Overview
Addicts rarely limit themselves to just one drug or a single compulsive behavior. An alcoholic can also abuse benzodiazepine downers and practice compulsive gambling.

OTHER DRUGS
The number of substances capable of altering a person's physical and mental balance seems endless. Inhalants, sports drugs, smart drugs – are all part of the mix.

Inhaling substances such as volatile solvents (e.g., aerosol sprays, metallic paints, butane lighter fluid), the nitrites (amyl, butyl, isobutyl), and anesthetics such as laughing gas (nitrous oxide), to change one's consciousness, is popular among younger age groups in places where psychoactive drugs are not readily available. These substances are cheap, easy to find, quick acting, and intense. They cause a giddiness, elevated mood, and reduced inhibitions but can also cause impulsiveness, irritability, dizziness, slurred speech, unsteady gait, lack of muscular coordination, and loss of unconsciousness.

Athletes use three class of drugs; therapeutic drugs, performance-enhancing drugs, and recreational/mood-altering drugs.
- Non-psychoactive drugs that relieve pain are O-T-C analgesics, some muscle relaxants, anti-inflammatories, and asthma medications. Psychoactive drugs that are used to relieve pain are primarily the opioids and skeletal muscle relaxants.
- Drugs that are used for a competitive advantage are primarily anabolic-androgenic steroids, human growth hormone, and stimulants such as methamphetamine and sometimes caffeine.
- Recreational drugs (e.g. alcohol, cocaine) are used by athletes for the same reasons they are used by the general public.

Miscellaneous drugs include such diverse substances as kava, herbal medicines, embalming fluid, nootropic ("smart") drugs, and even toad secretions.

OTHER ADDICTIONS
People become involved in compulsive nondrug behaviors for the same reasons people abuse drugs—to change their mood, forget their problems, get a rush, or to self-medicate. Heredity, environment and frequently practicing a compulsive behavior affect a person's susceptibility to developing a behavioral addiction. These behaviors include:
- Compulsive gambling: a new class of pathological compulsive gamblers in need of treatment has been created by the opportunities presented in gambling outlets, the acceptance of high stakes gambling presented as sport on television, and the widespread legality of gaming.
- Eating disorders include anorexia, bulimia, and binge-eating disorder. Obesity is epidemic in our society and has created a huge financial liability because of the many health problems associated with excessive weight.
- Other behavioral addictions include sexual addiction, compulsive shopping, hoarding, Internet compulsions, addiction to computer games, television, cell phone, tanning or body piercing, and exercise.

Abstinence is not an option for some behavioral addictions, such as an eating disorder, so treatment goals must aim towards a return to a normal level of activity.
Chapter 7 – OTHER DRUGS, OTHER ADDICTIONS

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Chapter 7 – OTHER DRUGS, OTHER ADDICTIONS

Extended Outline

I. INTRODUCTION (P. 7.2)
Addictions aren't limited to psychoactive drugs. Behavioral addictions like compulsive gambling, eating disorders and sexual addiction are also common among substance abusers.

OTHER DRUGS (7.2–7.29)
Inhalants are volatile liquids and sprays that produce many of the same psychoactive effects as street drugs.
Sports drugs comprise a variety of substances used to heal injuries, increase performance, or alter the athlete's state of consciousness.
Hard-to-classify drugs include animal extracts, herbal preparations, smart drugs, and nootropics.

II. INHALANTS (p. 7.2–7.11)
Inhalants, sometimes classified as deliriants, comprise a wide variety of substances. They are used for their stupefying, intoxicating, and occasionally psychedelic effects. There are three main groups of inhalants.

Volatile solvents (and aerosols) are hydrocarbons found in glues, gasoline, paint thinners, etc. Some aerosols are sprayed to produce a foggy mist and are inhaled for their gaseous propellants. Other volatile organic compounds are esters, ketones, alcohols, and glycols.
Volatile nitrites include amyl and butyl nitrite; they are also used recreationally.
Anesthetics. The most popular anesthetic is nitrous oxide (N2O), also known as “laughing gas.”

A. HISTORY (pp. 7.4–7.5)
Inhalant use dates as far back as 1400BC. The discovery of nitrous oxide (laughing gas) and chloroform in the late 1700s, and the rediscovery of ether in 1842, ushered in the modern era of inhalant abuse.
At the beginning of the twentieth century, petroleum refining created a new group of products, solvents, thinners, and glues that were inhaled for their intoxicating or euphoric effects. After World War II, the abuse of glue and metallic paints rose dramatically. Inhalants cause 700 to 1,200 deaths yearly in the U.S.

B. EPIDEMIOLOGY (p. 7.5)
Inhalants are popular because they are quick acting (7 to 10 seconds), cheap, and readily available especially to adolescents.

1. Worldwide
Abuse is most prevalent among adolescents although there are adults who abuse inhalants. Use among transients is particularly high. Internationally, abuse is found among the young, the poor, street children, recent immigrants to cities, and indigenous peoples. Gasoline is the most common inhalant worldwide. Many adolescents are unintentionally exposed to inhalant chemicals.

2. United States
Young people are more likely to abuse inhalants than are adults. Among 12- to 17-year-olds, in the U.S., females use slightly more than males. The number of abusers declines by two-thirds or more after the age of 25. Inhalant use in 8th, 10th, and 12th graders has gone down since 1995.

<table>
<thead>
<tr>
<th>Inhalant Lifetime Use</th>
<th>12–17 Yrs.</th>
<th>18–25 Yrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glue, shoe polish, or toluene</td>
<td>4.3%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Gasoline or lighter fluid</td>
<td>3.6%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Spray paints</td>
<td>3.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Cleaning fluids</td>
<td>2.2%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Amyl/butyl/cyclohexyl nitrites</td>
<td>1.6%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Lighter gases (butane, propane)</td>
<td>1.2%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Nitrous oxide</td>
<td>1.6%</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

C. METHODS OF INHALATION (pp. 7.5-7.6)

“Sniffing” breathing in the inhalant through the nose, directly from a container.

“Huffing” placing a solvent-soaked rag over, or in, one’s mouth or nose and inhaling.

“Bagging” placing the inhalant in a plastic bag and inhaling.

“Spraying” the inhalant directly into the nose or mouth.

“Balloons and crackers” inhaling from a balloon filled with nitrous oxide or another gas. “Crackers” refer to the pins or other “cracking” devices used to puncture the gas canisters.

Directly breathing pressurized inhalants into the mouth or nose exposes fragile membranes to the caustic effects of these substances. There is also a danger of freezing lung tissue due to the amount of pressure.

D. VOLATILE SOLVENTS (pp. 7.6-7.8)
These are mostly carbon- and hydrocarbon-based compounds that are volatile (turn to gas) at room temperature. They include gasoline, paints, air dusters,
paint thinners, lacquers, nail polish remover, spot removers, glues, lighter fluid, and a variety of aerosols. They are absorbed into the blood almost immediately after inhalation and quickly reach the heart, brain (within 7 to 10 seconds), liver, and other tissues.

1. Short-Term Effects
Inhalation produces a temporary stimulation, an elevated mood, and reduced inhibitions. Impulsiveness, excitement, and irritability also occur. Soon the depressive effects begin including dizziness, slurred speech, unsteady gait, and drowsiness.

High dose use can induce illusions, hallucinations, delusions, and a dreamy stupor that resembles alcohol intoxication. The intoxicated state may last minutes to an hour or more.

After prolonged inhalation, delirium with confusion, psychomotor clumsiness, emotional instability, impaired thinking, and coma have been reported.

- **Heart and vascular problems.** Arrhythmias and myocarditis are common with volatile solvents and can induce cardiac arrest.

- **Lung problems.** Solvents can cause pulmonary hypertension, respiratory distress, and lowered breathing capacity.

- **Liver problems.** Chronic exposure will cause some liver toxicity, which is usually reversible.

