

To Your Good Health

Dr. Donohue

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why

Will you explain Parkinson's disease as it progresses? My nosed me with it. shaking and my A.M.

Key signs of Parkinson's disease are tremor, muscle rigidity.

It is a shaking of the body when it's at rest, as if the body is quietly supported but it might go unnoticing more than the hand over the thumb.

This means that muscle movement is not as efficient. If you try to walk like Parkinson's patient, you will find great resistance. And movement difficult.

The slowness of movement in Parkinson's patients is often quite gradual, but in some individuals, medication therapy slows their movement close to normal. In the late stage Parkinson's disease, the symptoms are more severe. The main sign of staging has to do with the loss of fine motor control. It consists of signs of rigidity of the body and extremity. In Stage 3, the arms and the legs

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FITNESS

Cardio vs. weights

Right program depends on personal goals

By ROB WILLIAMS

FOR CANWEST NEWS SERVICE—VANCOUVER

When I first meet with potential clients, there seems to be a lot of uncertainty about how much cardiovascular activity they should do each week, and how much time should be devoted to strength training.

Most people who exercise regularly on their own tend to emphasize one or the other, finding it difficult to keep a balance. In my experience, clients who enjoy running or cycling usually don't get that excited about working out in the gym, and vice versa.

For people just getting started on a regular fitness program, it can be confusing when deciding how to allocate their time. By understanding the benefits of each form of exercise, and how to align these benefits with the desired goals, it can be a lot easier to develop your own effective training plan.

One of the most important things to understand is that your personal goals will determine what kind of exercise you should choose.

Someone who is looking to gain 15 pounds of lean muscle mass really shouldn't be doing a lot of calorie-burning cardiovascular activities.

A person looking to drop 10 pounds of fat and shape their body will definitely need a good balance of cardio and strength training to maintain their muscle mass while they trim the extra weight.

Here are a few key points to remember that will help you to determine your own requirements:

1. Determine your goals first: Many people begin exercising without having a clear plan. Do you want to build muscle, shed body fat, improve your athletic performance, feel better or just be more healthy? By establishing clear objectives you will be able to plan a more efficient program and identify progress.

2. Select the type of exercise that

Gaining muscle mass, strength or endurance requires strength training. Improved cardiovascular health or endurance requires cardiovascular conditioning. Healthy weight loss and fitness are best achieved with a combination of both.

3. Develop your program: Although cardiovascular and muscular strength improvements usually come from completely different methods of exercise, it is possible to choose exercises that offer improvements in both areas. Many conditioning exercises, like lunges with a medicine ball, will challenge the heart and lungs, burn calories and strengthen your muscles all at the same time. This is where you really start to maximize your time and exercise efficiency.

4. Be flexible: You should be prepared to adjust your program one way or the other depending on the changes you are observing (or not observing).

For example, if you're getting lean but not really seeing any increase in muscle mass, you may have to cut back on the amount of cardio, and increase the intensity of your strength program. As a starting point, most people can do very well with a balanced 30-minute strength program performed two to three days per week, plus two to three cardiovascular sessions of 30 minutes each.

Proper nutrition is vitally important to your success, no matter what your goals are. Eating too much or too little, or consuming foods that have poor nutritional content, can sabotage your efforts, even with the most well-thought-out program. It's essential to follow a sound nutrition plan in conjunction with your workout routine.

Vancouver kinesiologist and posture specialist Rob Williams is the owner of Mixx Co-Fitness Studio and Performance Posture in Coal Harbour. He welcomes questions at rob@mixxco.com



Cardiovascular exercise is essential for burning calories and improving heart and lung efficiency.

— Photo by Gerry Kahrman/Vancouver Province

Sound nutritional habits lead to strong and healthy teeth and gums.
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Healthy Living Assignment

Cardio vs. Weights

1. What is better, cardio or weights?
2. Can you trust the author of this advice?
3. What points can you use to determine your program requirements?
4. Who is the intended audience?
5. Body size is determined by 3 things. What 2 did he discuss? What is missing?

TeensHealth.org

A safe, private place to get doctor-approved information on health, emotions, and life.



Stress

Feeling like there are too many pressures and demands on you? Losing sleep worrying about tests and schoolwork? Eating on the run because your schedule is just too busy? You're not alone. Everyone experiences stress at times — adults, teens, and even kids. But there are ways to minimize stress and manage the stress that's unavoidable.

What Is Stress?

Stress is a feeling that's created when we react to particular events. It's the body's way of rising to a challenge and preparing to meet a tough situation with focus, strength, stamina, and heightened alertness.

The events that provoke stress are called **stressors**, and they cover a whole range of situations — everything from outright physical danger to making a class presentation or taking a semester's worth of your toughest subject.

The human body responds to stressors by activating the nervous system and specific hormones. The hypothalamus signals the **adrenal glands** to produce more of the hormones adrenaline and cortisol and release them into the bloodstream. These hormones speed up heart rate, breathing rate, blood pressure, and metabolism. Blood vessels open wider to let more blood flow to large muscle groups, putting our muscles on alert. Pupils dilate to improve vision. The liver releases some of its stored glucose to increase the body's energy. And sweat is produced to cool the body. All of these physical changes prepare a person to react quickly and effectively to handle the pressure of the moment.

This natural reaction is known as the **stress response**. Working properly, the body's stress response enhances a person's ability to perform well under pressure. But the stress response can also cause problems when it overreacts or fails to turn off and reset itself properly.

Good Stress and Bad Stress

The stress response (also called the **fight or flight response**) is critical during emergency situations, such as when a driver has to slam on the brakes to avoid an accident. It can also be activated in a milder form at a time when the pressure's on but there's no actual danger — like stepping up to take the foul shot that could win the game, getting ready to go to a big dance, or sitting down for a final exam. A little of this stress can help keep you on your toes, ready to rise to a challenge. And the nervous system quickly returns to its normal state, standing by to respond again when needed.

But stress doesn't always happen in response to things that are immediate or that are over quickly. Ongoing or long-term events, like coping with a divorce or moving to a new neighborhood or school, can cause stress, too.

Long-term stressful situations can produce a lasting, low-level stress that's hard on people. The nervous system senses continued pressure and may remain slightly activated and continue to pump out extra stress hormones over an extended period. This can wear out the body's reserves, leave a person feeling depleted or overwhelmed, weaken the body's immune system, and cause other problems.

What Causes Stress Overload?

Although just enough stress can be a good thing, stress overload is a different story — too much stress isn't good for anyone. For example, feeling a little stress about a test that's coming up can motivate you to study hard. But stressing out too much over the test can make it hard to concentrate on the material you need to learn.

Pressures that are too intense or last too long, or troubles that are shouldered alone, can cause people to feel stress overload. Here are some of the things that can overwhelm the body's ability to cope if they continue for a long time:

- being bullied or exposed to violence or injury
- relationship stress, family conflicts, or the heavy emotions that can accompany a broken heart or the death of a loved one
- ongoing problems with schoolwork related to a learning disability or other problems, such as ADHD (usually once the problem is recognized and the person is given the right learning support the stress disappears)
- crammed schedules, not having enough time to rest and relax, and always being on the go

Some stressful situations can be extreme and may require special attention and care. Posttraumatic stress disorder is a very strong stress reaction that can

develop in people who have lived through an extremely traumatic event, such as a serious car accident, a natural disaster like an earthquake, or an assault like rape.

Some people have anxiety problems that can cause them to overreact to stress, making even small difficulties seem like crises. If a person frequently feels tense, upset, worried, or stressed, it may be a sign of anxiety. Anxiety problems usually need attention, and many people turn to professional counselors for help in overcoming them.

Signs of Stress Overload

People who are experiencing stress overload may notice some of the following signs:

- anxiety or panic attacks
- a feeling of being constantly pressured, hassled, and hurried
- irritability and moodiness
- physical symptoms, such as stomach problems, headaches, or even chest pain
- allergic reactions, such as eczema or asthma
- problems sleeping
- drinking too much, smoking, overeating, or doing drugs
- sadness or depression

Everyone experiences stress a little differently. Some people become angry and act out their stress or take it out on others. Some people internalize it and develop eating disorders or substance abuse problems. And some people who have a chronic illness may find that the symptoms of their illness flare up under an overload of stress.

Keep Stress Under Control

What can you do to deal with stress overload or, better yet, to avoid it in the first place? The most helpful method of dealing with stress is learning how to manage the stress that comes along with any new challenge, good or bad. Stress-management skills work best when they're used regularly, not just when the pressure's on. Knowing how to "de-stress" and doing it when things are relatively calm can help you get through challenging circumstances that may arise.

Here are some things that can help keep stress under control:

- **Take a stand against overscheduling.** If you're feeling stretched, consider cutting out an activity or two, opting for just the ones that are most important to you.

