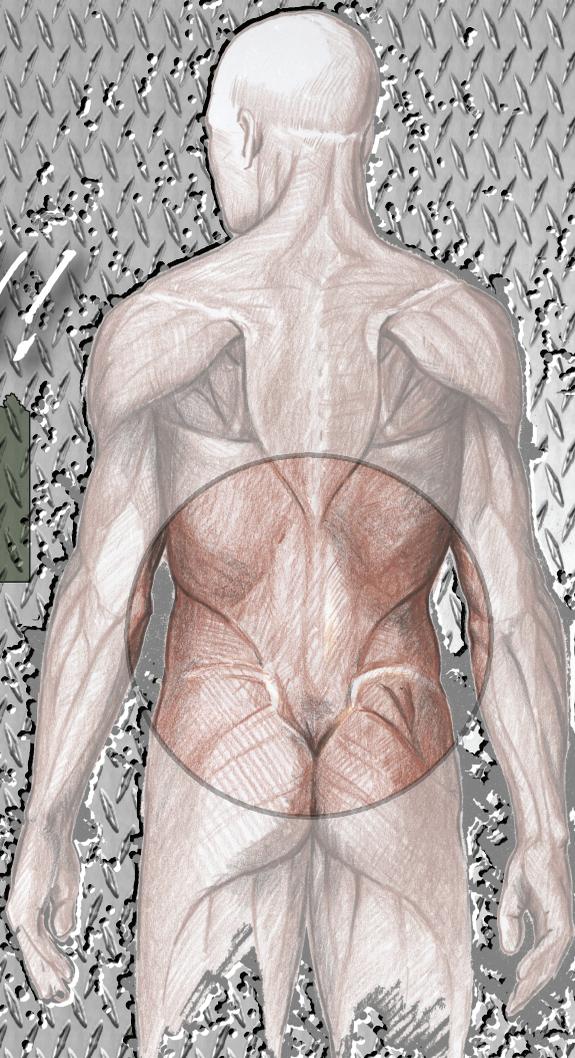


Living well!



Your Personal Blueprint

*Lifting
Manual*

Welcome to *Lifting Safely*

Lower back injuries play a significant role in regards to worker health and productivity. Most industrial ergonomic professionals estimate somewhere between 60-80% of the total U.S. workforce will suffer from back pain sometime during their career (Anderson, Fine, & Silverstein, 1995). Given this high rate of injury incidence, prevention of lower back injuries is a top priority.

At the INL, we are committed to reducing lower back injuries. This “Lifting Safely” booklet has been developed to address two of the main causes of lower back injuries: improper lifting technique and poor physical conditioning.

Industry tells us to “lift with the legs.” Although catchy and easy to remember, the simplicity of the message makes proper application difficult or unreasonable. For instance, few jobs can be performed with continuous squatting, the movement required to allow for leg muscle recruitment. Workers have routinely shown a preference for bending at the waist, using back strength instead of leg strength, because it is simply less fatiguing. And in some cases, it may be impossible to lift with the legs given the size of the object to be lifted or the object’s location in relation to the worker (removing items in a vehicle trunk). In either case, lifting techniques need to be modified and workers need to be aware of proper lifting techniques and how best to apply those techniques to the right situation. All issues addressed in this booklet.

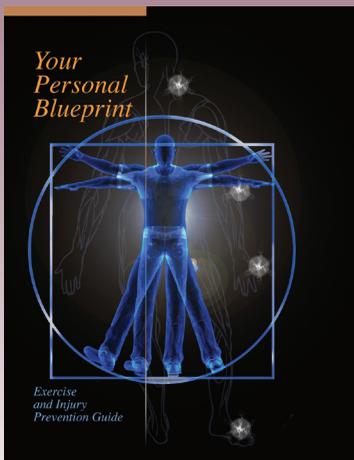
Numerous studies have established the connection between lower back muscular endurance and back injuries. Workers with poor muscular endurance of the back muscles have routinely been shown to be more susceptible to lower back sprains and strains, responsible for 95-99% of all back injuries (McGill, 2000).

As you work through the “Lifting Safely” manual, take your time. Study each lifting technique closely, practice, and apply what you learn to both the jobs you perform at work and at home. Use the exercises found in this manual to improve your muscular endurance and always remember to stay safe and be smart about lifting.

Yours in Health,



Brad Snedden, DSM, MPH



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Living well!

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Endorsements

“We need to give workers the right tools for the job. We can make a crucial difference by using the correct lifting form to prevent injuries. And we can go one step further -- by using the Personal Blueprint exercises to strengthen the key muscle groups commonly used in lifting.”