- **Neonatal problems.** Toluene can cause growth retardation, some odd facial features, and tremors.

2. Long-Term Effects
Chronic abuse is characterized by lack of coordination, inability to concentrate, impaired memory, weakness, disorientation, and weight loss. Some effects are irreversible though not progressive after abuse ceases. Chronic abuse of toluene can result in dementia, spastic movements, and other CNS dysfunctions.

Complications may result from the effect of the solvent or other toxic ingredients, such as lead which can lead to injuries of the brain, kidneys, bone marrow, and the lungs.

3. Psychiatric Effects
In the United States, 70% of surveyed inhalant abusers met the criteria for one or more lifetime mood, anxiety, or personality disorders and about half that percentage experienced a mood or anxiety disorder in the past year.

4. Warning Signs of Solvent Abuse
Though solvent abuse can be difficult to spot, there are various warning signs: headaches, chemical body odor, red, glassy or watery eyes, inflamed nose, nosebleeds, rashes, slurred speech, staggering gait, disorientation, etc.
5. Major Volatile Solvents

a. Toluene (methylbenzene)
The most abused solvent is also the most common – toluene. It is found in: glues, drying agents, solvents, thinners, paints, inks, and cleaning agents. Several studies indicate that toluene has an extremely high abuse potential. Chronic abuse can affect balance, hearing, and eyesight and most often, cause problems with neurological functions and cognitive abilities. In one study 65% of chronic abusers of the toluene in spray paint had neurological damage.

b. Trichloroethylene (TCE)
This common organic solvent is used in correction fluids, paints, metal degreasers, and spot removers. Occupationally, more than 3.5 million people are exposed to TCE. It causes overall depression effects and moderate hallucinations. The toxic effects are similar to those of toluene.

c. N-Hexane & Methyl Butyl Ketone (MBK)
Used as a solvent for glues and adhesives, there are reports of brain damage from occupational exposure as well as from deliberate recreational use. Recovery can take as long as three years in severe cases.

d. N-Hexane & Methyl Butyl Ketone (MBK)
This solvent for glues or adhesives can cause brain damage.

e. Alkanes
Alkanes are gases at room temperature, e.g., methane, ethane, butane, and propane. They are inhaled for their effects but can also cause cardiac arrhythmias and sudden death.

f. Gasoline
Gasoline sniffing is especially common among solvent abusers on American Indian reservations. Effects include insomnia, tremors, anorexia, and sometimes paralysis. When leaded gas is inhaled, symptoms can include hallucinations, convulsions, and the chronic irreversible effects of lead poisoning.

g. Alcohols
Ethanol, methanol, and isopropanol are the most commonly abused alcohol solvents. They can cause a mild high along with nausea, weakness, vomiting, headaches, and abdominal cramping.
E. VOLATILE NITRITES (p. 7.9)
Amyl nitrite was discovered in 1857 and was used to relieve angina (heart pains). Isoamyl, butyl, isobutyl, isopropyl, and most recently cyclohexyl nitrites followed. These inhalants dilate blood vessels, so the heart and the brain (as well as other tissues) receive more blood.

Effects begin within 7 to 10 seconds and last for 30 to 60 seconds. Inhalation creates a feeling of fullness in the head, a rush, mild euphoria, dizziness, and giddiness. Excessive abuse can cause passing out, oxygen deprivation, and temporary asphyxiation.

Nitrites, believed by some to enhance sexual activity, are sought by some gay males for their euphoric and physiological effects, which include relaxation of sphincter muscles.

Two-thirds of nitrite abusers use other inhalants, one-third abuse alcohol, and one-third abuse other drugs.

F. ANESTHETICS (pp. 7.9-7.11)
Anesthetics include nitrous oxide, halothane, ether, ethylene, ethyl chloride, and cyclopropane; only nitrous oxide is widely used.

1. Nitrous Oxide (N2O)
Nitrous oxide, discovered by Dr. Joseph Priestly in 1776, was popularized for both its anesthetic/analgesic and euphoric effects.

The rave and party scene that began in the 1990s renewed interest in nitrous oxide (N2O or “laughing gas”) principally because of its rapid onset and equally rapid dissolution of desired effects.

Most abusers purchase small pressurized metal or plastic canisters (e.g., Whip-It!® cartridges) of N2O. The gas is under great pressure so the rapid vaporization can cause freezing to oral, nasal, or lung tissues if inhaled directly. Transferring the gas to a balloon and then inhaling it is a common method of use.

Within 8 to 10 seconds of inhaling, the gas produces dizziness, giddiness, disorientation, silly laughter, a throbbing buzzing sound, and occasional visual hallucinations. It can also cause confusion, a headache, a sense that one is about to collapse or pass out, and impaired motor skills.

These feelings dissipate when the gas leaves the body. The maximum effect lasts two or three minutes. Cognitive functioning returns to normal within five minutes. Because N2O replaces oxygen in the blood, long-term exposure can cause central and peripheral nerve cell and brain cell damage due to a lack of oxygen.

When abused, there is a potential for seizures, cardiac arrhythmias, and asphyxiation leading to central/peripheral nerve damage or death. N2O abuse can lead to physical dependence in some users and is an addiction among some dentists and anesthesiologists.
2. Halothane

Halothane, first synthesized in 1951, is a prescription surgical anesthetic gas. Its effects are extremely rapid and powerful enough to induce a coma for surgery. Because of its limited availability, it is most often abused by anesthesiologists and hospital personnel.

G. DEPENDENCE (p. 7.11)

The DSM-IV-TR classifies inhalant-use disorders as inhalant dependence and inhalant abuse. Inhalant-induced disorders include intoxication, intoxication delirium, persisting dementia, psychotic disorder, mood disorder, and anxiety disorder. Though tolerance to volatile solvents will develop, the liability for physical and psychological dependence and addiction to these inhalants is less than that for other depressants. Treatment is difficult because most users are young and immature, and because continued use can cause cognitive impairments that hinder comprehension and recovery.

H. PREVENTION (p. 7.11)

Law enforcement officers, healthcare workers, teachers, and parents should be trained to recognize signs and symptoms of inhalant abuse.

III. SPORTS & DRUGS (p. 7.11-7.29)

A. INTRODUCTION (p. 7.11-7.13)

The World Anti-Doping Agency (WADA) serves as the watchdog for sporting endeavors. Public awareness and more effective sanctions resulted in the asterisk notations appearing after sports stars’ names indicating suspicion or conviction for use of performance-enhancing drugs.

The three categories of sports drugs are:

therapeutic drugs (analgesics, muscle relaxants, anti-inflammatories, and asthma meds);

performance-enhancing drugs (ergogenic drugs), such as steroids, growth hormones, blood-doping drugs, and stimulants; and

recreational and mood-altering drugs, both legal and illegal.

Some athletes perceive drugs (often illicit ones) as a quick way to put on pounds and muscle, to increase stamina, to get up for a game, to relieve pain, to increase confidence, or to remain competitive with other athletes who use drugs.

B. HISTORY (pp. 7.13-7.14)
Greek Olympic athletes in the third century B.C. ate large amounts of mushrooms or meat to improve their performance. By the 1800s, cyclists, swimmers, and other athletes used opium, morphine, cocaine, caffeine, nitroglycerin, and even low doses of strychnine (marathoners). For half a century, athletes have used a variety of substances and techniques to increase their endurance and strength: nitroglycerin, caffeine, amphetamines, strychnine, cocaine, heroin, steroids, blood doping, and erythropoietin (EPO).

1. International Politics
The Soviet weightlifting team used steroids in the 1952 Olympics and won medals. Steroid use was believed to be the way countries including the United States could maintain their competitive edge in international athletics and by 1958, steroids were available and abuse by athletes had become widespread. In 1999, the World Anti-Drug Agency (WADA) was formed to facilitate and implement a strong antidrug policy.