- **Be realistic.** Don't try to be perfect — no one is. And expecting others to be perfect can add to your stress level, too (not to mention put a lot of pressure on them!). If you need help on something, like schoolwork, ask for it.
- **Get a good night's sleep.** Getting enough sleep helps keep your body and mind in top shape, making you better equipped to deal with any negative stressors. Because the biological "sleep clock" shifts during adolescence, many teens prefer staying up a little later at night and sleeping a little later in the morning. But if you stay up late and still need to get up early for school, you may not get all the hours of sleep you need.
- **Learn to relax.** The body's natural antidote to stress is called the **relaxation response**. It's your body's opposite of stress, and it creates a sense of well-being and calm. The chemical benefits of the relaxation response can be activated simply by relaxing. You can help trigger the relaxation response by learning simple breathing exercises and then using them when you're caught up in stressful situations. (Click on the button to try one.) And ensure you stay relaxed by building time into your schedule for activities that are calming and pleasurable: reading a good book or making time for a hobby, spending time with your pet, or just taking a relaxing bath.
- **Treat your body well.** Experts agree that getting regular exercise helps people manage stress. (Excessive or **compulsive** exercise can contribute to stress, though, so as in all things, use moderation.) And eat well to help your body get the right fuel to function at its best. It's easy when you're stressed out to eat on the run or eat junk food or fast food. But under stressful conditions, the body needs its vitamins and minerals more than ever. Some people may turn to substance abuse as a way to ease tension. Although alcohol or drugs may seem to lift the stress temporarily, relying on them to cope with stress actually promotes more stress because it wears down the body's ability to bounce back.
- **Watch what you're thinking.** Your outlook, attitude, and thoughts influence the way you see things. Is your cup half full or half empty? A healthy dose of optimism can help you make the best of stressful circumstances. Even if you're out of practice, or tend to be a bit of a pessimist, everyone can learn to think more optimistically and reap the benefits.
- **Solve the little problems.** Learning to solve everyday problems can give you a sense of control. But avoiding them can leave you feeling like you have little control and that just adds to stress. Develop skills to calmly look at a problem, figure out options, and take some action toward a solution. Feeling capable of solving little problems builds the inner confidence to move on to life's bigger ones — and it can serve you well in times of stress.

Build Your Resilience

Ever notice that certain people seem to adapt quickly to stressful circumstances and take things in stride? They're cool under pressure and able to handle problems as they come up. Researchers have identified the qualities that make some people seem naturally resilient even when faced with high levels of stress.

If you want to build your resilience, work on developing these attitudes and behaviors:

- Think of change as a challenging and normal part of life.
- See setbacks and problems as temporary and solvable.
- Believe that you will succeed if you keep working toward your goals.
- Take action to solve problems that crop up.
- Build strong relationships and keep commitments to family and friends.
- Have a support system and ask for help.
- Participate regularly in activities for relaxation and fun.

Learn to think of challenges as opportunities and stressors as temporary problems, not disasters. Practice solving problems and asking others for help and guidance rather than complaining and letting stress build. Make goals and keep track of your progress. Make time for relaxation. Be optimistic. Believe in yourself. Be sure to breathe. And let a little stress motivate you into positive action to reach your goals.

Reviewed by: D'Arcy Lyness, PhD

Date reviewed: August 2010



Note: All information on TeensHealth® is for educational purposes only. For specific medical advice, diagnoses, and treatment, consult your doctor.

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Name: _____

Date: _____

Taking Note of Stress

Part 1: As you read the KidsHealth article titled "Stress," take notes on some of the main points:

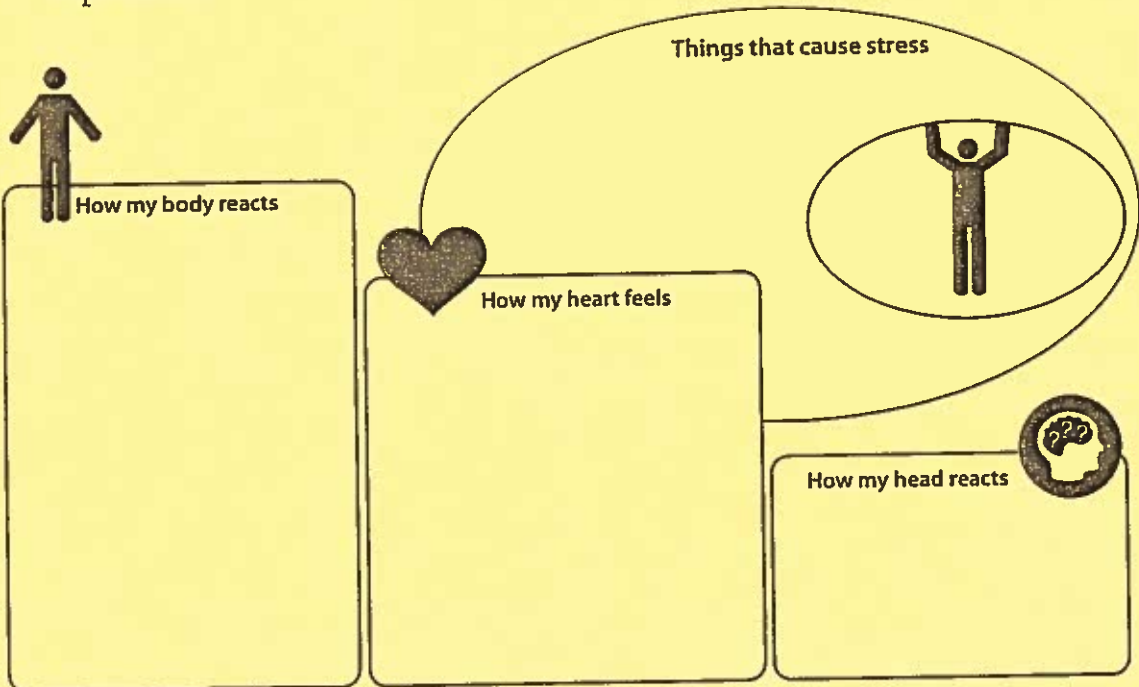
1. Stress is a feeling that's _____.
2. The events that provoke stress are called _____.
3. The body responds to stressors by activating the _____ and _____.
4. The body's natural reaction to stress is known as the _____.
5. Short-term stress can help you _____.
6. Long-term stressful situations can produce _____.
7. Pressures that are too intense or last too long, or troubles that are shouldered alone, can cause people to feel _____.
8. Signs of stress overload include: _____, _____, _____.
9. Stress management skills work best when they're used _____.
10. Techniques that help keep stress under control include: _____, _____, _____.
11. Behaviors and attitudes that can help people stay cool under stress include: _____, _____, _____.

Part 2: Listen to your classmates share additional stress-beating strategies and write down three more techniques to help you manage and minimize your stress:

1. _____
2. _____
3. _____

Worksheet: Stress and Me

Use this worksheet to explore how you respond to stress, and how you can better cope with it.



Healthy choices for coping with stress

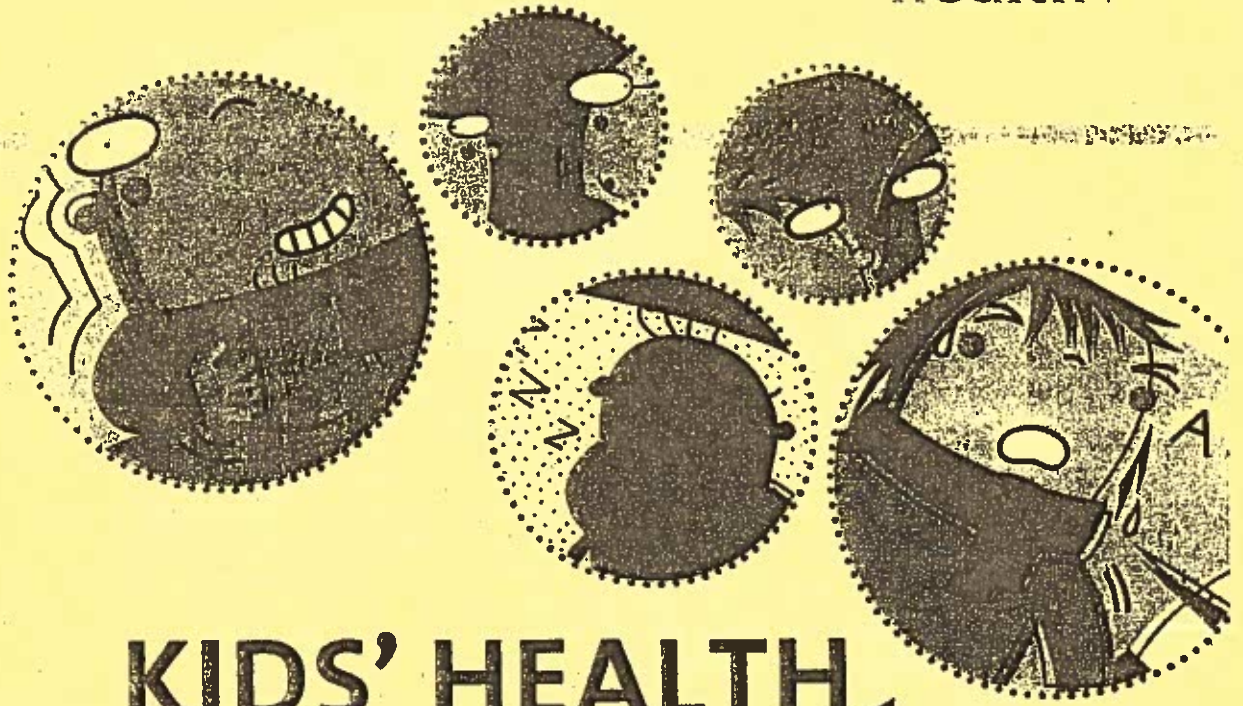
Not-so-healthy choices for coping with stress

