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Basic Concepts of Periodization

By Juan Carlos Santana
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The fitness and conditioning field is growing by leaps and bounds. This growth will impact the demands and responsibility put on fitness professionals. From an administrative perspective, better planning and organization is needed to keep up with the increasing number of participants. From a professional perspective, a theoretical model for progressive training provides the fitness and conditioning professional a scientific basis for systematic planning and progress.

The concept of periodization provides a theoretical training model that organizes the manipulation of the training variables for a specific time period. It is not necessarily a clear-cut set of directives but rather a blueprint for action and direction. Before we get into the theoretical aspects of periodization, let's first establish a philosophical common ground.

A Training Philosophy

Let's begin with the assumption that, in a very basic form, "we are all the same basic organism." That is, from a physiological perspective, the human organism deals with stressors in a very predictive manner; it adapts to them or it does not. The manner in which we generally adapt to specific stressors, like physical stress, is also universal and predictable. From a biomechanical perspective, the design of the human body crosses the entire human spectrum. Basically, our anatomical design is the same; our parts move the same way in every body. Therefore, a training model must be general enough to take advantage of the universality of the human organism, yet specific enough to meet individual needs and goals.

The Need for Planning

Every professional discipline has a plan for direction. For example, look at how we run businesses and manage money. Accounting principles provide us with business plans, budgets and financial statements to arrange a plan of action and manage financial recourses. Periodization accomplishes the same for the fitness professional as well as the client and athlete. Periodization provides a plan to manage our physical resources over a specific time period.

The History of Periodization

The organization of training can be dated to the ancient Olympics. Competitors of the Olympics were said to train for 10 months prior to the month-long event. However, it was not until the early 1900s that specialists such as Murphy and Kotov suggested preparatory exercises and distinct training phases. More distinct and better-organized periodization models can be traced to the 1960s. Russian physiologist Leo Metveyev and Czechoslovakian sport scientist Tudor Bompa expanded and further organized the periodization model. Bompa and Metveyev have been regarded as the fathers of modern periodization. Since the 1960s, other coaches and exercise physiologists have added to the original models, creating "modified" periodization models. However, despite the differing terminology amongst scientist and practitioners, the scientific basis for periodization remains a common ground.

The Scientific Basis

As we previously mentioned, the adaptive capabilities of the human organism are fundamentally universal. Canadian endocrinologist Hans Selye first described the time-course of our adaptive response. He called this response the General Adaptation Syndrome (GAS). The GAS describes three basic stages of response to stress: (a) the ***Alarm*** stage, involving the initial shock of the stimulus on the system, (b) the ***Resistance*** stage, involving the adaptation to the stimulus by the system, and (c) the ***Exhaustion*** stage, in which repairs are inadequate, and a decrease in system function results. The GAS stages are illustrated in Figure 1. These three basic stages of response are the fundamental and scientific rationale for the modern periodization model.

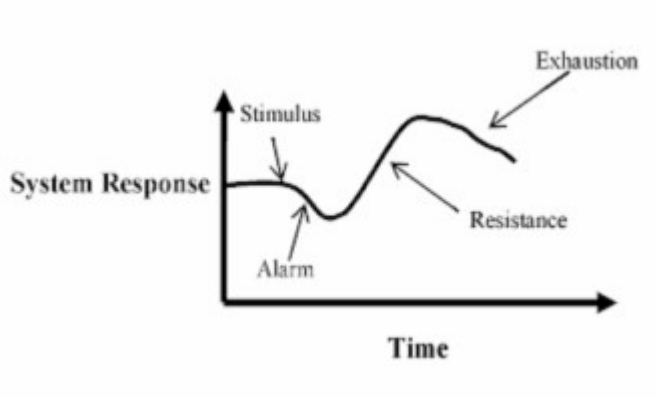
Although the GAS model in Figure 1 is an example of a single response to an acute stimulus, chronic responses to repeated stimulus can link the GAS over a period of time. If the exhaustion phase is avoided, each subsequent resistance phase brings the system response to a higher level, therefore leading to higher performance capabilities.

FIGURE 1

Three response phases proposed by Selye's GAS- A micro-fluctuation

- Alarm (Shock) - Acute system response to stimulus. These can include soreness, stiffness and possible drops in performance.