2. Commercialization of Sports
The commercialization of sports through television, product endorsements, huge salaries, and endless publicity has led many athletes and coaches to adopt an attitude of winning at any cost. Over the past 30 years, the social and financial pressures to win have driven some athletes to try performance-enhancing drugs.

3. Extent of Abuse
In the 1970s a large percentage of NFL players admitted to using amphetamines regularly.

In 2009, it was estimated that at least 150,000 junior high and high school students used steroids. Young athletes bulk up during high school and then go clean in college.

The actual extent of the problem is hard to determine because athletes are reluctant to admit use for fear of suspension or of becoming less desirable for product endorsements.

C. THERAPEUTIC DRUGS (pp. 7.14-7.16)
Drugs used in sports for specific medical problems are

- analgesics (painkillers) and anesthetics
- muscle relaxants
- anti-inflammatories
- asthma medications

1. Analgesics (painkillers) & Anesthetics
These drugs are normally used to deaden pain. They include topical anesthetics and systemic analgesic (e.g., aspirin or opioids). The most common opioids used in sports are hydrocodone, Demerol®, morphine, and Darvon®. The biggest danger associated with use results from their ability to block pain without repairing the damage; tissue dependence and compulsive use can also develop.

2. Muscle Relaxants
Muscle relaxants depress neural activity within skeletal muscles, e.g., carisoprodol (Soma®), methocarbamol, as well as benzodiazepines. They are occasionally abused for their mental effects, particularly Soma®. They can be used to enhance the effects of other drugs and, when taken in large doses, can cause giddiness, drowsiness, and relaxation. There have been overdoses and deaths from overuse. Benzodiazepines and barbiturates, also used as muscle relaxants, have a higher dependence liability.

3. Anti-Inflammatory Drugs
These drugs control inflammation and lessen pain and come in two classes. One class is nonsteroidal anti-inflammatory drugs (NSAIDs), e.g., aspirin. The other is corticosteroids, such as cortisone and Prednisone®. Side effects from corticosteroids are a significant consideration. Prolonged use can cause water retention, bone thinning, muscle and tendon weakness, etc. Psychoactive effects are minimal at low doses, but severe psychosis results from excessive high-dose use.

4. Asthma Medications (beta2 agonists)
Asthma affects 10% of the general population and is aggravated by heavy exercise. A lesser condition, exercise-induced asthma (EIA), has been identified. The incidence of EIA is 11% to 23% in athletes. Asthma is widespread in athletics and certain asthma medications are permissible. Asthma medications like ephedrine are stimulants and are banned by most sporting organizations. These drugs can slightly increase oxygen intake by bronchodilation.

D. ANABOLIC STEROIDS & OTHER PERFORMANCE-ENHANCING (ERGOGENIC) DRUGS (pp. 7.16-7.19)
Most performance-enhancing drugs, substances, and techniques are banned by all sports-governing bodies.

1. Anabolic-Androgenic Steroids (AAS or “roids”)
The most abused performance-enhancing drugs, anabolic-androgenic steroids (AASs), are derived from the male hormone testosterone or synthesized. The benefits include increased body weight, lean muscle mass, muscular strength, and, to a lesser extent, stamina. Psychologically, AASs increase aggressiveness
and confidence. Some high school and college students use AASs strictly to enhance personal appearance.

**Patterns of Use.** AAS users may take 20 to 200 times the clinically prescribed daily dosage. Some athletes practice steroid stacking by using three or more kinds of oral or injectable steroids and alternating cycles of use and nonuse. Cycling steroids involves taking them for a four- to 18-week period during intensive training, stopping for several weeks or months before beginning another cycle.

**Physical Side Effects.** A bloated appearance, ruptured tendons and damaged ligaments due to increased muscle strength. Long-term use in males lowers testosterone production causing feminine characteristics (e.g., swelling breasts, smaller sex organs) to develop.

Females show increased facial hair, decreased breast size, lowered voice, and clitoral enlargement as a result of long term use. Many of these effects are irreversible. In both men and women, severe cystic acne is common.

Although AASs can be taken orally, by patch, as a topical gel, or via an implant, up to 99% of “roids” are injected, making users susceptible to infections. Cardiovascular problems include hypertension, thrombosis, and cardiomyopathy.

Studies have linked AASs to cancer.

**Mental & Emotional Effects.** AASs do make users feel more confident and aggressive, but as use continues emotional balance often swings from confidence to aggressiveness, to emotional instability, to rage, to hypomania, to depression, to psychotic symptoms, and to paranoia. This condition, referred to as “roid rage” abates when use is stopped.

**Compulsive Use & Addiction.** Unlike most psychoactive drugs, AASs are not generally used for their immediate psychoactive effect but rather for longer-term gains. About one-third of users initially experience a sense of euphoria or well-being that contributes to their continued use and abuse of steroids. Distinct withdrawal symptoms indicative of dependence occur including craving, fatigue, depression, restlessness, insomnia, headaches, and a lack of sexual drive.

**Do Steroids Work?** In 1984, the American College of Sports Medicine stated that steroids can increase muscle mass and strength when combined with diet and exercise.

**Supply & Cost.** Athletes obtain steroids on the black market (through gyms, friends, Internet, or mail-order companies). Serious users spend $200 to $400 per week on anabolic steroids and other strength drugs - the cost of a single cycle can cost thousands of dollars. Some professional athletes spend $20,000 to $30,000 per year.

**Evaluation & Testing.** Visible signs of AAS abuse include: overdeveloped muscles, bloating, severe acne, and unexplained aggression. Blood and urine testing and testing for changes in body chemistry are becoming increasingly more sophisticated as abusers try to outwit the testing agencies. After revelations by players such as Jose Canseco, Major League Baseball instituted
comprehensive drug testing. The National Football League enforced penalties for use long before the Major League Baseball agreement.

F. HUMAN GROWTH HORMONE (HGH) (pp. 2.19-2.20)
Human growth hormone is a polypeptide hormone produced by the pituitary gland that stimulates growth in children. It also increases muscle mass, skin thickness, and connective tissues in muscles. Some studies have found that it has little effect on muscle development in those with normal HGH production. Until recently there were no conclusive tests for HGH use, there are now tests that can detect use for 10 to 14 days.
Side effects include gigantism, abnormal bone growth, and metabolic or endocrine disorders. Abuse is also associated with cardiovascular disease, decreased sexual desire, and impotence. HGH can decrease life span by up to 20 years.

E. STIMULANTS (pp. 7.20-7.21)
In some sports such as football, the use of stimulants is more widespread than the use of steroids. Players begin using CNS stimulants as performance boosters but prolonged use becomes self-defeating. The IOC and every other sports organizations banned the use of any kind of amphetamine and most other strong stimulants.

1. Amphetamines (amphetamine & methamphetamine)
Much of the increase in performance comes from the focusing effects of amphetamines and the increase in aggressiveness rather than specific muscular changes.
Tolerance to amphetamines develops rapidly, and the beneficial effects of the drug diminish. Amphetamines can be detected up to four days after use. Heart and blood pressure problems, exhaustion, and malnutrition are common with prolonged use.

2. Caffeine
Energy drinks containing caffeine have become popular with athletes and adolescents. Caffeine increases wakefulness and mental alertness. It also slightly increases endurance during extended exercise and increases muscle contraction. Side effects include increased digestive secretions, increased urination and dehydration.
The IOC limits caffeine to 12 mg/mL—about three strong cups—just before competition.

3. Ephedra (ma huang) & Ephedrine
Ephedra and ephedrine were formerly found in hundreds of legal OTC medications. They are used to increase strength and endurance and/or promote weight loss. When taken in excess, they can cause anxiety,
headaches, high blood pressure, cardiac arrhythmia, poor digestion, and overheating. Ephedrine is banned by the NFL, the IOC, and the NCAA.