Healthy consequences

Not-so-healthy consequences

LESS stress

MORE stress

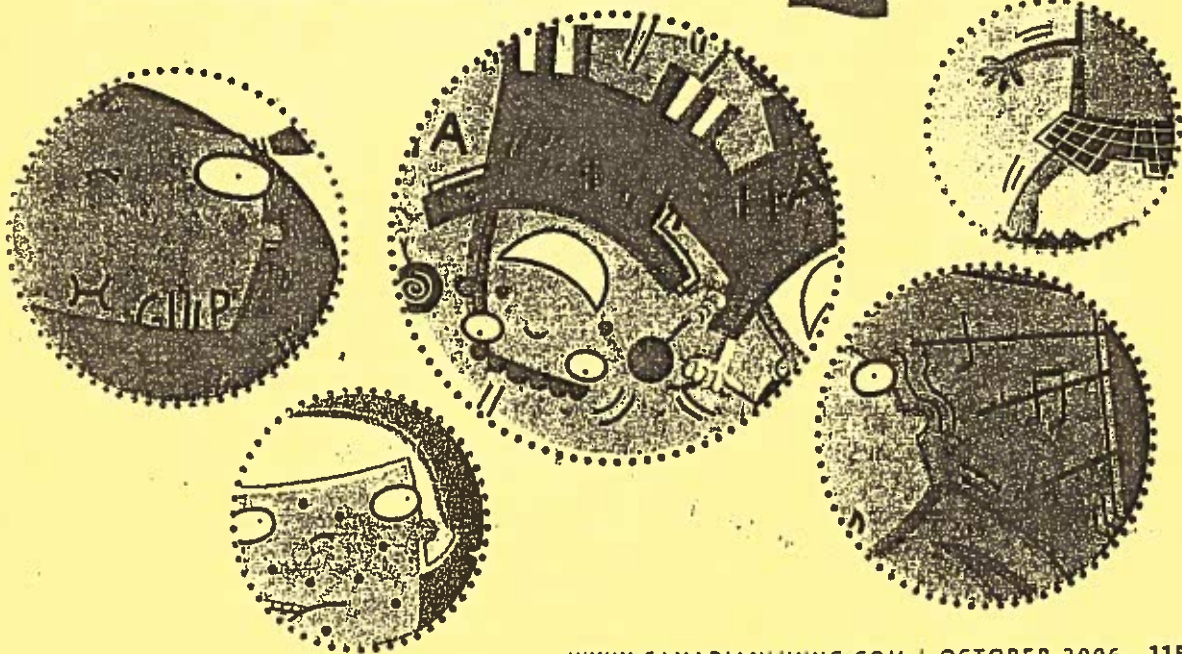


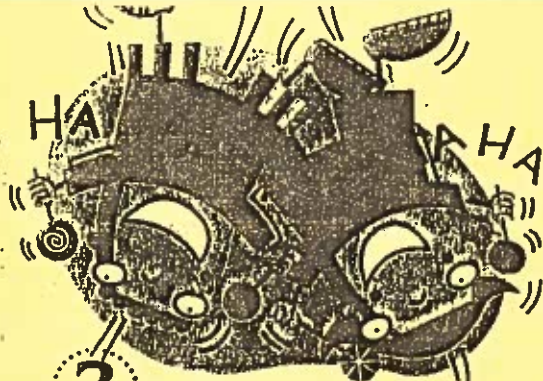
KIDS' HEALTH *True or False* Quiz

How much do you really know about your child's health? Learn to separate fact from folklore.

BY PAUL BENEDETTI

ILLUSTRATIONS BY BERNICE LUM





3 Eating sugar makes children hyperactive.

False. You take your six-year-old to a birthday party. Within minutes of eating sugary treats, every child in the room is bouncing off the walls. Common sense tells you that eating sugar makes kids hyper. Or does it? "It is a common misconception," says Dr. Madan Roy, chief of general pediatrics at Hamilton Health Sciences in Hamilton. "There has been a lot of good research done looking at the number of kids with attention deficit/hyperactivity disorder (ADHD) [though no research has been done on children without ADHD] and none has ever shown a connection." Sugar is a natural source of energy, he explains, and often children are eating treats in a special situation – a birthday party, Halloween, Easter – so it's no wonder they're excited.

Is recommended by the Canadian Paediatric Society as part of every child's regular immunization program.



5 Don't swim after you eat because it will give you a cramp.

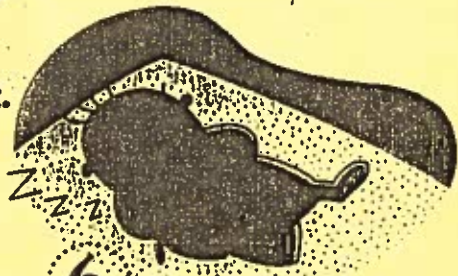
True. Well, sort of true. There's nothing particular about swimming that causes cramps after eating, but it's a good idea not to let your kids go into the water immediately after a big meal. When you eat, your body temporarily sends more blood to your gut to help digestion, which means there is slightly less blood available for muscular activity. If a child exercises vigorously after a heavy meal, she is more likely to get a cramp. Penelope Leach, author of *Your Growing Child* (Knopf, 1984), says there's no reason to keep your children out of the water for a full hour after a light lunch. Most doctors recommend kids wait a half-hour after eating before going into a lake or pool and that they always have adult supervision.



4 It's better to get chicken pox when you're a kid than when you're an adult.

True. "Absolutely," says Pontl. "It is well documented that when people get chicken pox during adulthood, it is a much more severe illness generally." Chicken pox, caused by the varicella-zoster virus, is characterized by a red base; followed by fluid-filled blisters that eventually scab. Children get a mild rash, itchiness, fever and flulike symptoms that last a week or two. But adults usually have many more blisters and a higher risk of contracting serious complications such as pneumonia and encephalitis.

The good news is that the chicken pox vaccine is highly effective and



6 Babies should sleep on their backs.

True. Each week in Canada an average of three babies die of sudden infant death syndrome (SIDS), or crib death. No one is sure what causes SIDS, but research over the last few years has shown that babies who sleep on their backs have the lowest risk for SIDS. A 1999 joint statement by The SIDS Foundation, the Canadian Institute

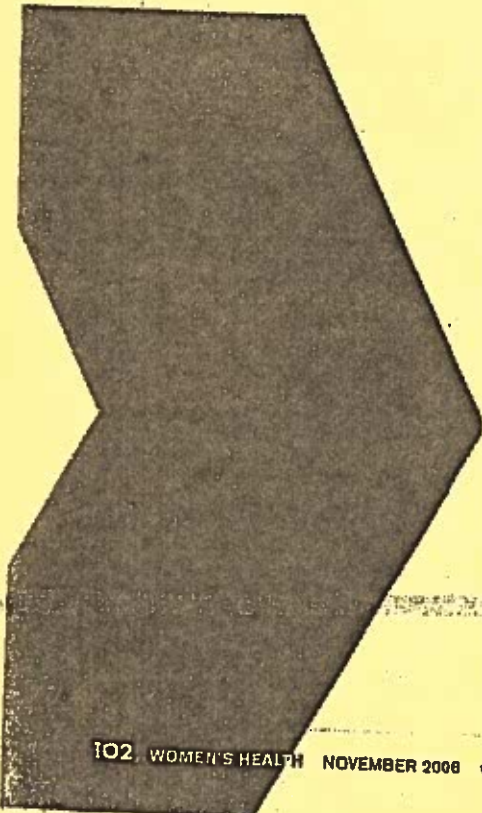
1. What level of noise is considered too loud and can damage your hearing permanently?
2. A) Is chewing gum considered food?
B) How long does it take to pass through your digestive system?
3. What makes children at a birthday party hyperactive?
4. Why is it preferable to contract chicken pox when you are young?
5. Don’t swim after you eat because it will give you a cramp. True or false? Explain.
6. How should you position a baby in a crib in order to prevent SIDS?
7. Why do we associate cold weather with colds?
8. A) If a child drinks coffee could it stunt her growth?
B) What are 4 symptoms resulting from excess caffeine?

C) What is the recommended daily allowance (RDA)?

