial businesses, to educational and nonprofit organizations, to government agencies with societal level reach and scale.

For example, the cost of health care is escalating. Physical activity is increasingly being recognized as a critically important, prevention-oriented, health behavior that is associated with lower health care costs. But, physical activity and sports equipment and experiences cost money. These costs serve as barriers to participation, especially for people with low incomes. Might it make sense to incentivize physical activity and sports-related purchases by allowing pre-tax dollars and/or other tax advantage incentives, such as write-offs or reimbursements, to

be used? The World Health Organization found that for every \$1.00 invested in physical activity, a \$3.20 return on investment was achieved through reduced medical expenditures.

Demography tells us other things, too. For example, physical activity participation takes not only money, but also time. A lack of time is another often reported barrier to regular physical activity participation. Who has the most money and time available? In America it is those ≥ 65 years of age who are retired. Moreover, they seem to have a desire and willingness to use their disposable income and available leisure-time to obtain physical activity-based experiences that are fun and memorable. Some call this time of life the “Freedom Zone”.

Demography suggests that the number of people entering the “Freedom Zone” is increasing faster than other population segments. Taken together, this is clearly a target market whereby entrepreneurial-oriented physical activity education and sports professionals can contribute to a sufficiency economy. That is, people living in the “Freedom Zone” seem to be interested and willing to pay for quality and meaningful leisure-time physical activity experiences that result in positive memories and a strengthening of interpersonal/social relationships.

Conclusion

In this presentation I have tried to share with you some ways in which those working in physical activity education and sports can both directly and indirectly contribute to the sufficiency economy philosophy as articulated by the Late King Bhumibol. In an economy focused on long-term profitability and sustainability, health, longevity, physical activity, and wellbeing all become commodities. Given the masses of people who are either sedentary, insufficiently active, or irregular active, there are genuine opportunities to make meaningful and substantial contributions to population health and a better quality of life for all. As I have tried to show, some of the opportunities have the chance to be immediately profitable through

direct services provided to those living in the “Freedom Zone” (in particular), whereas others are indirect and longer-term through the creation of a healthier society in which fewer people have costly health care needs. In either case, innovations aimed at increasing the populace’s engagement in physical activity should be doggedly pursued. Toward this end, efforts aimed at making physical activity necessary and assuring that physical activity remains fun, even joyful, will go a long ways toward achieving this most desirable end.

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