Over, Under, and Optimal Training

The Goal of Training

Whether for general fitness or sports performance, the goal of a training program is to improve health, physical ability, or both. Achieving the **right balance of training and recovery** ensures progress, while too much or too little training limits results.

Optimal Training

In this state, exercises and activities are performed in the correct "dose." After a workout, the body recovers, adapts, and grows stronger. With proper rest, nutrition, and healthy habits, fitness steadily improves and performance is sustained.

Overtraining

Overtraining occurs when the body is pushed beyond what it can recover from. In this state, the body **fails to return to baseline fitness** before the next workout begins. Occasional overtraining is rarely harmful if recovery time is extended.

However, repeated sessions without adequate recovery can lead to:

- **Overuse injuries**
- **Decline in performance**
- Loss of motivation and enjoyment in exercise

In fact, most common training-related injuries and setbacks are linked to chronic overtraining.

Undertraining

Undertraining happens when exercise is performed in amounts **too small to stimulate progress**. Recovery may be unnecessary or minimal because the body was not challenged enough to adapt.

- While **undertraining hinders improvement**, it can be appropriate in certain situations—such as for beginners, individuals recovering from an injury, or those with medical conditions.
- In those cases, lower intensity allows the body to gradually adapt and safely prepare for more vigorous training in the future.

Effective Training Programs

A well-designed program carefully "doses" exercise—enough to create improvement but not so much that it risks injury. For athletes and serious fitness enthusiasts, success depends on balancing exercise intensity with adequate rest and recovery.

As we age, training goals often shift toward **maintaining** levels of strength, endurance, and flexibility already achieved. Lifelong fitness provides a solid foundation that allows continued training at an optimal level, while avoiding the pitfalls of chronic overtraining.

Detraining

Detraining is the loss of fitness gains after stopping regular exercise. Measurable declines can occur in as little as **10–14 days** without training.

To prevent this:

- Aim to stay active, even at a reduced maintenance level.
- If normal routines aren't possible (travel, schedule changes, illness), substitute alternative activities. For example:
    - Walk instead of jog
    - Do bodyweight exercises if gym equipment isn't available

If an illness or injury forces complete inactivity, allow a **gradual return** once you resume training. A good rule of thumb:
→ Take **twice the amount of time you were inactive** to safely rebuild to your prior fitness level.
(Example: 3 weeks off = 6 weeks rebuilding period)

Recovery Between Sessions

Adequate recovery prevents overtraining. Rest allows:

- Replenishment of energy stores
- Muscle, joint, and ligament repair
- Restoration of cardiovascular function

Beginners usually gain fitness quickly, but as training experience increases, the risk of overtraining grows—making recovery time even more critical.

Periodization Principle

Periodization is a method that helps athletes and exercisers avoid overtraining. It states that:

- The **longer it takes to build** strength, endurance, flexibility, or sport-specific fitness,
- The **greater the eventual performance gains** and
- The **longer those gains can be sustained.**

With periodization, training is **planned over weeks, months, or even years**, with cycles of intensity, recovery, and progression.

Signs of Optimal Training

1. Steady strength gains (progress measured by RM principle).
2. Improved endurance or aerobic performance.
3. Better flexibility without pain.
4. Improved sports performance.
5. Little or no muscle soreness.
6. Lower resting heart rate.
7. Lower resting blood pressure.
8. Overall sense of well-being and motivation to exercise.

Signs of Overtraining

1. No progress or decline in strength (drop in working-RM).
2. No improvement or loss in aerobic endurance.
3. No improvement or decline in flexibility.
4. Decline in sports-specific skills or performance.
5. Persistent muscle soreness between sessions.
6. Elevated resting heart rate.
7. Elevated resting blood pressure.
8. Constant fatigue, lack of energy.
9. Loss of enthusiasm or motivation for workouts.
10. Difficulty sleeping.
11. Poor or declining appetite.
12. Frequent injuries (muscles, joints, bones).
13. Frequent or recurring illness.

Preventing Overtraining

1. Set clear, realistic fitness or performance goals.
2. Regularly monitor resting heart rate and blood pressure.
3. Maintain a balanced, nutritious diet.
4. Prioritize sleep and rest.
5. Keep a moderate lifestyle—limit alcohol and late nights.

Exercise Contraindications — Signs of Trouble

Stop exercising and seek medical help if you experience:

- Pain during or after exercise that does not resolve
- Popping or cracking sounds in a joint
- Swelling in a joint or muscle
- Stiffness lasting longer than 12 hours
- Reduced range of motion in a joint
- Noticeable strength loss in normal movements
- Shortness of breath or chest pain
- Unusual fatigue
- Extreme environmental conditions (temperature or humidity)

✅ **Summary**: Fitness success comes from finding the right balance—**not too much, not too little**. Avoid overtraining by allowing for recovery, use periodization to structure long-term goals, and stay consistent to prevent detraining. Above all, listen to your body and recognize early warning signs to keep progressing safely.

Adapted courtesy of Dr. Tom Gill.