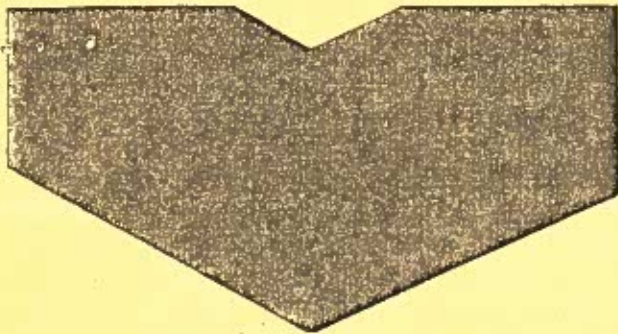
gut check

Everything you ever
wanted to know
about your personal
plumbing but were
afraid to ask

BY LAUREN RUSSELL
PHOTOGRAPHS BY DAN WINTERS



No matter how good you look in a belly shirt, your innards are hardly a pretty sight. Your gastrointestinal (GI) tract deals with the dirty work of your body: digesting food for nutrients and sending out the trash. This noisy, smelly, squishy system includes the esophagus, a 10-inch-long tube; the stomach, a fist-size bag of muscle; 20 feet of small intestine; and 6 feet of large intestine (aka the colon). With no Google map, we're often left wondering what the holdup (or the rush) is in there and why normally dependable routes suddenly cause trouble. But because of the unappealing issues that arise, talking about your own highway problems isn't as easy as discussing rush-hour traffic. "There's definitely embarrassment, and women tend to suffer in silence," says Jacqueline Wolf, M.D., a women's GI disease specialist at Harvard Medical School. Still, considering that digestive problems—from constipation to acid reflux—affect up to 70 million people, we should muster the guts to find out what's going on beneath our navels.



» How long does it take for food to travel through my system?

The majority of the trip averages 24 hours, says Patricia Raymond, M.D., a gastroenterologist in Chesapeake, Virginia. Once a steak hits your stomach, roughly 3 liters of hydrochloric acid begin to turn it into paste. About 30 minutes later, the food sludge travels to the small intestine, which immediately absorbs the nutrients and sends them to your bloodstream. The leftovers move into the colon, where any remaining liquid is sucked out, and they solidify into feces. This detritus takes from 1 to 4 days to snake its way through your colon and into your sewer system, depending on how much fiber your waste contains, says Michael Levitt, M.D., director of research at the Minneapolis Veterans Affairs Medical Center.

» Is eating lots of fiber really that important?

Uh, yeah. Fiber is a component of all plant-based foods, such as whole grains, fruits, and vegetables. You don't digest fiber, so it acts like a Brillo pad for the intestines, scrubbing out bad cholesterol and soaking up water so that waste can glide through. Chances are you're not eating enough (the average person ingests only 7 grams daily, though the RDA is 25—about six servings of fruit or vegetables and two slices of whole-grain bread). To stay regular, beef up your produce intake. Or take a daily 1,500-milligram fiber supplement of psyllium husks, suggests Mehmet Oz, M.D., professor of surgery at Columbia University and coauthor of *You: On a Diet*. But if you need immediate action, try a laxative with sennosides, stool-softening agents that help liquids mix with the cement in your pipes.

» Why does my stomach gurgle when I'm hungry?

"It's very much like the Pavlov's dog effect," Dr. Raymond says. "You see the food, you smell the food, your saliva glands start to go, and your stomach starts to go." That sets off a chain reaction of churning, grinding, and spasms in the intestines meant to help food move through the system. If there's not much in there to move, there's nothing to muffle the noise, so the gurgling is louder. Dr. Raymond compares the effect to the way a partially filled water balloon

makes more sound than a full one. But bellies rumble even after you've gorged. Called borborygmi, these are simply the sounds of digestive enzymes and gas moving through the intestines.

» Is there any way to avoid farting?

Don't go to Jim Carrey movies.

» Seriously, why do I fart? And can I prevent it?

We all expel up to 2 liters of gas a day. This gas comes from two sources: "You either swallow air or you make it from various foods," Dr. Levitt says. When you take in air from carbonated drinks and chewing gum, it doesn't smell when it comes out the other end. Noxious

emissions happen anywhere from 30 minutes to 3 hours after you eat, when bacteria that live in your colon dine on leftovers your small intestine can't digest, creating smelly gas as a by-product.

Since everything we eat leaves a meal for bacteria, you really can't stop natural gas production. A liquid diet would eliminate most of the fumes because fluids usually leave too little residue for bacteria to get a hold of. A more reasonable solution is to avoid foods on date night that create especially pungent odors. Sulfur-rich items like eggs, broccoli, cauliflower, and cabbage produce hydrogen sulfide, which smells like rotten eggs. Beans also create a mighty stink because we lack the enzymes to fully digest the complex sugars they contain (Beano, a natural supplement you take with food, provides the missing enzymes). The sound, however, is all you. A fart becomes audible when you tighten up, Dr. Raymond says. "If you just relax and let the gas come out, you may have smell, but you won't have that noise."

» How often should I be making a deposit?

Think quality, not quantity. At any given time, you're lugging around 5 to 7 pounds of waste, and you won't always need to discard the same amount. "People fixate on their poop frequency," Dr. Oz says, "but what they should look at is a range that is acceptable." In general, you should be going at least once every 6 to 48 hours. "It's when you're not comfortable that we worry," Dr. Raymond says. Straining to get anything out or to hold anything in could indicate problems, from lactose intolerance to irritable bowel syndrome, requiring medication.

» What's a healthy bowel movement supposed to look like?

C'mon, plenty of us watch *Extreme Makeover*, so we can bear taking a peek at what we leave in the toilet. A bowel movement should be shaped like an "S" or a banana because "that's the shape of your rectum," Dr. Oz says. And, like a banana, it should be about 1½ inches in diameter. Any wider and you're at risk for tiny cuts around the anus. Your stool should also be fairly full and soft, but not so light that it floats like a noodle—a sign you're not digesting fats properly. Under normal circumstances, bile dyes waste a range of brown, green, and yellow hues. But dark red or black stool could be caused by bleeding (a sign of a stomach ulcer), and white or very pale movements mean your gall bladder could be blocked—both cause to see a doctor.

Continued on page 130

1. a) What is the function of the gastrointestinal (GI) tract?

b) What body parts does it include?
2. Explain the route of food through the digestive tract.
3. A) Why is fiber important?

b) What is the recommended daily allowance (RDA)?
4. Explain **borborygmi**.
5. A) How much waste does the average person carry around?
b) How often should you have bowel movements?
c) What's more important...quantity or quality?
d) What should a healthy bowel movement look like (shape, texture, and color)?
6. What are 5 stomach pains and their corresponding symptoms?

Alcohol and Drug Dependency



Key Terms

Addiction
 Alcohol
 Alcoholism
 Amphetamines
 Anabolic steroids
 Caffeine
 Cocaine
 Crack
 Crank
 Depressants
 Diuretics
 Drug
 Ethyl alcohol (Ethanol)
 Fetal Alcohol Syndrome (FAS)
 Hallucinogens
 Ice
 Marijuana
 Over-the-counter (OTC)
 Physical dependency
 Prescription drugs
 Roid rage
 Stimulants
 Testosterone
 THC
 Tolerance
 Withdrawal

"Just say no to drugs!" is a familiar phrase used daily in our society. There are drugs for sleep, pain, depression, stress and weight loss. A **drug** is a substance which, upon entering the body, can change the function or structure of the physical and mental condition of the person. There are over-the-counter drugs and prescribed drugs for medical conditions. But the abuse and misuse of legal and illegal drugs are evident daily in our society. After reading this chapter, it is our hope that you will make informed decisions regarding your health and well-being regarding alcohol and drug use.

DRUGS AND DEPENDENCE

Addiction is defined broadly as losing control over an activity. Some addictive behaviors may be worse than others. Addiction to any substance involves three stages: **tolerance**, **dependency**, and **withdrawal**. **Tolerance** is produced through the continued use of narcotics, sedatives, alcohol, or amphetamines. Therefore greater quantities are needed to achieve the same effort, or less effect is achieved from a single drink/drug dose. The body works to attempt to eliminate the effects of drugs in the system. Larger doses of the drug are required to cause the same effect. With the increased doses of the drug comes the increased side effects and risks. **Physical dependency** occurs when a person has a biochemical need to continue using a particular drug in order to prevent withdrawal symptoms. **Psychological dependence** occurs when the person has a craving for a particular drug which may be so intense as to alter behavior. **Withdrawal** (physical dependence) occurs once tolerance has been developed and the use of the drug is stopped. Signs and symptoms of withdrawal may include headache, dry mouth, shaking, hallucinations, and epileptic seizures.

There may be addiction to television, work, food, exercise, compulsive shopping, gambling, and most seriously, chemical dependency (e.g., coffee, alcohol, tobacco, cocaine, marijuana, prescription drugs). Addiction is based on denial; therefore, addicted people are often unable to admit that habits cannot be stopped without treatment and will continue the abuse behavior. Getting assistance is the first important step in overcoming addiction. According to the U.S. Department of Education, "Today's drugs are stronger, more addictive,

and pose a greater risk than ever before." (Refer to Lab 10.1.)

