

A Look at Training Models

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Modern training theory indicates that there are at least a dozen models of athlete preparation with regard to volume and intensity. These models attempt to outline and describe the implementation of training loads so that the athlete is trained optimally. Volume is a factor related to how much the athlete does. Volume is similar to the mileage of a runner, or the sets and repetitions performed by a weight lifter. In gymnastics volume is typically described as the number of skills performed.

Intensity is the variable that indicates how hard the athlete is working. Intensity in gymnastics is described as the difficulty of the skills performed or the number of elements performed per minute. Unfortunately, past experience with the National Team Tracking Program has shown that coaches rarely use a recognized and effective training model in their athlete preparation (4-7). Typically, the gymnastics coach increases both volume and intensity in the final week(s) of training prior to a competition which results in excessive fatigue and unstable performances. Although there are many ways that an athlete's training load can be administered, increasing volume and intensity simultaneously is probably not a smart way to prescribe training.

Classical training theory indicates that the training load of the athlete begins with volume (how much you do) high followed by a gradual decrease, and intensity (how hard you do it) starts low and gradually increases (Figure 1). However, this method applies only to athletes of middle and lower level qualifications. For elite athletes, there is a serious problem in the large swings in fitness that are used in the approach outlined in Figure 1.

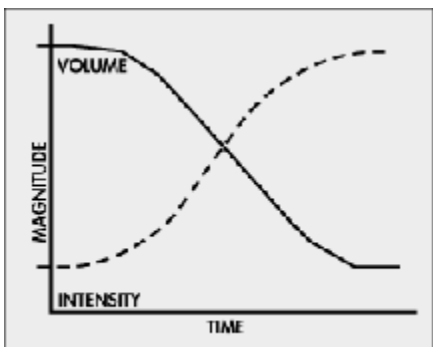


FIGURE 1

For example, is it beneficial for an elite athlete to go from a condition of being almost completely out-of-shape to a condition of being almost completely in-shape and then back again? This has been shown to result in a higher injury rate, probably due to the large swings in fitness. Is it okay for an elite athlete to practice skills and techniques at only partial effort? Again, this is probably a bad idea because the athlete should perform skills with near maximum effort to ensure technical perfection and virtuosity. Finally, is it wise to allow the athlete to achieve a certain level of performance only to systematically lose that performance level? It appears that once a level of performance is attained, it is probably silly to allow the athlete to abandon a large portion of it. The first model, shown in Figure 1, is based on early attempts at training prescription by Matveyev (3). Perhaps because this model was among the first to be translated and made available in the West, it has been followed without question by many coaches and athletes when other models may be more

appropriate.

Another model may be more appropriate for training high performance athletes. Zatsiorsky has offered a more specific model for the elite athlete by constraining changes in both volume and intensity to the upper levels of athlete capabilities (10). Figure 2 shows a modified approach to training where volume and intensity behave somewhat reciprocally, but the large swings in fitness are constrained.

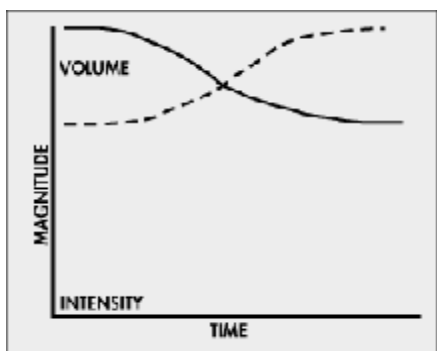


FIGURE 2

The model in Figure 2 can ensure that the athlete is maintained at a high level. However, the nagging question of whether the athlete can tolerate even modest reductions in intensity without losing some of the "edge" built up over many weeks of earlier training is apparent. It is well known that drops in training intensity may lead to detraining (1, 2, 8, 9). The need to maintain the highest quality of performance while cycling the athlete's work and rest periods is difficult. This problem often appears most intensely when the athlete is nursing an injury yet must maintain a competitive fitness and attitude. A third type of model has also been proposed for the development of the elite level athlete, particularly for those athletes who must be "meet ready" most of the year. The third model incorporates a roughly constant level of intensity while volume is cyclically increased and decreased to provide alternate high and low demands so that the athlete can attain and maintain fitness while receiving opportunities for recovery. This third model should be reserved for those athletes who are extremely fit and able to withstand a long and intense training load. However, the third model may provide the format for those athletes who are constantly competing with a means of achieving sufficient recovery that overuse type injuries are less likely. Figure 3 shows a diagram of the approach.

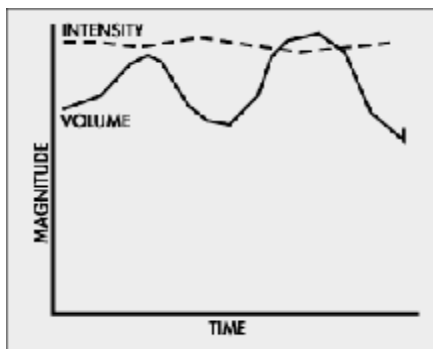


FIGURE 3

The athlete's training quality is maintained via the method shown in Figure 3. The athlete rests/recovers when the volume is reduced. Most frequently, the reduction of volume can be achieved by simply dismissing the athlete from training early.

Of course, the coach may also use a mixture of these models depending on the period of the preparation. During the general preparation phase the athlete may use the first model. During specific preparation and precompetition phases the athlete may use the second model. Finally, during the competitive phase the athlete may need the third model. It has seldom been addressed that training model approaches can be mixed, and that a number of different training models exist. It will be continually important for the coach to gain experience and knowledge about these models so that a larger repertoire of training approaches can be used for particular athletes and circumstances.

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