

Regeneration in Track and Field

Vietta E. Wilson, Ph.D.

York University, Toronto, Canada

Coaches and athletes have long recognized the need to prevent injuries, staleness or over training. With recent advance in the science of regeneration (Lehmann, 1999), and to the art of application of rest/work cycles (Bompa, 1999), this has become more feasible. Because there has been ample information on the physiology of recovery the focus of this article will be on techniques that particularly emphasize the recovery/regeneration of psychological states or brain functioning.

This paper will highlight concepts or techniques from non-sport areas that may offer new frontiers for enhancing the recovery/regeneration of athletes. Since most of these techniques require a specialized knowledge or skills, references will be provided where coaches can look for research on the topics or available resources.

What is Recovery and Regeneration?

Recovery is a general term that encompasses the return to the physiological and psychological states, which allow the athlete to again maximally load or use these systems. It involves:

1. physiological systems,
2. psychological states,
3. behavioral, and
4. social aspects.

The need for recovery may come from the loading of the systems through:

- typical training regimes,
- unusual sport stress,
- injury,
- illness, or
- changes in the daily life style of the athlete such as nutrition, sleep or daily life hassles.

Regeneration is considered to be one type of recovery, but implies that rather than merely waiting for the system to recover, athletes are actively involved in changing their behavior or thoughts to influence the speed or depth of recovery. Some authors feel that recovery is primarily based on physiological processes while

regeneration focuses more on the psychological state of the athlete. In reality, both systems are interdependent and changes in physiological systems affect psychological states and vice versa.

How Does One Assess the Need for Regeneration of Psychological States?

1. Ask and Observe

The simplest method is for the coach to ask the athlete how they feel in:

- the physiological systems (muscle fatigue, energy levels, ability to recover after workouts, etc),
- psychological systems (feeling states-positive vs. negative, motivated vs. emotionally drained, comfortable vs. stressed, etc), or
- somatic symptoms (headache, sleep disturbances, etc).

The coach can also observe:

- the speed of reactions,
- performance levels, and
- the nature of interactions with the coach and other athletes.

What the coach is looking for is a change in behavior or attitude of the athlete from their levels when they are refreshed and/or performing well.

2. Paper and Pencil Questionnaire

Kellmann and Kallus (1999) have developed a research-based questionnaire that tries to specifically identify the stress and recovery of an athlete or a team. In an attempt to monitor the training load upon the psychological state of an athlete, to prevent over training and burnout, they measure:

- body symptoms,
- emotional states,
- behavioral aspects, and
- social aspects.

3. Psychophysiological Monitoring

Scientific work on the approaching states of over training using high caliber athletes has been conducted.

Looking for more easily applied techniques:

- some coaches recommend changes in resting heart rate as one variable that may reflect over training, or perhaps an illness;
- some massage or muscle therapists believe they can determine, from muscle palpation, the degree of fatigue of a muscle.

For a more complete discussion of over training, recovery and regeneration see texts by Kreider (1998) and Lehmann (1999).

Traditional Recovery and Regeneration of Psychological States

1. Variety of Training

A very simple but effective technique to lessen psychological fatigue is to vary the nature of practice. While it is time consuming to constantly prepare alternative training regimes or skill sessions, the benefits are significant in both the attainable quantity and quality of work.

2. Therapeutic massage

The specific scientific benefits of therapeutic massage are still debated but athletes readily endorse the psychological effects. The type, duration and number of sessions of massage need to be determined by the effects upon each individual athlete.

3. Relaxation exercises for regeneration

• Breathing

While an athlete needs to learn proper breathing to fine tune performance, a different set of breathing exercises is used to facilitate regeneration. The athlete will practice slowing the breathing rate to six breaths per minute, while maintaining abdominal breathing without hyperventilating. The slowed state of breathing at six cycles/minute is associated with a meditative state believed important to slowing the mind and healing. Practice occurs for no more than 2-3 minutes at a time, but is repeated several times during a session. Respiration biofeedback is now being used by professional athletes for mental quieting and psychophysiological return to homeostasis (Gervirtz, 1999).