Substance abuse takes its form primarily in excessive alcohol consumption or drug abuse. The media such as television, radio, and newspaper send messages that promote the use of chemicals to give pleasure and avoid pain. What can you do to combat these problems with abuse? One answer is education. Becoming knowledgeable, aware of the signs and symptoms of drug abuse, and being able to handle daily pressures which confront people in today's society are some steps in the right direction toward the prevention of drug misuse.

Drugs today continue to remain popular since they can have wonderful effects upon the human body and mind. Drug misuse includes inappropriate use of medicines, resulting in impaired physical, mental, emotional, or social well-being; not following directions regarding time intervals between doses; and providing personally prescribed medicines to other individuals. Sometimes adverse reactions do occur and such practices can have tragic consequences.

While all forms of addiction are unhealthy, this chapter focuses on several of the most common and serious forms of addiction in our society: over-the-counter and prescribed drugs, alcohol, diuretics, anabolic steroids, marijuana, amphetamines including cocaine, crack and ice. The addiction to cigarette smoking has already been discussed in Chapter 2. Additional information concerning these and other drugs can be obtained from the Food and Drug Administration, Public Health Service, local pharmacy, physicians, and law enforcement agencies.

Over-the-counter and Prescription Drugs

Food and Drug Administration (FDA) drugs are classified into two basic groups: (1) the over-the-counter medicines (OTC), and (2) the prescription medicines.

OTC drugs, often called patent medicines, include an assortment of medications that can be purchased without a physician's prescription. The major effect of these non-prescription drugs is to relieve minor symptoms of illness, such as a headache, or serve as a nighttime sleep aid. There are over 300,000 OTC drugs on the market and they are often consumed or applied on a temporary basis for illnesses that do not warrant a visit to a physician. These drugs may deter symptoms or signals from the body that may need some corrective action. Therefore, OTC drugs should not be used on a regular basis for an extended period of time. OTC drugs include, but are not limited to, analgesics, sleep aids, stimulants, cold remedies,

laxatives, and weight-control products.

Prescription drugs can only be obtained from a physician by a prescription given to the patient. Prescription medications bear a Rx symbol on the label and can be sold only by a registered pharmacist. These drugs are much more powerful than OTC medications and are more likely to cause unanticipated and/or adverse side effects. Each prescription is individualized for a patient in terms of dosage and frequency of use according to the nature of the illness, the patient's age, sex, weight, general health status, and potential for allergic reaction. Refer to Lab 10.2.

DEPRESSANTS

Depressants are drugs used to decrease nervous or muscular activity. These drugs are commonly called "downers." Depressant drugs such as alcohol and marijuana will be discussed in this section.

Alcohol

Alcoholism is one of the most serious public health problems in the United States today. Medically defined, alcoholism is a disease in which there is impaired control over drinking, preoccupation with alcohol, continued use of alcohol in the face of adverse consequences, and distorted thinking. When alcoholics drink, they can't always predict when they will stop, how much they will drink, or what the consequences of their drinking will be. The difference between an alcoholic and an abusive drinker is control. The alcoholic has lost control of the amount of alcohol consumed whereas the abusive drinker can make a decision regarding the amount of alcohol consumed. If you have a drinking problem, seek professional assistance and take control of your life. (Refer to Lab 10.3.) There is hope and help is available at hospitals, alcohol/drug treatment centers, clinics and self-help groups.

Research findings support the theory of a biogenetic predisposition to alcoholism. A 1984 study found that nearly 70% of alcoholics and alcoholic parents had violent fathers and 26.3% had violent mothers when compared with fewer than 7% in non-alcoholic homes. It has been estimated that people with alcoholic parents run four times the risk of developing alcoholism themselves.

Alcohol, the major active ingredient in wine, beer, cocktail and wine coolers, is a natural substance formed by the reaction of fermenting sugar with yeast spores. The kind of alcohol in alcoholic beverages is ethyl alcohol (ethanol), a colorless, inflammable liquid with an intoxicating effect, a central nervous system depressant. The central nervous system consists of the brain and the spinal cord. Ethyl alcohol or ethanol

the brain and the spinal cord. Ethyl alcohol or ethanol is a drug which can produce feelings of well-being, sedation, intoxication or unconsciousness, depending on the manner in which it is drunk and the amount consumed. The alcoholic beverage can raise your risk-taking, lower your inhibitions, and may make you relaxed and happy; if abused, it can be unsafe and unhealthy. Technically, alcohol can be classified as a food because it provides energy, one of the functions of food. Alcohol contains 7 calories of energy per gram consumed and has almost twice the value of equal amounts of carbohydrates or protein. Calories from alcohol have no nutritional value. (Refer to Chapter 6.)

Alcohol does not have to be digested. When consumed, 20% of the alcohol is normally absorbed immediately into the bloodstream through the stomach walls and small intestines. How quickly alcohol is absorbed into the bloodstream depends on your gender, body weight, speed of consumption, food intake and preference of beverage. Men can drink the same amount of alcohol as women of equal weight and have a lower blood alcohol content (BAC). The reason is that women have more fat tissue and less lean tissue; therefore, less body water. Alcohol is water soluble and less dilution occurs in the body of a female. The more water or weight you have, the more dilution. A person with a higher water content can consume more alcohol than a smaller person with lower water content. In addition, women have less of a protective enzyme which breaks down alcohol before it is absorbed in the bloodstream. Alcohol travels quicker to the liver in women to be metabolized; therefore, women have a higher rate of liver disease than men. According to the *New England Journal of Medicine*, 1990 (Frezza, et al.), alcoholics, especially women, have virtually no gastric alcohol metabolism.

The rate of speed of consumption and food intake also affect the rate of the absorption of alcohol. Gulping alcohol quickly increases the rate of absorption into the bloodstream and in sipping alcohol, the body metabolizes it quicker. Food in the stomach slows down alcohol absorption. Without food in the stomach, alcohol is absorbed extremely fast into the stomach walls and small intestines. Carbonated drinks (such as colas) are absorbed faster than water-diluted drinks.

The other 80% of alcohol enters the bloodstream almost as fast after being quickly processed through the gastrointestinal tract. (See Figure 10.2.) After consumption, alcohol eventually can be found in all tissues, organs, and secretions of the body. This alcohol immediately acts on the brain's central control areas to slow down or depress brain activity. (See Figure 10.1.) Alcohol reduces peripheral vision,

decreases motor performance and concentration, increases risk-taking behavior, increases urination, decreases fear, distorts depth perception, reduces coordination, reduces the ability to solve problems, impairs judgment, and induces sleep. A single large dose may decrease sexual function.

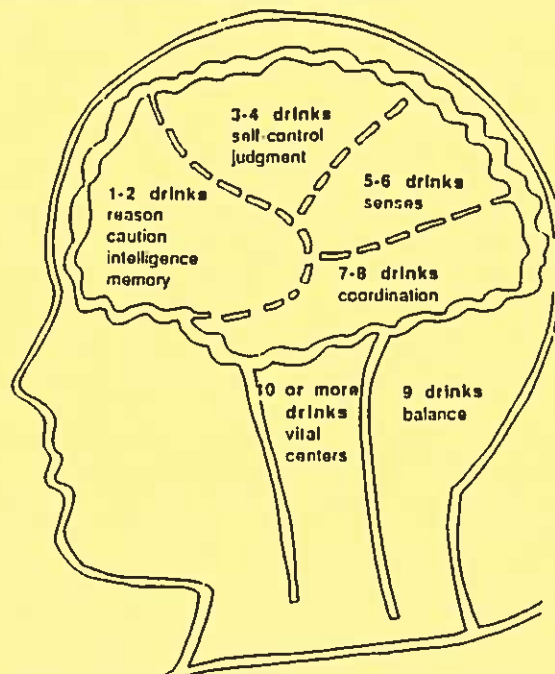


Figure 10.1. Alcohol's effects on the brain.

Once alcohol is in the bloodstream, time is the only thing that will sober the individual. Alcohol is metabolized primarily by the liver and can cause mild euphoria and death. You cannot sober up by drinking black coffee (makes a more wide-awake drunk), taking a cold shower, exercising, or breathing pure oxygen. It takes a specific amount of time for the body to burn up a quantity of alcohol, generally at the rate of about one-half ounce of pure alcohol per hour. Consumption of alcohol in moderation, approximately one drink for the average-sized adult female and two drinks for a male, may be compatible with a positive healthy lifestyle for some individuals.

The Effects of Alcohol on Performance

- Moderate drinking results in loss of muscle coordination for at least 12-18 hours after consumption. Also, decreased muscle tone and other effects last for several days after the alcohol is not detectable in the blood.
- The liver is disrupted from its normal function (making glycogen) in having to break down alcohol. Glycogen is a major energy component and

Figure 10.2.
BLOOD ALCOHOL CONCENTRATION
NUMBER OF DRINKS TO BODY WEIGHT

Note: This chart does not distinguish between men and women

Showing estimated percent* of alcohol in the blood by number of drinks in relation to body weight.

