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Periodization: Period or Question Mark?

In Part 1 of this series, Lon Kilgore examines the research behind one of the sacred cows of strength and conditioning.

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Many textbooks claim to present best practices, but a closer look reveals some recommendations may not be supported by experimental evidence.

Periodization is king of all exercise-programming methods.

Classical periodization, the English translation of Leonid Matveyev's Soviet model of programming, is the single best model and should be used in all strength-and-conditioning training for all healthy and athletic populations.

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So says the National Strength and Conditioning Association (NSCA) and anyone who relies solely on its publications. This bias toward a single training approach can be seen simply by examining the sections in NSCA publications that describe how to program exercise:

“This program design strategy is called periodization” (5).

“The term used to describe the special planning that occurs with athletic training is “Periodization” (3).

If you oppose the belief that training should be periodized for everyone everywhere, then historically the NSCA—and anyone who has bought into its dogma—will automatically brand you as ignorant of “best practices” (an educational buzz term meaning “what we assume everyone else does”).

Periodization is overwhelmingly presented as best practice in all NSCA publications on programming—as superior to all other models of programming. That the NSCA proposes periodization trumps all other training models can be demonstrated in an opinion piece published in its *Journal of Strength and Conditioning Research*:

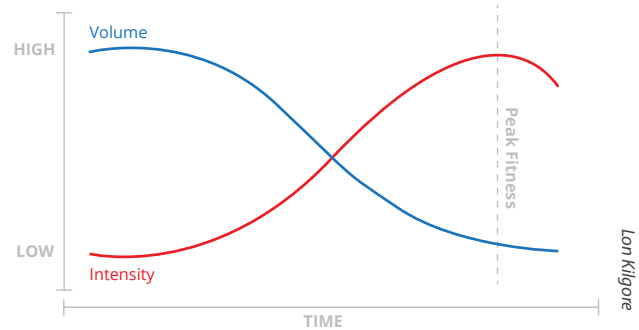
“Although these commercial programs have value, they do not incorporate workouts within a progressive, periodized model; a method that has been well established as an effective means of training athletes for optimal performance” (2).

So if we have the only body of strength-and-conditioning academics and professionals stating we must periodize using a single model, and if there is sure to be professional blowback if we do not, excellent reasons, great logic and a concrete scientific foundation must underpin that position. And we should obviously see superior fitness gains resulting from that position.

Right?

Misrepresentation of a Foundation

The NSCA would like for all strength-and-conditioning professionals and personal trainers to buy its books and use the information inside to train their charges with no questions asked.



The NSCA has for more than 30 years proposed Matveyev’s model of periodization should be applied to all trainees from novice to elite.

The NSCA promotes itself as the “worldwide authority on strength and conditioning.” As such, if a new fitness professional, politician, attorney or member of the general public wanted to find “authoritative” standards or guidelines on strength training, unknowing individuals might end up reading NSCA publications and accepting their contents as irreproachable fact. Even if the individual ended up reading American Council on Exercise (ACE) guidelines, he or she would still be indirectly exposed to NSCA dogma (compare the contents of NSCA and ACE guidance documents on performing exercise).

In “Essentials of Strength Training and Conditioning,” the chapter on periodization is referenced. Via references in text and bibliography, the authors attempted to provide the reader with some reassurance that the words and ideas presented were backed by data from other scientific authors.

In most chapters of academic textbooks, dozens and dozens of citations are intended to demonstrate the content is founded upon previous works. NSCA textbooks are no different from others in this approach. In fact, the average number of citations per chapter in “Essentials” is 88.

Superficially, 88 references seem like a lot. We would expect a core principle such as periodization to have lots of support in the literature. And we might be tempted to equate lots of citations in a paper or chapter with rock-solid support for the concept presented.

This may not be the case, as the number of citations in a chapter can be misleading. In the Periodization chapter

of “Essentials,” 25 citations of previous works can be found. This seems to be quite light if we adopt the idea that more citations are better and we recall periodization is considered a core concept to be understood and employed by all fitness professionals.

It is indeed tempting to read something into those 25 references, as other “Essentials” chapters contain effusive citations. But numbers aren’t everything. If the citations included in a chapter are presenting quality data and directly relevant to the point to be made or concept to be supported, a large number of references aren’t required.

