INTRODUCTION

Counting the number of miles run in a given time period (weekly) is a common way to determine training volume for distance runners. Traditional periodization models (figure 1) have shown that high volumes are important to elicit training adaptations early in the training cycle, and that these volumes should progressively decrease as an athlete approaches their main competition (Plisk and Stone 2003). Therefore, the purpose of this study was to test the traditional periodization model using associations between training volumes and race performance.

METHODS

Mileage data was collected for the Carthage College women’s cross country team during the 2016 season. 23 National Collegiate Athletic Association Division III athletes between the ages 18-22 participated in the study. Each athlete reported their weekly mileage to the coach. Training volume was then compared with performance at various points throughout the season:

1. Preseason Volume vs Preseason Performance
2. Regular Season Volume vs In Season Performance Improvement
3. Total Training Volume vs Conference Performance

RESULTS

PRESEASON VOLUME VS PRESEASON PERFORMANCE

Figure 2 shows a correlation of -0.66 between time run in the first race and number of miles run during the preseason summer months of training. This suggests that the more miles run over the summer, the faster the athlete completed the 6-kilometer race.

IN SEASON VOLUME VS IN SEASON PERFORMANCE IMPROVEMENT

Figure 3 shows a correlation of -0.608 between change in race time from early to late season and number of miles run during the 2 months of regular season. This suggests that the fewer miles run while in season, the more the athlete improved performance.

DISCUSSION & PRACTICAL APPLICATION

These data support the traditional periodization model. It is important to accumulate large training volumes in the preseason period. During the season athletes should reduce volume and focus more on races (intensity). Although intensity may become more important during season, athletes that completed a higher total training volume (preseason + in season), had the best performances at the end of season conference tournament. Therefore, coaches should encourage their athletes to build up their work capacity in the summer months so that they can maintain high performance throughout the season leading up to the conference championship.

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Bibliography/For Further Information


Figure 1. Depiction of ideal periodization training

Due to the principles of periodization it was expected that:

1) Higher volume during preseason would lead to better performance early in the season.
2) Lower volume during regular season would lead to more improvement throughout competition season.
3) Higher overall volume would lead to faster race times at the end of the season during peak competition.

Figure 2. Compares times from the first race with number of miles run over the summer.

Figure 3. Relationship between performance improvement and number of miles run during the in season.

PRESEASON VOLUME VS PRESEASON PERFORMANCE

Figure 4 shows a correlation of -0.727 between the final race time of the season and the number of miles run throughout the entire season, 3 months of summer and 2 months of regular season. This suggests that the higher the overall volume, the faster race at the end of the season when peak performance is desired.