- Resistance (Adaptation) - Chronic system response to stimulus. These can include increases in lean body mass (LBM) and strength.
- Exhaustion (Fatigue) – Lack of ability by the system to respond. This can lead to overtraining, staleness and persistent decrements in performance. This is this phase we are trying to avoid!

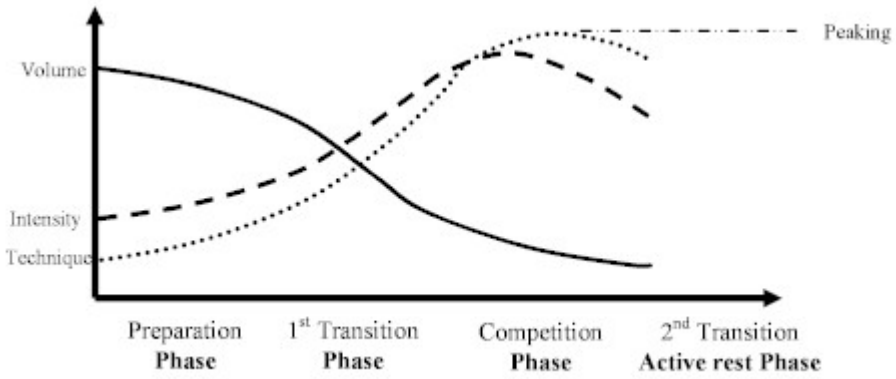


Objectives of Periodization

The primary objective of periodization was to manage training and physical resources and prevent the exhaustion phase of the GAS (i.e., prevent overtraining). The secondary objective was to bring performance to a peak. The periodization model accomplishes these two objectives by manipulating the primary training variables. Figure 2 illustrates Matveyev's original periodization model. It shows the inverse relationship of volume and intensity and how technique work played a roll in peaking performance.

FIGURE 2

Matveyev's original Periodization Model



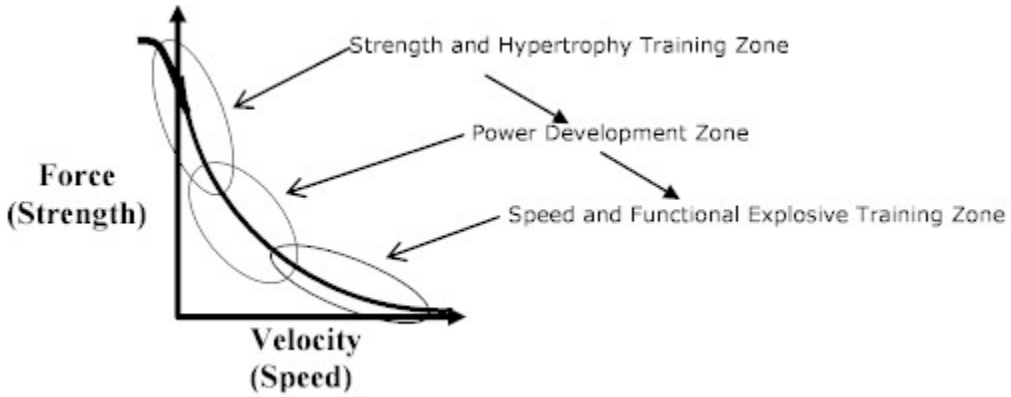
Periodization Concepts and their Impact on Program Design

With a basic understanding of the periodization model, we can now take a developmental approach to training. This will allow us to create a system of progressive development, instead of training by brail. This is equivalent to teaching the village how to fish, instead of giving them a fish.

One simple and effective way of developing and teaching periodization is by relating it to a simple and well-established scientific model. The model we will use to help us explain and validate our periodization model is the Strength vs. Velocity curve (Figure 3). This figure illustrates the inverse relationship between force and speed. That is, the heavier the load, the slower it will move; the heavier the training, the slower it will be. Dr Signorile, professor at the University of Miami, Florida, used the Strength vs. Velocity curve to substantiate training at various speeds to develop specific physical and performance components. If you want to develop a specific physical quality like strength, you will eventually end up training at the left side of the curve. Conversely, if you wanted to train for speed, you would end up training at the right side of the curve. The natural process of starting in the middle, going up the curve to develop strength, then gradually "surfing" down to develop power and speed was coined as "Surfing the Curve" by Dr. Signorile. "Surfing the Curve" is the best model we have found to explain and teach periodization. It provides a perfect pictorial illustration of the progressive, specific and cyclic nature of periodization.

