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 **ASSIGNMENT**

Discuss how six(6) principles of sports physiology training can be applied to improve athletes performance during international competition.

1. **Specificity Principle:** According to the specificity principle, adaptations are specific to the muscles trained, the intensity of the exercise performed, the metabolic demands of the exercise and the joint angle trained. For example, if a an athlete is training for a marathon, the training will be focused on low intensity-high volume exercises to build endurance and also training specific to strengthening the muscles used in running such long distance races. Also the training will be outlined in a manner that it matches the environmental conditions of wherever the competition is taking place.
2. **Overload Principle:** The basis behind the overload principle is that for training adaptations to occur, the muscle or physiological component being trained must be exercised at a level that it is not normally accustomed to. What this means is that for each training session the exercise load should be one that pushes the athlete to the limit of the abilities but not overboard to the point that it causes harm to the athlete. The aim of this is that eventually, the athlete should be able to perform those exercises at a faster time rate than before. E.g if an athlete is able to run 2 miles in 1min and reach their max heart rate, continuation of this each session and with positive impact the athlete will be able to run 2 miles in less time and still run an extra length.
3. **Individuality Principle:** The individuality principle refers to the concept that people respond differently to the same training stimulus. This means that each athlete responds to exercise regimens differently either due to age, gender, genetics or pretraining status. Therefore a coach has to be aware of these factors that can affect their response to the training and streamline their exercise regimens to suit each athlete specifically with positive outcomes.
4. **Progression Principle:** During the course of a training program, adaptations occur that change the relative intensity or volume of training. In order to maintain the intensity or volume, the resistance used needs to be continuously modified. What this means is that if an athlete in a training sessions lifts weights of 150lbs in 6 to 8 reps, eventually the muscles build strength and the athlete is able to lift the weights with ease for for more than 8 reps. At this point, the weights need to be modified to an amount that the athlete can lift with resistance for not more than 8 reps. This needs to be continued at each point that the athlete gets used to the resistance.
5. **Principle of Diminishing Returns:** Principle of diminishing returns states that performance gains are related to the level of training experience of the individual. For instance, an athlete who is just beginning strength trainings will gain large bursts of strength, as time progresses, the strength gains reduce and eventually, the athlete reaches a plateau. The below diagram shows pattern of response to exercise intensity.  



1. **Principle of Reversibility:** The basis behind the reversibility principle is that, when the training stimulus id removed or reduced, and eventually the gains that were made from the training program will revert back to their original level. This Is called detraining. Detraining means the partial or complete loss of training induced adaptations as a result of a training reduction or cessation. An instance in which this can occur is when an athlete is injured and the body part has to be placed in a cast, when the cast is taken off, the muscle has suffered atrophy and strength loss. Another instance is when an athlete for stops training altogether for an extended period of time, when they do eventually return to it their strength is reduced compared to when they were actively training.