4. Tobacco
The nicotine in cigarettes is a mild stimulant, but it does little for performance except perhaps to increase alertness. Smoking reduces lung capacity. Smokeless tobacco (spit tobacco) has many of the same effects as cigarettes but does not reduce lung capacity. Chewing tobacco, a mainstay of baseball players for years, fell from favor after a number of players spoke out and revealed the health problems caused by their habit. In 1994, the NCAA banned the use of all tobacco products during NCAA-sanctioned events.

G. OTHER PERFORMANCE ENHANCING DRUGS & TECHNIQUES
(p. 7.21-7.25)
1. Androstenedione & Dehydroepiandrosterone (DHEA)
Androstenedione, a direct precursor in the biosynthesis of testosterone, is produced by all mammals. Athletes such as Mark McGuire have abused it to increase muscle mass.
DHEA, a somewhat similar hormone, has been tried in an attempt to increase testosterone. OTC sales were banned in 1985.

2. Beta Blockers (propranolol [Inderol®] & atenolol [Tenormin®])
Beta blockers are normally prescribed to lower blood pressure, decrease heart rate, and prevent arrhythmias. Their ability to calm the brain and tremors makes them attractive to some athletes involved in riflery, archery, diving, ski jumping, biathlon, and pentathlon. Beta blockers are banned by the IOC and most athletic organizations.

3. Erythropoietin (EPO)
EPO is a blood oxygen booster that stimulates bone marrow to produce more red blood cells to carry oxygen to muscles; it is used in endurance sports like cycling. There are tests for EPO analogues. The dangers associated with EPO use include thickening of the blood, which can lead to clots resulting in stroke and heart attacks. EPO is banned by the NCAA, the USOC, and most every other sport.

4. Blood Doping
Blood doping increases endurance by transfusing extra blood into the body to boost the number of red blood cells available to carry oxygen. The athlete’s own blood is taken, stored and then reinfused five or six weeks later. Blood doping is used in endurance sports. Several expensive tests exist to detect blood doping.

5. Herbal Medicines
Herbs, animal extracts, vitamins, minerals, proteins, etc., have been used by athletes to improve their competitive edge. Often, some of the ingredients not listed on a product trigger a positive test for banned substances.
Creatine is an amino acid that is created naturally in the body and found in fish and meat. Creatine supplements are legal and sold over the counter to benefit sprint disciplines, such as running, cycling, and many power sports.

6. Gamma-hydroxybutyrate (GHB)
This supplement was sold as a fat burner, an anabolic agent, a sleep aid, a muscle definer, and a psychedelic. It was used to reduce anabolic steroid water-weight gain and raised levels of HGH. Excess use can cause respiratory depression, amnesia, occasionally coma, and a dramatic slowing of the heart rate.

7. Soda Doping
Some athletes believe that ingesting alkaline salts (sodium bicarbonate) 30 minutes prior to exercise delays fatigue by decreasing the development of acidosis. It is somewhat effective for events of short duration rather than for endurance activities. Its use can cause diarrhea, and excess water retention.

9. Weight Loss
Despite the evidence that dehydration significantly diminishes performance, wrestlers, gymnasts, and jockeys will use diuretics, laxatives, exercise, fasting, self-induced vomiting, diet pills, amphetamines, tobacco, caffeine, and sweat off excess fluids in a sauna to make their competition weight. The NCAA recently changed training rules to counteract this unsafe practice.

Diuretics are used to lose water weight rapidly, to limit the bloating caused by steroids, and to avoid detection of illegal drugs. Excessive use of diuretics causes serious dehydration.
After a few months of continuous use, most diet pills and amphetamines lose their effectiveness and can be addicting.

9. Other Performance-Enhancing Drugs & Techniques
Adrenaline and amyl or isobutyl nitrite is taken by weightlifters just prior to competing to increase strength.
Bee pollen pellets are supposed to increase energy levels and performance. Most scientific studies, do not agree.
Calcium pangamate. This nonvitamin, also called “vitamin B15,” supposedly keeps muscle tissue better oxygenated. It is reportedly a carcinogen.
Cyproheptadine (Periactin®) is an antihistamine believed to cause weight gain and increase strength.
Darbepoetin (Aranesp) boosts the amount of oxygen in the blood. By 2002 a test was developed to detect it in urine.
Gene doping involves the non-therapeutic use of genes, genetic elements, and/or cells that have the capacity to enhance athletic performance.
**Human chorionic gonadotropin (HCG)** or tamoxifen is occasionally used after anabolic steroid treatment to try to restart the body's own testosterone production.

**Modafinil (Provigil®)** is a prescription drug that acts as a stimulant. It was thought to mask the use of THG in drug tests.

**Ornithine and arginine** are amino acids taken to increase muscle mass through the release of HGH. High doses can lead to kidney damage.

**Primagen** increases steroid production and is mainly used by European athletes.

**Vitamin B12** supposedly wards off illness and provides extra energy.

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**H. RECREATIONAL/MOOD-ALTERING USE OF DRUGS BY ATHLETES**

(pp. 7.25-7.27)

1. **Stimulants**
   The advantages and consequences associated with these drugs are the same for athletes as nonathletes.

2. **Sedative-Hypnotics**
   Benzodiazepines, barbiturates, and opioids are used as self-rewards for enduring the stress of performing. They also used as a tranquilizer to unwind after the excitement of competition or to counteract the effects of stimulants.

3. **Alcohol**
   Alcohol negatively affects reaction time, coordination, and balance. The NCAA specifically bans alcohol for rifle competition. The USOC does not ban it because it does not generally enhance performance. The problems with alcohol are connected to its excess use as a reward for performance. Alcohol is not tested for unless an athlete exhibits abuse problems.

4. **Marijuana**
   Marijuana hinders rather than helps performance because it lowers blood pressure, inhibits sweating, impairs the ability to follow a moving object, hinders the ability to do complex tasks, diminishes hand/eye coordination, and decreases oxygen because it is smoked.
   Marijuana is extremely fat-soluble and stays in the body for a long time, so impairment can persist for a day or two after casual use and longer after cessation of chronic use.
   Currently, the NCAA and the IOC ban all marijuana use for ethical and moral reasons rather than for performance reasons.

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**I. TESTING (pp. 7.26-7.27)**

Drug-testing programs are in place in every sports organization as well as in individual colleges. The NCAA tests at all NCAA championships and at postseason football bowl games and conduct year-round anabolic steroid testing programs. In a survey of NCAA schools, only 56% of the respondents had an alcohol/drug education program for student-athletes.
The World Antidoping Agency coordinates drug-testing programs, does research, creates educational programs, and publishes an annual list of banned substances. Each professional sports league (NFL, NHL, PGA, etc) has drug testing and drug use rules.

A. ETHICAL ISSUES (p. 7.27)
Drugs undermine the assumption of fair competition on which all sports rest, and they violate the very nature of sport. There is a real threat that the public will turn away from sports if they believe winning is based on access to the latest pharmacology to evade drug testing.

IV. MISCELLANEOUS DRUGS (pp. 7.27-7.29)
A. UNUSUAL SUBSTANCES (p. 328)

1. Camel Dung
Some Arab countries produce hashish by force-feeding ripe marijuana plants to camels. Their four-chambered stomachs convert the marijuana into hashish camel dung.

2. Embalming Fluid (formaldehyde)
Embalmimg fluid can be either inhaled for its depressant and psychedelic effects or used in the manufacture of other illicit drugs. Some abusers soak marijuana joints or cigarettes in the fluid before smoking. They are called “clickems” or “fry.”

3. Gasoline
There are records of people mixing gasoline with orange juice and drinking the concoction - in spite of the toxicity of leaded and unleaded gasoline.

4. Kava
The roots of the *Piper methysticin* plant are chewed or crushed into a soapy liquid and swallowed. This milky exudate of the root (kava) produces a drunken state, similar to that of alcohol, when used in large quantities. Kava is used as a relaxant and an antianxiety drug.

5. Kratom
At high doses, the leaves of this Southeast Asian tree are chewed to deliver opioid-like effects, inhibits smooth muscle contraction, and reduces pain. At low doses, it acts as a stimulant.