Body Weight	DRINKS											
	1	2	3	4	5	6	7	8	9	10	11	12
100 lbs.	.038	.076	.114	.152	.190	.228	.226	.304	.342	.380	.418	.456
110 lbs.	.035	.070	.105	.140	.175	.210	.241	.280	.315	.350	.385	.420
120 lbs.	.031	.062	.093	.124	.155	.186	.217	.248	.279	.310	.341	.372
130 lbs.	.029	.058	.087	.116	.145	.174	.303	.232	.261	.290	.319	.348
140 lbs.	.027	.054	.081	.108	.135	.162	.189	.216	.243	.270	.297	.324
150 lbs.	.025	.050	.075	.100	.125	.150	.175	.200	.225	.250	.275	.300
160 lbs.	.023	.046	.069	.092	.115	.138	.162	.184	.207	.230	.253	.276
170 lbs.	.022	.044	.066	.088	.110	.132	.154	.176	.198	.220	.242	.264
180 lbs.	.021	.042	.063	.084	.105	.126	.147	.168	.189	.210	.231	.252
190 lbs.	.020	.040	.060	.080	.100	.120	.140	.160	.180	.200	.220	.240
200 lbs.	.019	.038	.057	.076	.095	.114	.133	.152	.171	.190	.209	.228
210 lbs.	.018	.036	.054	.072	.090	.108	.126	.144	.162	.180	.198	.216

The actual concentration of alcohol in the blood at any given time may be determined by subtracting .015 percent from the percentage shown on the chart for every hour that elapses since the first drink.

* Percent = Drops of alcohol per drops of blood. Example: .10 = 1 drop per 1,000 drops of blood.
.05 = 1 drop per 2,000 drops of blood.

BAC Worksheet:

1. ___ Number of Drinks 2. ___ Hours since first drink 3. ___ BAC if consumed in 1 hr.
X ___ BAC of one drink X .015 Detoxification rate - ___ Amount of detoxification
= ___ BAC if consumed in 1 hr. + ___ Amount of detoxification = ___ Blood Alcohol Concentration

fuel for the body. Therefore, the body has less fuel available for athletic competition and practice.

- Decreased glycogen causes muscles to fatigue earlier during performance and the energy is not available for the muscles.

Fetal Alcohol Syndrome (FAS)

Fetal alcohol syndrome (FAS) has been clearly identified as a result of prenatal alcohol exposure to the developing fetus and is one birth defect that is preventable. FAS is a combination of physical and mental birth defects characterized by a pattern of defects such as growth retardation before and after birth, central nervous dysfunction, and abnormal

features of the face and head. FAS occurs only when alcohol is passed from the mother through the placenta to the unborn child. When a mother smokes, eats unhealthy foods, drinks alcoholic beverages and consumes drugs during pregnancy, the unborn child will be affected. Yet many pregnant women are knowledgeable of these facts and still refuse to alter their lifestyle for their unborn child.

Babies born with FAS may suffer from a variety of organ malformations, particularly the heart. Many of these babies are small, poorly coordinated, have short attention spans, and widely-spaced eyes and small, flat cheeks. In the United States about 5000 babies are born with FAS each year. FAS may occur when drinking as little as three ounces of pure alcohol

a day, six average mixed drinks or six cans of beer. Even moderate amounts (2-5 drinks daily) can damage the fetus causing some, but not all, of the signs of FAS. Some women who drink heavily during pregnancy have children with no signs of FAS, while others who drank sparingly have babies with alcohol-related damage. Alcohol appears to affect development by inhibiting protein synthesis in the fetus, which is essential for cellular growth.

Organizations available to provide support for mother and child include Women for Sobriety, WIC, community health and mental health centers, and private physicians. Currently, there is no way to predict which babies will be damaged by alcohol. There is no other reason for FAS. For this reason, the best advice is not to drink during pregnancy. Why take such a risk with your child? It could last for a lifetime.

Driving Under the Influence

Despite increased public and legislative awareness, one person every 20 minutes is killed due to an alcohol-related automobile accident and fifty percent of all fatal auto accidents in America are alcohol related. The alcohol-related fatal crash rate of young drivers between the ages of 16 and 24 is three times greater than that of older drivers. Many states are providing severe penalties upon conviction of

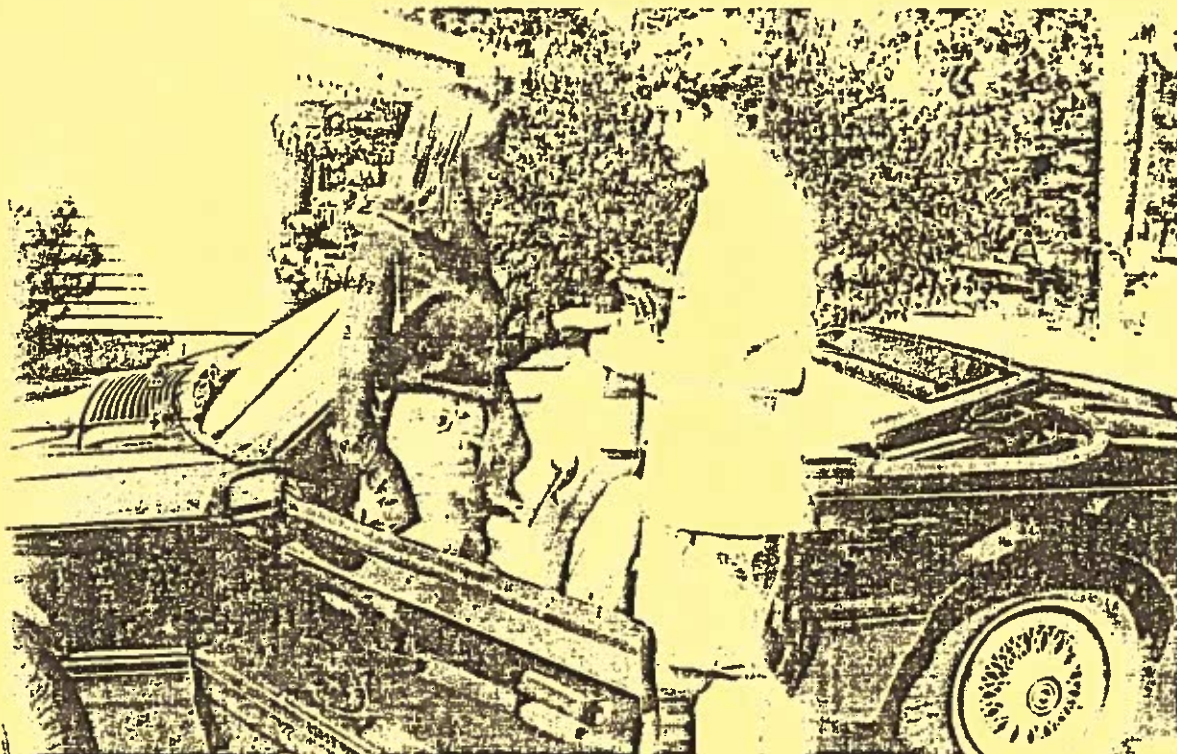
individuals while driving under the influence of alcoholic beverages (blood alcohol level of .10% or higher), chemical substances or controlled substances (DUI).

There are several direct effects of alcohol on driving-related skills. At higher blood alcohol levels, reaction time is slowed, the driver's ability to discriminate or distinguish between levels of light or sound and to estimate the speed and distance of moving objects is impaired and general body coordination is reduced. Drinking drivers at night have more difficulty with driving because of the glare, since their eyes are slow to adapt to changes in light. Alcohol affects every part of the body except the ears. Lastly, the intoxicated person often fails to recognize the alcohol-induced impairment.

Friends don't let friends drive drunk! Suggestions for staying alive:

- **Don't drink and drive.** The leading cause of death for young people is alcohol-related automobile crashes.
- **Don't ride with an alcohol or drug impaired driver.** Over 20% of fatally injured individuals are passengers in the drinking driver's vehicle.
- **Always buckle your safety belt.** A safety belt is the best defense against the alcohol or drug impaired driver. **Buckle up!** It may prevent you from being crippled or permanently injured for life.

Friends don't let friends drink and drive!



Treatment

Treatment for drug addiction (alcohol) is seldom accomplished without professional guidance and support. The initial step in treatment is to recognize that there is a problem or possible addictive behavior. To find out if you have a drinking problem, complete Lab 10.4, the NCADD Self-test: "What Are the Signs of Alcoholism?" If so, start today; only you can take control of your life. It is your body. Take care of it.

