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# Considerations in Athletic Performance Enhancement Training: Athlete Weight Room Preparation

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During my 30+ career as a Physical Therapist (PT), Certified Athletic Trainer (ATC) and Strength and Conditioning (S&C) Coach, I have been involved in both the Sports Rehabilitation and Performance Enhancement Training of athletes and have had many valued experiences throughout my years of practice in these two related professions. When confronted with an athlete who presents with a pathology that occurred during the course of S&C or personal training participation, my observations of the athlete, the review of the athlete's injury and medical history, and my experiences in the sports rehabilitation of athletes, often reveals that the injury is not directly due to a specific exercise performance, but to one of two other training considerations.

The first possible cause is the implementation of a poor program design, i.e. inappropriately prescribed exercise weight intensities and exercise performance volumes, which is beyond the subject matter of this dialog, and the second, is the athlete was not properly physically prepared prior to their participation into the formal training program design.

Often times, the athlete enters the weight room to initiate their physical training and regardless of their physical condition and/or training experience, they are expected and instructed, along with their peers, to participate in the first day of the identically prescribed formal training program design. This is especially true of the high school athlete. The question then arises, how does the S&C Professional know the athlete will be able to correctly perform and physically tolerate the prescribed program design when implementing this manner of training?

My good friend and one of my mentors, Hall of Fame S&C Coach Al Vermeil has established and imparted upon me his hierarchy of athletic development. This system is utilized as a well-organized progression to assist the S&C Professional in the optimal athletic development of the athlete (Figure 1.)

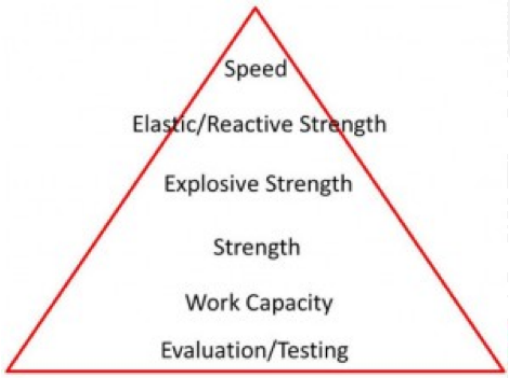


*Figure 1. Vermeil's Hierarchy of Athletic Development*

Coach Vermeil's system is fostered upon a continuum of the physical qualities necessary for optimal athletic performance. A review of this hierarchy will reveal that strength is the physical quality, the foundation, from where all other physical qualities evolve. Each physical quality is dependent upon the optimal development of the preceding physical quality so that the ideal development of each successive physical quality in the hierarchy may transpire. One should note that although several physical qualities may be trained simultaneously, the emphasis of training is placed upon one specific physical quality until the time where the next ascending physical quality in the pyramid is determined to be developed.

Prior to the initiation of training, a review of Coach Vermeil's hierarchy will exhibit the necessity for the physical evaluation of the athlete, as well as the development of the athlete's work capacity, or as some coaches may call this level of the pyramid "general physical preparation (GPP)". Work capacity or GPP is necessary for the preparation of the athlete for their eventual safe participation in the formal weight training program design.

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During my time studying at the Soviet Institute for Physical Culture and Sport in Moscow, prior to the break up of the USSR, the topic of the system of athletic development that ensued at the thousands of Soviet Sports Schools across the USSR was discussed. Included in this lesson was the necessity for the preparation of the young Soviet athlete prior to the progression of applied higher stresses,over time, that would occur during their specific athletic development (specialization). A modification of this concept is presented in figure 2.

| AGE | YEARS OF TRAINING | PERCENT GPP | PERCENT SPECIALIZATION |
|---|---|---|---|
| 12 | 1 | 70% - 80% | 20% - 30% |
| 13 | 2 | 50% - 60% | 40% - 50% |
| 14 | 3 | 30% - 40% | 60% - 70% |
| 15 | 4 | 10% - 20% | 80% - 90% |
| 16 | 5 | 0% - 10% | 90% - 100% |

*Figure 2. The General Physical Preparation and Specialization of the Young Athlete*

The successful Soviet structure of training acknowledges the importance and incorporation of a systematic process of general physical preparation prior to the athete's eventual participation in 100% specialization of training, therefore, shouldn't we as S&C professionals also heed from this lesson of athletic development?

Javorek's Exercise Complexes

One method utilized over the years to prepare our athlete's for the participation into the formal training program design is to incorporate Javorek's exercise complex system into the training process. These exercise complexes were developed by S&C Coach Istvan "Steve" Javorek as part of the training system utilized with his athletes. These exercise complexes require the athlete to perform a series of specific exercises, employing either barbells or dumbells, with one exercise performance immediately followed by another until an "exercise cycle" or "set" is completed. The athlete then performs the prescribed number of exercise cycles/sets to complete their prescribed daily workout. An example of a Javorek's exercise complex is as follows:

Barbell Upright Row X 6 Reps
Barbell Snatch High Pull X 6 Reps
Barbell Behind the Head Squat Push Press X 6 Reps
Barbell Behind the Head Good Morning X 6 Reps
Barbell Bent Over Row X 6 Reps

In this example the athlete will have performed a total of 30 successive exercise repetitions while incorporating the entire body during the training in the exercise cycle/set. Exercise weight intensities are initiated with 10% to 15% of the athlete's body weight and are progressed over time until the athlete is able to perform the exercise complex with 30% – 35% of their body weight. The workouts are performed three days per week and depending upon the individual athlete, may begin with three exercise cycles/sets in their initial workout and progressed over time until the athlete demonstrates the performance of 5-6 cycles/sets at 30% to 35% of their body weight per daily workout.

Some of the advantages for incorporating Javorek's exercise complexes include but are not limited to:

- Establish the proficiency of exercise technical performance
- Preparation of the neuro-muscular and musculo-tendonous systems of the body for the eventual application of high volume, high weight intensity exercise performance
- Enhance joint mobility and soft tissue compliance
- Enhance strength and power output
- Increase work capacity

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Depending upon the specific needs, presentation, and medical history of the athlete, exercises may be substituted and/or modified for the athlete as part of their prescribed exercise performance.

Javorek's exercise complex systems work well to assist in the preparation of the athlete for the ensuing intergration of the formal training program design. A program design that will include the application of higher exercise volumes and weight intensity performance. We have also implemented Javorek exercise complexes during the "end stage" of the athletes sports rehabilitation prior to their discharge from the clinic and eventual particpation in a formal off-season S&C program. The preparation of the athlete prior to their initiation into the formal training program design is an important aspect of training that is often overlooked. A properly prepared athlete will not only perform superiorly in the weight room, but likely reduce the incidence of training injuries as well.