6. Raid® Hairspray & Lysol®
Abusers puncture the aerosol cans and swallow the liquid, mainly for its alcohol content. Recently, inner-city youths have been spraying Raid® onto marijuana and rolling it into a joint.

7. Sarpa Salpa
This fish, a species of bream found off the coasts of South Africa, Cyprus, and Malta, becomes toxic after eating a certain algae, if it is eaten by something higher on the food chain – a human for example, hallucinations can occur.

**8. Strychnine**
This poison is found in pesticides, lethal doses can cause muscular convulsions and death from asphyxia. It low doses, it causes stimulation, similar to methamphetamine.

**9. Toad Secretions (bufotenine)**
The *Bufo* genus of toads (Colorado River, Sonoran Desert, Cane, and others) secretes a psychedelic substance called bufotenine from pores located on the back of the neck.

**B. HERBAL PREPARATIONS & SMART DRUGS/DRINKS**
*(pp. 7.28-7.29)*

**1. Herbal Preparations**
For thousands of years, herbal preparations and other natural “cures” were the only medicines available. Their effectiveness was real and highly valued, but some of those curative effects came from the spiritual power given the substances by healers and medicine men and the power of faith.

As the science of pharmacology advanced faith in traditional herbal medicines diminished. Today herbal medicine is making a comeback in the West. The healing properties of some products have not been rigorously tested to deliver the results claimed by the marketing materials. There are other concerns that some preparations contain prescription drugs, e.g., Valium® or substances that are banned in sports competitions or employment.

**2. Smart Drugs/Drinks**
“Smart drugs” are drugs, nutrients, drinks, vitamins, extracts, and herbal potions (e.g., ginseng, gingko biloba, and caffeine) that manufacturers believe boost intelligence, improve memory, sharpen attention, increase concentration, detoxify the body, and energize the user. These are promoted as natural, healthy, and legal substitutes for club drugs or other illegal substances. Trade names include: Cloud 9,® Brain Tonix,® and Brain Booster®.

**3. Nootropics**
Some smart drugs and drinks contain combinations of medications usually prescribed for Parkinsonism, Alzheimer’s disease, or dementia. It is believed that these drugs effectively rebalance the brain after abusing drugs. There are also claims that they slow or reverse the aging process.

There is a proposal to classify these drugs as nootropics. Substances in this class would include those with low toxicity that improve learning, memory consolidation, and memory retrieval and are absent of any CNS effects.

**OTHER ADDICTIONS**

**V. COMPULSIVE BEHAVIORS (PP. 7.29-7.31)**
Compulsive gambling, overeating, compulsive buying/shopping, obsessive sexual behavior, Internet use, and other electronic addictions and game playing, along with pathological lying, shoplifting, hair pulling/twisting, and fire setting—all offer opportunities for repetitive compulsive behaviors. The hallmark of impulse-control disorders, as listed in the DSM-IV-TR diagnostic manual, is a failure to resist an impulse that is harmful to the individual or others but often starts out as pleasurable. People engage in compulsive behaviors for the same reasons they engage in compulsive drug use. Compulsion, tolerance, withdrawal, abuse, denial, and relapse occur with compulsive behavioral addictions. Addictive behaviors alter brain chemistry in much the same ways as psychoactive drugs do.

VI. HEREDITY, ENVIRONMENT & COMPULSIVE BEHAVIORS (PP. 7.31-7.32)
Compulsive behaviors can be triggered by genetic predisposition, by environmental stressors, and by the repetitive behavior itself. Increased dopamine levels in compulsive gamblers, overeaters, and shoppers suggest a common biochemical thread.

A. HEREDITY (p. 7.31-7.32)
Twin and nuclear family studies show a connection between heredity and compulsive behaviors that do not involve psychoactive drugs. A much higher-than-normal percentage of twins born to obese parents, but subsequently raised in different households, ended up obese. The researchers also found that “shared environmental pressures were not significant” in affecting the twins’ weight gain.

More than 90 different genes were identified as having an influence on an individual’s susceptibility to addictions.
Researchers suggest a genetic basis (e.g., DRD2 A1 allele gene) not only for alcoholism, but also for drug dependence and behavioral addictions. They found that even though this marker gene appears in only 19% to 21% of nonalcoholic, nonaddicted, and noncompulsive subjects, it exists in:

- 69% of severe alcoholics;
- 45% of compulsive overeaters;
- 48% of smokers;
- 52% of cocaine addicts;
- 51% of pathological gamblers.

Carriers of this A1 allele gene have a deficiency of dopamine receptors in the reward/control pathway making them more likely to seek out substances and activities that release excess dopamine.
There is more than one marker gene for compulsive drug use and compulsive behaviors.
B. ENVIRONMENT (p. 7.32)
Environment affects behavioral addictions through:
- Availability - state lotteries, slot and poker machines, and Indian gaming casinos;
- fast-food restaurants, lack of physical activity, an abundance of fats and sugars in processed food products;
- sex in the media and Internet pornography;
- shopping networks, a society focused on instant gratification.

C. PRACTICING COMPULSIVE BEHAVIORS (p. 7.32)
It is also easy to understand how engaging in the activity can lead to compulsive behavior.
- Having a big win while gambling imprints the brain with expectations of always winning.
- Excessive consumption of food resets brain chemistry so a person eats to change mood rather than sustain life.
- Compulsive use of pornography diminishes the importance or interest in normal sexual/emotional relationships.

VII. COMPULSIVE GAMBLING (P. 7.32-7.42)
U.S. gambling revenues will top $135 billion by 2013; worldwide revenues will top $500 billion although the recent economic woes have slowed the growth. Gambling is defined by Gamblers Anonymous (GA) as,

“Any betting or wagering, for self or others, whether for money or not, no matter how slight or insignificant, where the outcome is uncertain or depends upon chance or skill constitutes gambling.”

Gambling includes:
- poker, blackjack, craps, roulette, and pai gow;
- slot machines and video poker machines;
- horse and dog races;
- bingo and raffles;
- state-run lotteries and keno games;
- sports betting, both legal and illegal;
- stock speculation such as day trading;
- Internet gambling;

The numbers of gambling opportunities - mostly legal, are creating and/or enabling problem and pathological gamblers.

A. HISTORY (pp. 7.33-7.35)
1. Gambling in Ancient Civilizations
Evidence of gambling dates back to 40,000 B.C. with the discovery of astragali, four-sided rolling bones from the ankles of small animals. Roman soldiers cast lots for the robes worn at the Crucifixion; the knights of the Crusade gambled at dice. Along with the proliferation of gambling came restrictions against it.
2. Gambling in America

Three waves of gambling swept the United States. The first, from the 1600s until the mid-1800s, involved lotteries.

The second began at the end of the Civil War in 1865 when riverboat gambling, saloon card games, roulette wheels, and dice games were introduced.

After gambling was legalized in Nevada and 21 states opened pari mutuel racetracks other benchmarks followed: New Hampshire rediscovered the state lottery in 1964; Atlantic City opened to gambling; lotteries began in 38 states; off-track betting, riverboat casinos; and finally, the legalization of gambling casinos on American Indian lands completed this legitimization.

Gambling has become a legal, respectable pastime. By 2009 more than 233 of the 562 American Indian tribes in the United States owned 423 gambling facilities in 28 states. State-supported lotteries were established through the 1980s and 1990s to supplement tax dollars and generate jobs.

The growth in gambling has been as explosive worldwide. Macau, China is slated to overtake Las Vegas in gambling revenues. Other nations are following the U.S lead and increasing their stake in gambling.

B. POLITICS OF GAMBLING (7.35)

Those who favor gaming establishments argue that they attract tourists to the community, create jobs and generate tax revenues. However, each dollar spent gambling is a dollar that is only partly recycled into the local community. This money is referred to as “cannibalized dollars.”

Most politicians support gambling because the revenue it generates increases state income without raising taxes.