FIGURE 3

Strength/Velocity curve. The force velocity curve illustrates the relationship between speed of movement and force generated.



Expanding on Dr. Signorile's "Surfing the S&V Curve" model, we can surf the curve through the entire periodization process. Figure 4 demonstrates a practical application to this approach. Where one begins surfing the curve, how high one surfs and where one ends will depend on the initial training status of the individual, the amount of strength needed for the activity and the speed requirement of the activity being trained for. The area needing the most amount of work would require one to focus on that area of the curve. Figure 5 illustrates how this model can be used to help us design different training schemes.

FIGURE 4

The periodization scheme surfs the S&V curve in the manner shown below. Notice the area on the curve that emphasizes a specific training component.

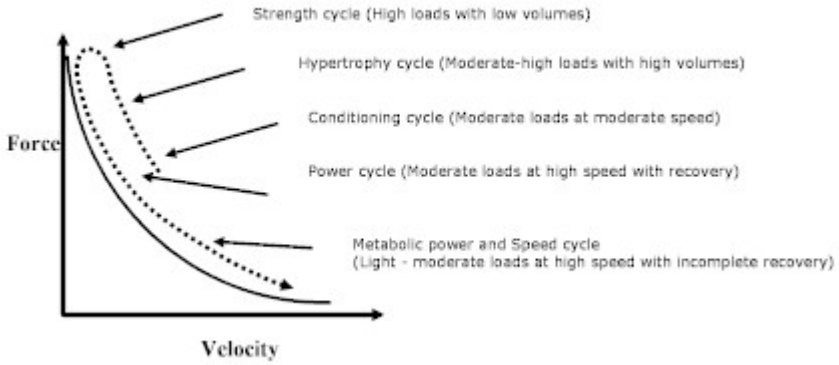
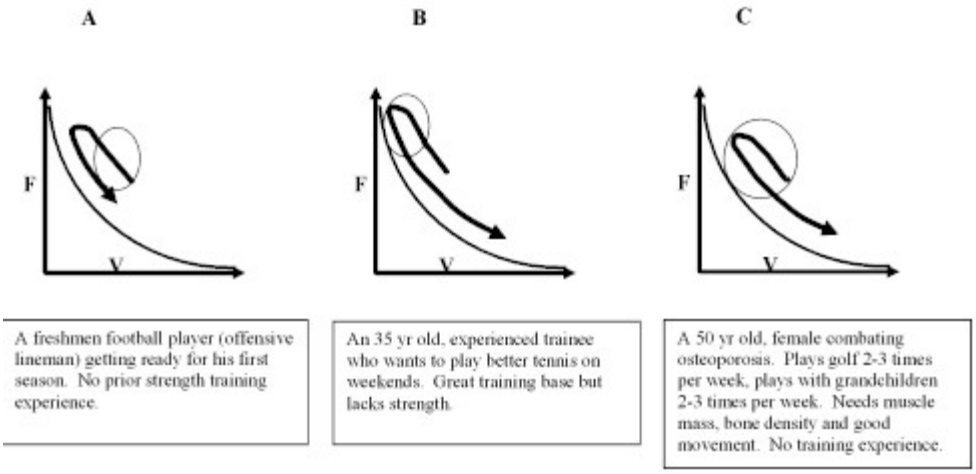


FIGURE 5

Surfing the S&V curve in the design of multiple programs. The area to be emphasized is circles.



Rationale

A – Anatomical adaptation should be emphasized due to the lack of maturity and training experience. His position does not require much running speed but does require him to move a large opponent quickly.

B – This mature individual has a training base that has probably been focusing on muscular endurance, thus lacking decelerating capabilities on the court. We would quickly progress this individual through the AA phase and concentrate on strength, especially eccentric stabilization strength. Since tennis is fast and does not require one to move anything other than bodyweight, the final stages of the conversion phase would emphasize fast movements with minimal weight.

C – With this woman, the anatomical adaptation and hypertrophy phases would be the focus of her programming. This type of training would assist her in accruing lean body mass and bone density. However, her activities warrant specific speed work to help her with her golf swing and chasing after her small grandchildren.

With the periodization model we have provided, designing a program should be a matter of surfing the Strength vs. Velocity Curve. While surfing the curve, we will need to manipulate certain variables. The articles to follow will deal with more details of programming such as training variables and the different phases of training.

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