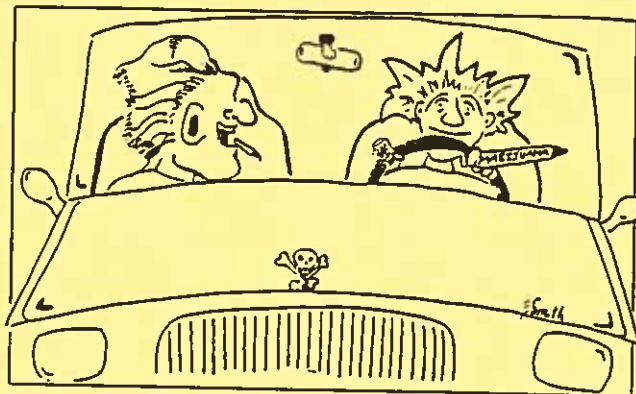
The Twelve Steps of Alcoholics Anonymous

- 1—We admitted we were powerless over alcohol—that our lives had become unmanageable.
- 2—Came to believe that a Power greater than ourselves could restore us to sanity.
- 3—Made a decision to turn our will and our lives over to the care of God *as we understood Him*.
- 4—Made a searching and fearless moral inventory of ourselves.
- 5—Admitted to God, to ourselves and to another human being the exact nature of our wrongs.
- 6—Were entirely ready to have God remove all these defects of character.
- 7—Humbly asked Him to remove our shortcomings.
- 8—Made a list of all persons we had harmed, and became willing to make amends to them all.
- 9—Made direct amends to such people wherever possible, except when to do so would injure them or others.
- 10—Continued to take personal inventory and when we were wrong promptly admitted it.
- 11—Sought through prayer and meditation to improve our conscious contact with God, *as we understood Him*—praying only for knowledge of His will for us and the power to carry that out.
- 12—Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics, and to practice these principles in all our affairs.

Marijuana

Marijuana (pot, grass, reefer or weed) comes from the leaves and flowers of the plant, *Cannabis sativa*, that grows wild and is cultivated in many parts of the world (including the United States). The leaves and flowers are dried and crushed which causes the marijuana to have a tobacco-like resemblance. A "joint" (cigarette) is when marijuana is rolled in papers. Marijuana is composed of 421 components and is the most widely used drug in the U.S. and has the ability to intoxicate its users because of its psychoactive or

mind-altering ingredient called delta-9 tetrahydrocannabinol (THC). It is the THC content found at various concentrations in different parts of the plant which determines the potency. The THC content is controlled by plant strain, soil conditions, climate and harvesting.



Drugs are cool(?)...but deadly!

THC is absorbed through the lungs and into the bloodstream almost immediately after smoking. It reaches the brain within 30 seconds of inhalation of marijuana smoke, and the psychic and physical changes reach their peak in about 2-3 minutes and then the THC is metabolized in the liver to waste metabolites, but 30 percent of it remains in the body one week after marijuana is first smoked. Studies show that deposits of THC (stored in fatty tissues) can take up to approximately 30 days to be completely eliminated from the body, brain, and reproductive organs; therefore, the use of marijuana leads to addiction. Scientific studies clearly indicate that regular users do develop physical and psychological dependence. Regular users crave the drug and experience changes in mood, nervousness, irritability, and develop an obsession to smoke more "pot."

Marijuana is estimated to be ten times stronger today than in previous years. Ninety percent of the research indicates that marijuana is a harmful and dangerous drug. In 1975, marijuana contained 0.4 percent THC; in 1982, 3.5 percent, and today the THC content in marijuana ranges from 4 to 6 percent and has been reported as high as 20 percent. Sinsemilla, a cultivated seedless variety of high potency marijuana grown from the seedless female cannabis plant, has a content of THC that is as much as 600 times as strong as the marijuana of the 1960s and '70s.

The mixture of drugs such as marijuana and alcohol (beer) can cause a drug overdose. Each drug doubles the effect of the other. For example, one marijuana joint plus one beer is equal to drinking three beers or smoking three and one-half joints. Marijuana inhibits vomiting, thus causing alcohol to remain in the body

digestive disorders, weight loss, malnutrition, insomnia, confusion, anxiety, and cocaine psychosis. Cocaine psychosis often leaves the individual with paranoia and hallucinations. In addition, the chronic user perceives imaginary insects or snakes crawling on or underneath the skin.

Large doses of cocaine can cause nervousness, vomiting, tremors, blurred vision, seizures, high blood pressure, dizziness, strokes, angina, and cardiac arrhythmias. In addition, overdoses can lead to sudden death as the result of respiratory paralysis, cardiac arrhythmias, and severe convulsions. Many individuals may lack an enzyme used in metabolizing cocaine; therefore, as little as two to three lines of cocaine may be fatal. Cocaine users develop a tolerance, and more of the drug is needed to get the same effect.

Cocaine is an illegal drug. Users are fined, arrested, and are placed in jail. Pregnant women who use cocaine can have babies who are born already addicted to the drug. In some states, women who give birth to unhealthy babies due to cocaine use during pregnancy are prosecuted.

Crack

Crack, often known as "crack" on the East Coast and "rock" on the West Coast, is cocaine in which the hydrochloride has been removed to make it smokable. It is a highly addictive, extremely potent form of cocaine. Crack is beige (slightly brownish), white, or yellowish white.

Crack is sold in the form of pellet-size chips in small plastic vials about 3/4 to 1 inch long, called "rocks," or in a tablet form. A single dose is less expensive than cocaine; however, the average person uses five or more vials in one hour to maintain a high.

Crack reaches the brain four to six seconds after smoke is inhaled and causes a sense of euphoria in the person. The drug's impact begins immediately and the average high per \$10 buy is five to seven minutes. The high is always followed by a very unpleasant low, and the user will want more and will go on binges lasting from one to three days or longer.

The biochemical state of the brain is altered and often users have an increase in blood pressure, in heart rate, and in body temperature. In addition, tremors, convulsions, nausea, and vomiting may occur. The respiratory system may fail; narrowed arteries restrict blood flow to the heart, therefore causing heart failure. Users have become aggressive and violent, even with family members, while under the influence and may become so depressed that suicide is attempted. It is estimated that over half of all adolescents' suicides are related to drugs.

Crack may be smoked in a pipe, usually made of glass. The user inhales the vapors given off as the crack is heated. Crack may be mixed with marijuana, tobacco or other drugs. Often crack is doused with PCP (space basing or space blasting), a powerful drug with side effects such as depression, panic, physical illness or violence. Sometimes individuals pay a fee to use the pipes, torches set in racks, or "rock houses."

Crank and Ice

Methamphetamine is known by various names, including "crack" or "new PCP," "meth," "crank," "crystal," "crystal meth," "speed," "go," "go-fast," "chris," "cristy," "zip," and "ice." Crank is a powerful stimulant, odorless, yellow or off-white in color, and is sold in capsules, crystals, or chunks. Approximately one-eighth of an ounce, "eightballs," are considered to be a day's supply. Crank can be inhaled, sniffed, or injected to produce a high of approximately two to four hours. Ice is the crystalline smokable form of the drug that is fine to coarse off-white to yellow powder, crystals, chunks and is imported from Asia.

Ice reached the epidemic stage in Hawaii in mid-1989, and is causing serious problems in Los Angeles, San Francisco, and San Diego and rapidly is moving to the East Coast. Asian gangs import ice from Hong Kong, Korea, and the Philippines through Hawaii.

Ice is smokable and the most dangerous variation because it includes phenyl-2 propane and methylamine, used to make PCP [Angel Dust and MDMA (Ecstasy; XTC)]. Methamphetamine affects the central nervous system (CNS) and acts as a stimulant that triggers the brain to produce a state of arousal, wakefulness or mood elevation. It also suppresses the appetite by acting on the brain and the gastrointestinal system. The drug is not the actual source of stimulation but it releases stored energy from body reserves by chemically interacting with the CNS by providing a rush or jolt followed by euphoria lasting from 2 to 30 hours as compared to 15-20 minutes to 2 hours from crack. The abusers are not aware of the dangers of the crash and depression that follow until it is too late.

Studies indicate that ice abusers, undergoing emergency treatment after one dose, show symptoms of acute psychosis such as hallucinations, convulsions, paranoia, delusions, impaired communication and aggressive or violent behavior lasting up to two days after the drug is taken. The body temperature of an ice abuser can be as much 106 - 108° F and can lead to kidney failure, irregular heart beat, palpitations, hypertension, and severe weight loss. The after-effects

of crank are similar to the use of ice.

Crank and ice may replace crack cocaine for numerous practical reasons. Ingesting methamphetamine produces nausea; snorting it quickly leads to extreme nasal irritation; and taking it intravenously may spark fears of HIV/AIDS exposure because of needle sharing. The alternative is to smoke ice or crank.

It is profitable for a dealer to sell crank and ice because it is cheaper to supply than crack cocaine and commands a higher price among abusers. It is new, falsely perceived as "safer" than crack, longer lasting and is available. Ice sells for approximately \$400 a gram in Hawaii, or one dose costs only \$5, whereas a gram of cocaine sells for \$110.

HALLUCINOGENS

Hallucinogens are a group of drugs which produce temporary intoxication and distortions of memory. Lysergic acid diethylamide (LSD), phencyclidine (PCP), and ecstasy (MMDA)/love drug (MDA) will be discussed in this section.

Lysergic Acid Diethylamide (LSD)

LSD is an hallucinogen drug, developed in Germany in 1938 and popularized during the 1960s. At the present time, most material sold as THC (major ingredient in marijuana) is either PCP or LSD. LSD is produced from lysergic acid, a substance found in ergot, a fungus that grows on rye and other grains, or from lysergic acid amide, a chemical found in seeds of the morning glory flower. LSD is odorless, tasteless and colorless, and is sold on the street in tablets, capsules and occasionally in liquid form. It is usually taken orally but is sometimes injected. LSD is now marketed as tablets, thin squares of gelatin ("window panes") or paper ("blotter acid"). Common names include "dead acid," "double domes," "the hawk," "microdot," "sugar," "sunshine," and "strawberry fields." "Flashbacks" occur in 5% of users. The effects of high doses may last 10-12 hours.