C. ONLINE GAMBLING (7.35)

Online gambling exploded in the 1990s and continues to grow. In October 2006, Congress passed a law criminalizing the processing of funds by banks and credit card companies. (In 2011, a number of online gambling associations were prosecuted for laundering money. See Chapter 1)

D. PROBLEM & PATHOLOGICAL GAMBLING (PP. 7.35-7.39)

Problem gambling is defined as gambling behavior that causes problems in any part of one’s life.

Pathological gambling adds the element of continual and significant disruption of most areas of one’s life.

At-risk gambling applies to those who are susceptible to betting their way into problem or pathological gambling.

Compulsive gamblers can be either problem or pathological gamblers.
The only differences between problem and pathological gambling involve time and money. The average problem gambler spends $3,000 per year, the average pathological gambler loses at least $11,000 per year. In the early 2000s, most states had yet to establish prevention or treatment programs nor had they adequately studied the consequences of compulsive gambling. As the number of gambling opportunities/outlets increased, states began to fund gambling treatment. This is appropriate because the majority of state and casino gambling income is derived from problem, and pathological gamblers.

E. EPIDEMIOLOGY (pp. 7.36-7.37)
The proliferation of gambling outlets has a dramatic effect on the number of pathological and problem gamblers. An earlier meta-analysis study estimated that 125 million U.S. adults gamble and, of those, 2.2 million are pathological gamblers and 5.3 million are problem gamblers. Another study found that about 15 million were at risk for problem gambling. 1.1 million adolescents are pathological gamblers. Male compulsive gamblers outnumber female compulsive gamblers 2 or 3 to 1. The proliferation of slot machines may change that ratio because more women play slots.

Pathological gamblers (25% to 63% of gamblers) are likely to have other addictions or disorders; 50% have a mood disorder, 41% have an anxiety disorder, and 60% have a personality disorder. Over the past 25 years the 65 + demographic shows the greatest percentage of growth in gambling. College students have a higher rate of pathological/problem gambling than the general population.

F. CHARACTERISTICS (pp. 7.37-7.39)
There are several other types of gamblers.

Recreational/social gamblers. These players are able to separate gambling from the rest of their lives.

Professional gamblers. It’s a business for this group, losses are part of the game and some individuals are able to make a living gambling.

Antisocial gamblers. These individuals have no conscience (loaded dice, marked cards) and will steal to gamble.

There are two subtypes of pathological or problem gamblers: the action-seeker and the escape-seeker (although even action gamblers seek escape).

Action-seeking gamblers are frenetic, excited, and always in action.

Escape-seeking gamblers are often drawn to slot machines and poker machines (they are also called machine gamblers). They just want to be left alone.

Like other addictions, pathological gambling is a progressive disorder requiring more gambling and larger bets.
Symptoms of persistent recurrent pathological gambling are:

- preoccupation with gambling;
- gambling with more and more money;
- repeated unsuccessful efforts to control, cut back, or stop gambling;
- restlessness and irritability when attempting to control, cut back, or stop.

A pathological gambler passes through four phases.

1. Winning Phase
Initially gambling is recreational and pleasurable. For both action and escape gamblers, the goal is to stay in action and escape reality for as long as possible, winning is secondary.

The winning phase can last one year or 10 years as skills improve. A winning phase doesn’t exist for machine gamblers. Early on, for 70% to 80% of both action and escape compulsive gamblers, a big win fueled the craving to gamble. A gambler with a susceptibility to compulsion begins to devote more time and wager more money. They remember their wins and minimize their losses.

2. Losing Phase
A losing phase often starts with a losing streak that due simply to the laws of chance. Gamblers try to recoup their losses, and begin chasing their money and making bad decisions. Financial losses start to accelerate.

3. Desperation Phase
In the end stages, gamblers often lose jobs, max out credit cards, borrow from friends and family, and some turn to illegal activities. Gamblers often bankrupt their families and suffer divorce or separation because of deteriorating family relationships. Embezzlement and theft become more common.

4. Giving-Up Phase
At this stage pathological gamblers stop thinking they will win it all back, they just want to stay in action so they don’t have to think. Gamblers experience elated moods when they win and mania, depression, panic attacks, insomnia, health problems, and suicidal thoughts or actual attempts when they lose.

G. UNDERSTANDING THE COMPULSIVE GAMBLER (p. 7.39)
To a gambler, “It’s not about the money.” Compulsive gamblers want the rush or zoning out from a large win more than they want the money. The value of a win is that it allows the gambler to continue gambling.

Gambling is a binge activity—gamblers will continue gambling until their access to money is gone, until the game ends, or until they are arrested.

H. MAGICAL THINKING & THE GAMBLER’S FALLACY (pp. 7.40-7.41)
Cognitive distortions are common to compulsive gamblers; researchers believe that about 70% of their gambling related thoughts are illogical. Magical thinking, the main cognitive distortion, is the belief that thinking equates with doing. It ignores cause and effect and denies the validity of the laws of chance. The "gambler's fallacy" is the belief that one can control random events such as a slot machine. Slot machines are designed and programmed to take advantage of this fallacy with "almost wins" encouraging the gambler to continue play. It takes an average of three and a half years of steady play to slide from social gambling into pathological gambling.

1. Recovery

Recovery comes from correcting those cognitive distortions. It also comes from standard addiction treatment, recognizing that egotism and a sense of entitlement are much stronger in compulsive gamblers.

I. GAMBLERS ANONYMOUS (pp. 341-342)

Gamblers Anonymous, a 12-step recovery group has chapters in every state and in 45 countries worldwide. It was formed in 1957 on the model of Alcoholics Anonymous. Its basic tenet is to allow problem compulsive and pathological gamblers to help themselves by developing spirituality and ultimately changing the way they live.

VIII. COMPULSIVE SHOPPING/BUYING & HOARDING (PP. 7.42-7.43)

Handling money in an irresponsible manner is characteristic of almost any addict. Compulsive shoppers describe the relief from depression and the subsequent high when buying as similar to the high from cocaine. The highest level of excitement and pleasure for compulsive shoppers comes just before they say, "I'll take it!"

Studies put the number of compulsive shoppers somewhere between 2% and 10%. Often, compulsive shoppers enter a store without anything specific in mind and frequently purchase on impulse. Debt counseling is just a stopgap measure because the roots of the condition such as depression (very common) have not been addressed.

Attending a self-help group for support is an alternative to shopping. There are more than 400 Debtors Anonymous groups in the United States.

A. Hoarding

Collecting, accumulating, and hoarding are offshoots of compulsive shopping. A hoarder’s worth and self-esteem come from objects and their ability to acquire them. Those that hoard relatively valueless objects: newspapers, plastic utensils, stuffed animals and in some cases, spoiled food and trash usually have deeply rooted psychological problems.
IX. EATING DISORDERS (PP. 7.43-7.52)

A. OVERVIEW (7.43-7.46)
In World War II, 40% of the Army recruits were rejected because they were too small to go into combat with a heavy pack. At the end of the war the government launched the school lunch program to make children bigger and stronger, cheese, milk, bread and other heavy foods were provided through the program. It was too successful. Today approximately 27% of Army recruits are rejected because they exceed the weight requirements.

In 2008, 33.8% of U.S. adults were considered obese compared with just 15% in 1980, when those who are overweight are included, that percentage climbs to 66%. Eating disorders include anorexia, bulimia, and binge eating.

The World Health Organization estimates that 300 million people worldwide are obese and 750 million are overweight.

The concept of beauty has changed over the centuries. A thin slight frame was once a sign of poverty and lower class status, plumpness was a sign of wealth and upper-class status. Today, the average fashion model is 5’11” and weighs 117 pounds. The average woman is 5’4 and weighs 140 to 164 pounds. Americans spend $40 to $100 billion per year on diet programs and products.