But if we perform a quality and relevance check on the citations at the end of the Periodization chapter in “Essentials,” we find only three truly experimental papers cited in this “authoritative” chapter. Three experiments produced in more than three decades? Surely there has to be a larger evidence base for such a central tenet of a professional organization and world authority. Even more troublesome, none of the three papers exactly tested Matveyev’s model of periodization. Remember that this model is presented as the only periodization method endorsed by and taught in the NSCA text.

One of these papers compared an approximation of classical periodization, Poliquin’s undulating method and linear progression. They found no difference in strength

gain between the three programs. The other two research papers were on the physiology of strength. So, quite bizarrely, the only research reference in the chapter bibliography that specifically evaluated classical periodization did not show that Matveyev’s model was superior to even simply adding weight with every workout (linear progression).

But what about the other 22 papers the NSCA authors used as support for the position that Matveyev’s periodization is king? You can look at them as window dressing, opinion and review pieces that essentially review other opinion and review pieces. There is even a reference to an earlier edition of “Essentials.” They are included for the illusion of supporting evidence derived from experimentation. In the exercise sciences, as in other disciplines, caution in interpretation of publications is warranted because there are many examples of unsubstantiated and poorly evidenced opinion being passed off as viable institutionalized thought (1).

One might think this poor delivery of actual data in support of classical periodization might be an editorial oversight in only one NSCA publication, but this is not the case. In the NSCA’s “Basics of Strength and Conditioning Manual,” the analysis of citations included is even more troubling than that in “Essentials.” There are only five periodization references—none experimentally based—in this chapter on a basic professional skill. Compare that to 24 experimental papers and 16 non-experimental papers on stretching and warming-up in the same chapter.

Justifying flexibility work and pre-exercise activities receives more attention than providing a factual basis of programming concepts in a chapter on program design?

Where Is the Truth?

While the model of programming proposed by Matveyev so many decades ago has proven to be effective in the field, so has the model proposed by Yuri Verkhoshansky and the models forwarded by many other figures in resistance training.

Even the 1982 “Classic” paper on periodization by Mike Stone states it is a “hypothetical model” of programming, not a paper intended to say classical periodization is the only way to program (4).



If NSCA texts and digital presences include no evidence directly supporting classical periodization's effectiveness in the short term, long term or in comparison to other viable models beyond Dr. Stone's forward-thinking paper, how is the average trainer and coach to know the NSCA's adopted model actually works? How would the average trainer or coach be exposed to the rich variety of other effective programming options available to them if the NSCA only delivers classical periodization?

A responsible professional should demand more than opinion if he or she is to adopt a single model of exercise programming to be applied to all athletes from novice to elite. A responsible professional should demand more from a professional society than to ubiquitously adopt and disseminate opinion and conjecture as undisputed fact.

While the general concept of periodization of training does have a small body of evidence supporting it, the literature in the area is a quagmire of opinion pieces and reviews, with a few actual experiments sprinkled amongst them. In Part 2 of this series, the author will tease out the experimental papers and frame them so readers can actually evaluate their merits and come to an objective decision on the place of periodization in exercise programming.



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About the Author

Lon Kilgore graduated from Lincoln University with a B.Sc. in biology and M.Sc. in kinesiology from Kansas State University, and he earned a Ph.D. from the Department of Anatomy and Physiology at Kansas State University's College of Veterinary Medicine. He has competed in weightlifting to the national level since 1972 and coached his first athletes from a garage gym to national-championship event medals in 1974. He has also competed in powerlifting, the first CrossFit Total event, wrestling and rowing. He has worked in the trenches, as a coach or scientific consultant, with athletes from rank novices to professionals and the Olympic elite, and as a collegiate strength coach. He was co-developer of the Basic Barbell Training and Exercise Science specialty seminars for CrossFit (mid-2000s). He was a certifying instructor for USA Weightlifting for more than a decade and a frequent lecturer at events at the U.S. Olympic Training Center. He is a decorated military veteran (sergeant, U.S. Army). His illustration, authorship and co-authorship efforts include the best-selling books "Starting Strength" (first and second editions) and "Practical Programming for Strength Training" (first and second editions), recent releases "Anatomy Without a Scalpel" and "FIT," magazine columns, textbook chapters, and numerous research-journal publications. His professional goal is to provide the best quality, most practical, most accessible and highly affordable educational experiences to fitness professionals through his university work and through his *AnatomyWOD* and *PhysiologyWOD* courses. His students have gone on to become highly notable figures in weightlifting, powerlifting, cycling, fitness and academia.