Phencyclidine (PCP) or "Angel Dust"

PCP is most often called "angel dust." It was first developed as an anesthetic in the 1950s and was taken off the market for human use because it often caused hallucinations. Until 1979 it was used on large animals as a tranquilizer. Medical attention is imperative because the person has a tendency to have unpredictable, erratic, and violent behavior. These behaviors can be directed to themselves or to others. PCP can be a pure, white crystal-like powder, tablet or

a capsule. It can be swallowed, smoked, sniffed, or injected. Often it is sprinkled on leafy material such as parsley, marijuana, oregano, or tobacco and is smoked.

Ecstasy (MMDA) and MDA (Love Drug)

MMDA ("Ecstasy," "XTC," "MDMA," "Adam"), a designer drug invented solely to avoid the federal law has become increasingly popular since 1987. MDA ("the love drug") is a hallucinogenic drug and can produce intensified feelings and impair thoughts and perceptions. Shortly after the use of the drug these effects disappear. The effects of moderate doses of "ecstasy" are similar to those of LSD. One researcher found that continued use of MDA leads to a persistent reduction of serotonin (neurotransmitter in the brain). These reductions lasted for approximately six months after the drug was discontinued and may happen because MDA destroys those particular cells in the brain. Serotonin is involved with mood, sleep, and arousal. Researchers expect to find some brain malfunction due to the use of "ecstasy" and to find that the malfunction gets worse as the person increases in age. Both MMDA and MDA are detected easily by drug tests.

ADDITIONAL INHALANTS

Additional inhalants, including butane, freon, and glue, are used by some people in an attempt to obtain euphoric effects. Prolonged use causes kidney, liver, and bone marrow destruction. These inhalants can cause serious damage to the nervous system, halting speech and memory lapses, and can cause permanent brain damage and may result in death.

A phenomenon called "Sudden Sniffing Death Syndrome" can occur for first time users. The user's heart, sensitized by overexposure to solvents, beats irregularly and stops. Other times the process causes respiratory arrest and there is not any oxygen for the brain and the individual may die by suffocation. These inhalants are cheap and easily accessible.

Solvents: glue, gasoline, lighter fluid, nail polish, spray paint, paint thinner, and correction fluid.

Propellant gases: propane, butane, nitrous oxide, deodorant sprays, insecticides and spray shoe polish.

Refrigerants: freon

Symptoms of inhalant use include coughing; chemical-smelling breath; weight loss; shaky or unsteady walk; slurred speech; rash around the mouth or nose; teary, glazed, reddened eyes; and erratic behavior.

The effects of drugs persist after the drug has been eliminated from the body. The type of drug, drug

administration, age, general health (liver and kidneys), quantity of drug injected, presence of other drugs, and percentage of body fat are some factors which affect the clearance of a drug from the body. Bodies are different; therefore, it is impossible to predict how long a drug may remain detectable.

DRUGS AFFECTING PHYSICAL PERFORMANCE

Caffeine

Caffeine, a bitter tasting, odorless compound, is considered as a nondrug because it is taken invisibly into the body in beverages (coffee, colas, nonherb teas), and in candies (cocoa and chocolate). In addition, caffeine is an additive in certain kinds of aspirin, analgesics, cold remedies, and diet aids. Caffeine is a powerful central nervous system stimulant. It tends to mask fatigue. It produces dehydration and abnormal heart electrical function which decreases performance.

Coffee is an important source of caffeine in the American diet. It is estimated that the average American coffee drinker consumes about 1000 cups of coffee per year and more Americans drink coffee than any other nation. Yet another popular source of caffeine is cola-flavored soft drinks consumed by young people. Some experts believe that caffeine in cola drinks is responsible for hyperactivity in children. Refer to Chapter 9 for additional information on caffeine.

Diuretics

Diuretics cause dehydration in the body because of the increased urine output. Diuretics are often used to lose weight and can be extremely dangerous since the loss of weight is a result of water loss, not fat. Water lost is quickly regained during the next 24 hours after rehydration. When used by athletes such as boxers and wrestlers to temporarily decrease weight in order to compete, the dehydration produces fatigue (weakness) and can result in heat illness.

Anabolic Steroids

Anabolic steroids are a synthetic version of testosterone and were developed in the 1960s by Dr. John B. Ziegler. Anabolic steroids stimulate the development of muscle, bone, skin, and hair growth, as well as emotional responses. The body produces 2.5 to 10 milligrams of testosterone daily in an adult male;

some weight lifters are known to take many times that amount per day. When the body gets too much testosterone, it may shut down skeletal growth mechanisms, lower sperm counts, cause acne, sterility, mood swings, rashes, uncontrollable aggressive behavior ("roid rages"), baldness, cancer, high blood pressure, lowered number of high-density lipoproteins (HDL), liver tumors, bleeding ulcers, and heart and kidney disease. Women produce a small amount of hormone; therefore, when using steroids they may experience menstrual irregularities, deepening of the voice, and masculine characteristics. The risk of exposure to acquired immune deficiency syndrome (HIV/AIDS) has increased to the user who injects anabolic steroids.

Steroids are not prescribed often, so athletes use the black market to acquire them. Black market and quack steroid products often come from underground laboratories or foreign countries and are of questionable quality and purity. Often they may not even be steroids.

Most people who use steroids are aware of the possible side effects, but are not concerned with the future. However, many of the side effects or adverse reactions are immediate consequences. Anabolic steroids have no place in an exercise plan and are illegal if purchased without a physician's approval. Physicians are becoming aware of the drug's dangerous side effects and are not readily writing prescriptions.

Human Growth Hormone (hGH)

Human growth hormone is produced naturally in the pituitary gland (brain) of all healthy individuals and, if not produced by the body, stunted growth and/or dwarfism is likely. When bodies produce a large amount, growth can reach and exceed eight feet in height ("Andre the Giant," wrestler, is a typical hGH person). This condition is usually accompanied by acromegaly, a condition in which the bones of the hands, feet, fingers, eyebrows, nose and jaw grow to extreme proportions (sometimes called the "Frankenstein effect"). Acromegaly often includes enlargement of the heart, leading to early death through congestive heart failure. Medical science can now manipulate the pituitary, minimizing the effects of some of these medical conditions.

For years, hGH was extracted from the pituitary glands of human cadavers. Today, hGH is usually synthetically produced. Athletes who want a drug other than anabolic steroids to affect body size and strength have tried hGH which may provide dangerous side effects. Refer to Lab 10.5.

CHAPTER SUMMARY

High risk individuals, such as those with chemical dependency (alcohol, drugs) are advised to seek medical assistance. The real hope of the future is through prevention. Over 50% of all fatal accidents are alcohol- or drug-related. Being dependent on chemical substances can lead to addiction and be detrimental to your health and well-being. Only YOU are responsible for your health and your future. By making wise choices you are given the opportunity to accept life's challenges.

There are numerous agencies, self-help groups, and professional assistance available for individuals who exhibit addictive-like behaviors. Contact your local or state resource centers to seek professional assistance. A partial listing of organizations and agencies you may wish to contact for assistance can be found in Chapter 15, Consumer Guidelines.

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- U. S. Department of Justice. Drug Enforcement Administration, 75 Spring St. S. W. Rm. 740, Atlanta, GA.
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Alcohol and Drug Dependency

Please read the text and answer the following definitions and questions.

Addiction: _____

Alcohol: _____

Alcoholism: _____

Amphetamines: _____

Anabolic steroids: _____

Caffeine: _____

Crack: _____

Crank: _____

Depressants: _____

Diuretics: _____

Drug: _____

Ethyl Alcohol (Ethanol): _____

Fetal Alcohol Syndrome (FAS): _____

Hallucinogens: _____

Ice: _____

Marijuana: _____

Over-the-counter (OTC): _____

Physical dependency: _____

Prescription drugs: _____

Roid rage: _____

Stimulants: _____

Testosterone: _____

5. True or false?

- One person every 20 minutes is killed due to an alcohol-related automobile accident.

- Alcohol-related fatal crash rate of young drivers between the ages of 16 and 24 is not three times greater than that of older drivers.

- The initial step in treatment is to recognize that there is a problem or possible addictive behavior.

- Pot, grass, reefer or weed are other words for marijuana.

- Marijuana is composed of 420 components

6. Fill in the blanks.

- Crack, often known as "crack" on the _____ and "rock" on the _____.
- Crack reaches the brain ____ to ____ second after smoke is _____.
- The average high per _____ buy is _____ to _____ minutes.
- The biochemical state of the brain is _____ and often users have an _____ in blood pressure.

7. What is the human growth hormone (hGH)?

8. What are the side effects of using anabolic steroids?