The DSM-IV-TR classifies eating disorders as follows:

**Anorexia nervosa** is an addiction to weight loss, fasting, and minimization of body size.

**Bulimia nervosa** is an addiction to binge eating followed by self-induced vomiting, fasting, or excessive exercise.

**Binge-eating disorder** is defined as “bulimia without vomiting,”

**Compulsive overeaters** (the largest group) are overweight or obese.

Eating disorders involve a sense of powerlessness over food, obsessive thoughts of food, use of food to escape undesirable feelings, secretive behavior, guilt, denial, and overeating or fasting regardless of the harm done.

B. GENETIC, ENVIRONMENTAL & NEUROCHEMICAL FACTORS (pp. 246-247)
Evidence suggests that eating disorders are a combination of genetic, neurochemical, psychodevelopmental, and sociocultural factors.

1. Genetic Factors
Genes having the greatest impact are those that affect hunger, satiety, and food intake rather than metabolic rates. High-fat, high-sugar diets decrease the number of dopamine receptors (down-regulation) which increases craving, especially if there is a genetic anomaly.

2. Environmental Factors
In a restrictive food environment where feast and famine are cyclical, the body’s homeostatic control system efficiently regulates body weight. In a society where rich food is readily available, the natural subconscious control of appetite and metabolism often becomes ineffective. It is necessary to take cognitive control of one’s eating habits.

3. Neurochemical Factors
Compulsive overeating could be called “food addiction because certain high energy foods (fat, sugar) intensify craving and promote eating disorders. Consider how the concentration of drugs through refinement and synthesis increased their addictive liability over the centuries and then compare that with how the concentration of high-calorie foods (e.g., refined carbohydrates), increased compulsive overeating. Food manufacturers are aware of this distortion of normal mechanisms and often add sugar and other refined carbohydrates to satisfy this craving.

C. MEDICAL CONSEQUENCES OF OBESITY (p. 3.47)
Medical conditions associated with obesity include high blood pressure, high cholesterol, circulatory problems, heart disease, type II diabetes, sleep apnea, and a 15% to 60% greater risk of cancer. Being 80 or more pounds overweight shortens a person’s life span by up to 12 years.

1. Diabetes.
Diabetes has become epidemic in the United States and is spreading to other countries. About 8% of the population had diabetes in 2009, predictions indicate the number will double in 25 years. Adult onset type II diabetes is caused by overeating and consuming too many refined carbohydrates.

D. PSYCHOLOGICAL PROBLEMS & CO-OCCURRING DISORDERS (pp. 7.47-7.48)
Depression, anxiety, substance abuse, personality disorders, a negative body image, and poor self esteem are common among people with eating disorders. Abuse of tobacco, alcohol, amphetamines, prescription drugs, or over-the-counter substances is frequently found in 12% to 18% of those with anorexia, and 30% and 70% of those with bulimia.

The brain does not differentiate between the euphoric feelings generated by bingeing and those generated by fasting. High levels of sugar have been found to reduce the levels of corticosteroids, the body’s stress hormones.

E. EPIDEMIOLOGY OF ANOREXIA, BULIMIA & BINGE-EATING DISORDERS (p. 7.48)
More than half of all eating disorders go undetected even though most eating disorders begin in adolescence, are chronic, and affect women disproportionately; 90% to 95% of anorectics and bulimics are women.
Anorexia and bulimia are more common in developed nations with an abundance of food. Recent studies of schoolgirls in Cairo, Egypt, found rates for anorexia and bulimia about the same as those in England.

In recent years, the age of onset of anorexia nervosa has dropped from as low as 13 years old to nine. Children starve themselves, use diuretics and laxatives, and throw up to stay thin. It is a growing obsession in modern society.

In the United States, approximately 20% of college women have an eating disorder.

F. ANOREXIA NERVOSA (pp. 7.48-7.49)

Anorexia, an addiction to weight loss, fasting, and minimization was practiced as far back as the Middle Ages and known as the "holy anorexia."

1. Definition

Anorexia could be considered “weight phobia.”

- **Anorexia restrictors** continue to lose weight by limiting their food intake through dieting, fasting, the use of amphetamines and other diet pills, and excessive exercise.
- **Binge-eating/purging types** promote weight loss by purging using diuretics, laxatives, enemas, or self-induced vomiting.

People afflicted with anorexia nervosa have a distorted perception of their body’s shape and size, avoid weight gain and eventually lose from 15% to 60% of their weight.

2. Causes

Young female anorexics may have a tendency to perfectionism but they lack self-esteem and a sense of self. A refusal to eat gives them a measure of control over their lives. Additional characteristics of anorexia include anorexic delusions and compulsions. One theory suggests that what initially began as a strict diet, changes brain chemistry after three months and feeds the delusions and compulsion.

3. Effects

Semistarvation strains all of the body’s systems, especially the heart, liver, and brain. Vomiting causes dehydration and depletes electrolytes which can lead to arrhythmias and cardiac arrest. Estrogen levels in females and testosterone levels in males decrease.

Other symptoms are osteoporosis, sterility, miscarriage, and birth defects. Death rates among anorexic patients are estimated at 4% to 20%. Congestive heart failure and suicide are the most frequent causes of death.

G. BULIMIA NERVOSA (pp. 7.49-7.50)

1. Definition

Bulimia is characterized by eating large amounts of food in one sitting (bingeing) followed by inappropriate methods of ridding the body of the food. Methods include self-induced vomiting (used by 80% to 90% of bulimics), diuretics or laxatives, fasting, and excessive exercise.
People with bulimia often are ashamed of their behavior, eat secretly, and consume food rapidly. Those with the disorder often are within a few pounds of normal weight.

During binge episodes there may be a feeling of frenzy, of not being in control, and a sense of being disconnected from one’s surroundings.

2. Causes
Causes include environmental/social pressures to be slim and the desire to be perfect. The biochemical changes involved with bulimia can make the disorder self-perpetuating.

3. Effects
Frequent vomiting creates the risk of stomach acid burns to the esophagus, throat, and the tooth enamel (which can be permanently eaten away by acid). A dental professional is often the first to spot bulimic activity. Heart problems, such as arrhythmias, can develop as can electrolyte imbalances and irregular menstrual periods.

Other problems include a greater liability for alcohol/drug abuse, a high rate of depression, and a greater risk of suicide. Psychological effects include loneliness and self-imposed isolation.

H. BINGE-EATING DISORDER (including compulsive overeating) 
(pp. 7.50-7.51)

For the first time in history, there are as many people overweight as underweight, about 1.1 billion of each in a worldwide population of almost 7 billion.

1. Definition
Binge-eating disorder is marked by recurrent episodes of binge eating without vomiting, laxative use, or other compensatory activities. Extreme weight gain is often a consequence. A pattern of frequent eating and snacking over a period of several hours is a symptom of this condition.

People eat in response to emotional states rather than to true hunger signals. They believe that they cannot control the amount eaten, the pace of eating, and the kind of food eaten. They will stop only when it becomes painfully uncomfortable.

2. Causes
Research suggests that neurochemical changes to the stop switch elevates overeating to binge eating. Food is often used to modify emotions, especially depression. Weight gain may increase stress, guilt, and depression, perpetuating the overeating cycle.

I. TREATMENT & SUPPORT GROUPS (pp. 7.51-7.52)

60% of overweight Americans turn to one or more of the hundreds of diet books, magazine articles, and more than a half dozen types of surgery (e.g., lap band gastric bypass). Support groups range from commercial ventures like TOPS® (Take Off Pounds Sensibly), Weight Watchers®, and Jenny Craig® to self-
help 12-step groups like Overeaters Anonymous, Food Addicts Anonymous, and GreySheeters Anonymous. Unless children learn good eating habits when they are young, maintaining a normal healthy weight become a lifetime process.

**X. SEXUAL ADDICTION (PP. 7.52-7.54)**

The porn/adult entertainment industry is estimated to generate more than $100 billion per year worldwide. 14 million the United States and 25 billion each in China and South Korea. As of 2011 there were more than 100,000 pornographic sites on the Internet, visited regularly by 72 million worldwide.

**A. DEFINITION (pp. 2.52-2.54)**

Sexual addiction is marked by sexual behavior over which the addict has little control. Sexual addiction can include masturbation and pornography (the most frequent behaviors) along with serial affairs, phone sex, fetishes, and frequent visits to topless bars and strip shows. The anonymity of the Internet feeds into traits found in many sex addicts. Many use chat rooms and message boards to find sex partners. Collateral addictions include love addictions (the compulsion to fall in love and be in love) and relationship addictions. The object of a sexual addiction can be pursuit of the pleasure and/or a desire to subdue pain or anxiety. There is a lack of control over the behavior, a continuation of the behavior despite adverse consequences, and an obsession with doing, planning to do, or simply thinking about the behavior.

The incidence of sexual addiction in some studies is 3% to 6% of the population. 80% of sex addicts are male.

**B. EFFECTS & SIDE EFFECTS (p. 7.54)**

Whether it’s for the high or as a way to cope with depression, anxiety, stress, solitude, or low self-worth, compulsive sexual behavior conditions the body to seek the release of pleasure-giving neurotransmitters. Usually there is a culminating sexual event (e.g., exposure, rape, or molestation) and an orgasm, over which the addict has virtually no control. The event is often followed by remorse, guilt, fear of discovery, and resolutions to stop the behavior.

**XI. ELECTRONIC ADDICTIONS (PP. 7.54-7.58)**

All forms of electronic media have addicting qualities.

**A. THE INTERNET (p. 7.55)**

The Internet was proposed in 1989 by a British-born computer scientist, Tim Berners-Lee. As of 2010 more than 2 billion people worldwide were connected. Besides ease of use and anonymity, the Internet is inexpensive, convenient, controllable, validating (it doesn’t criticize), rewarding, and escapist.
Symptoms of Internet addiction include feeling irritable and anxious when not online, spending more time online; neglecting responsibilities because of online activities, etc.

Some people experience a stimulant-like rush when online, others describe a feeling of tranquility by their quiet, isolated, online experience. Cybersexual addiction, computer relationship addiction, Internet compulsions, information addiction, and computer games addiction are the result of Internet use.

**B. CYBERSEXUAL ADDICTION (p. 7.55)**
See Sexual Addiction, earlier in this chapter.

**C. CYBER-RELATIONSHIP ADDICTION (p. 7.55)**
If connections made on the Internet are not created for sexual activity but becomes compulsive, they could be called “cyber-relationships.” Problems occur when an online relationship draws the participants away from his or her real-life relationships. Online friendships can lead to “cyber affairs,” often to the devastation of the neglected partner.

**D. INTERNET COMPULSIONS (p. 7.55-7.56)**
Accessibility creates and perpetuates Internet compulsions. There are hundreds of online casinos, stock-trading companies, and auction houses. The promise of large winnings and profits is a spur to activity. The notion that "I can do it whenever I want" makes abuse of this activity especially addicting.

**E. INFORMATION ADDICTION (p. 7.56)**
The ability to access thousands of Web sites that cover virtually every subject is attractive to a wide variety of Internet users. Young people may find that online activity is less threatening than actual human interaction and could be at risk for isolation.

**F. COMPUTER GAMES ADDICTION (p. 7.56)**
Adult males, teenagers, and children play computer games. The average game player spends 30 to 60 minutes a day playing games. Game addicts can play five, or more hours a day.
Hundreds of role-playing games, particularly MMORPGs (massively multiplayer online role-playing games) were introduced in the 1990s. Two of the most popular are World of Warcraft® and Happy Farm®.

**G. TELEVISION ADDICTION (pp. 7.56-7.57)**
The average American watches 2.8 hours of TV a day. For compulsive TV watchers here and abroad, six to eight hours a day is standard.
The benchmarks of addiction include compulsive use, using TV to change one’s mood, craving, loss of control, continued use despite adverse consequences, and development of tolerance.
The distorted view of real life presented on many TV shows makes it harder for a compulsive viewer to make good decisions. The portrayal and promotion of dysfunctional families and relationships as the norm, rather than the exception, is confusing to adolescents and young adults.

In one New Zealand study, kids 5 to 15 years of age who watched the most TV were the least likely to graduate from high school or college.

**H. MOBILE PHONE ADDICTION (pp. 7.57-7.58)**

The number of cell phones in the U.S. has gone from 385,000 in 1985 to an estimated 373 million in 2013. Worldwide it has gone from 2.7 billion cell phones in 2006 to an estimated 5.8 billion by 2013 with the biggest growth in Asia.

Two of every five U.S. youths uses a cell phone and spend an average of an hour per day calling and/or texting. The jury is still out as to whether the communication advantages are overshadowed by the loss of privacy. The smart phone/Internet revolution is still in its infancy, and its impact on social and cultural behaviors is continuing to evolve.

**XII. CONCLUSIONS (P. 7.58)**

The disease is addiction, not inhalant abuse, steroid misuse, or compulsive gambling, eating, shopping, or sex. They are the manifestations of the disease. There are similarities between substance abuse and other all-consuming behaviors, but there are distinctive characteristics of a specific addiction that must be addressed in treatment.

Psychotherapy, behavioral therapies, self-help groups, and psychiatric medications tailored to specific compulsive disorders offer hope for effective treatment and recovery.
Chapter 7 - OTHER DRUGS, OTHER ADDICTIONS

Classroom or Small Group Discussion Topics

1. Have students describe:
   A. The main attractions of inhalants as psychoactive substances
   B. Methods/techniques of inhalant use.
   C. The health risks of the inhalant substances
   D. The health risks of the techniques used for inhalants.

2. How would an ingenious seventh-grader use inhalants during school hours? What telltale signs might appear?

3. List common household products that warn against use without proper ventilation. Which of the products could be abused as inhalants?

4. Ask the class to debate the acceptability of steroid use in baseball. Have the students compare the statistics from the most recent baseball season to those from the seasons when Mark McGuire, Sammy Sosa, and Barry Bonds were breaking records with their power hitting.

5. Is it appropriate for state governments to sponsor gambling and lotteries activities where the majority of revenue comes from addicted players?

6. Should online gambling be permitted? If so should players be able to use their credit cards to pay for their gaming?

7. Discuss how the inclusion of corn syrup and other refined carbohydrates in many processed foods is similar to boosting the nicotine content of cigarettes.

8. What unusual substances are students aware of that have been or could be used as psychoactive drugs.
Chapter 7 – OTHER DRUGS, OTHER ADDICTIONS

Critical Thinking & Class Exercises

1. Have students take several deep breaths and describe the effects. How would those effects compare to the effects of “huffing” solvents described in the chapter? If any student had a personal experience accidentally smelling or inhaling a toxic substance (e.g., paint thinner) how did it affect them?

2. What would a student do if they discovered a younger brother or sister was inhaling dangerous chemicals.

3. Present the hypothetical: A varsity athlete who has never used steroids is elected co-captain of the team. It is widely suspected that most of the starting players on a rival team that won the league championship were on steroids. The co-captain’s team has dedicated itself to winning the league championship next year. Ask students to discuss what the co-captain should tell younger players who ask whether they should “start bulking up on “roids” for next season.

5. Have students go through the TV listings and through newspapers to find out how many references to gambling (including ads) there are. Have them scout their neighborhoods for stores or bars that have offer gambling.

6. How much time do your students spend watching TV, on the Internet, on their cell phones, or using other electronic devices? How much is too much? If they believed they had a problem – what would they do?

7. Ask students to design a support-group program for those with eating disorders.
   - Should group therapy or 12-step groups be disorder specific (i.e., one for anorexics, another for overeaters)?
   - Should it be gender segregated, mandatory, or self-referred?
   - What kinds of issues should be discussed?
   - What role, if any, should family and friends play?