Dwayne E. Coburn
Director of Facility and Site
Services



Back pain is all around us, most unfortunate given most occurrences are preventable. Yet, we see examples of its abuse and misuse as well as its decay everyday at work and as we recreate. Most of us know someone who has injured his/her back and very seldom do we think it can happen to us even when we have witnessed co-workers and family members injuring themselves doing mundane tasks.

To start protecting yourself, all that is required is to first stop and think about the task, prepare (mentally and physically e.g., stretching), then position yourself using correct lifting form. Keep it simple.

Do your back a favor by spending a portion of the time you spend caring for your possessions, i.e. car, house, yard and care for your physical self.

Alan Wood
President of the United Steelworkers Local 652



“As a health care professional, I understand the stress that the back is subjected to through various work-related activities and the anatomic reasons for injuries. As someone who has suffered a low back injury and continues to battle chronic pain, I appreciate any tool I can use personally and professionally to help prevent injuries or manage prior conditions. My personal experience has been that targeted exercise is a great way to protect the back from problems and is an exceptional resource to both employee and employer. The concepts in this book, if applied, can make a significant difference in the health and well-being of those who add this to their routine.”

Jason Joyner, PA-C
Physician Assistant



The Five L's

When lifting at work or at home, remember to apply the 5 L's of lifting safely:

Lungs: Proper breathing is essential to lifting correctly. Improper breathing leads to increased muscular fatigue, poor core stabilization, and to a decrease in force production. Always remember to inhale during preparation and exhale during exertion.

Legs: The legs provide the strength for lifting safely. Improper lifting technique removes the burden from the legs and places it on the back-- increasing injury potential. The lessons highlighted in this manual will teach you how to best maximize your strength potential and reduce injury risk.

Load: Know your limitations and stay within work-related lifting policies. A large number of lifting injuries are a result of overestimating one's strength or underestimating the weight of the load. Always ask for help when needed or mandated by company policy.

Lever: Manipulate internal and external levers to lighten the load. Internally, this includes body positioning and using the right muscles for the job. Externally, this includes using aids such as a wheel barrow or a hand cart.

Lordosis: A medical term used to describe the inward curvature of the spine. Commonly referred to as swayback or saddleback. When lifting, a slight inward bend of the lumbar vertebrae has been shown to be protective. This is generally accomplished by lifting the head upwards during the lift.

Lifting Policy

The Idaho National Laboratory has a lifting policy that mandates employees do not lift loads that exceed 50 pounds and/or 1/3 of their body weight. In addition, workers should not lift loads in excess of 50 pounds and/or 1/3 their body weight without assistance if unsafe body positioning is required. For more information regarding the INL's lifting policy see LWP-14604 section 4.7. ICP employees, visit MCP-2692 Section 4.7.

Standard lifting Procedure

Step One: Approach

- Keep 8-12 inches between *You* and the object to be lifted, do not exceed more than 16 inches



- Lift from a corner
- Feet flat on floor
- Concentrate your weight in the center of the feet, collapsing the arch of the foot
- Feet preferably shoulder width apart, toes aimed slightly outward

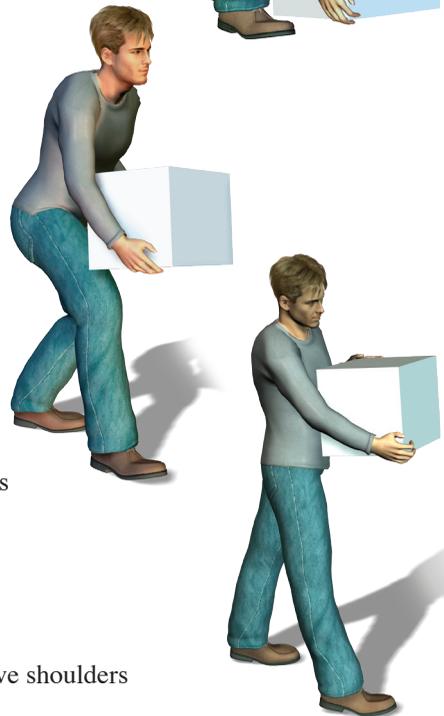
Step Two: Descent

- Lower yourself by bending equally at the hip and knee
- Keep your heels on the floor
- Concentrate your weight in the center of the feet
- Secure one hand under the object, the other at the opposing or far corner
- Keep the object close to the body



Step Three: Ascent

- Raise by unbending the hips and knee at an equal speed
- Look up during the ascent
- Keep a slight bend in elbows, if possible feet flat
- Keep the object close to the body
- Hold securely



Step Four: Transfer

- Once standing, secure the object between the chest and hips
- Hold securely
- Maintain an upright posture
- Always look where you are going
- When changing directions: look first, position the feet, move shoulders and hips together

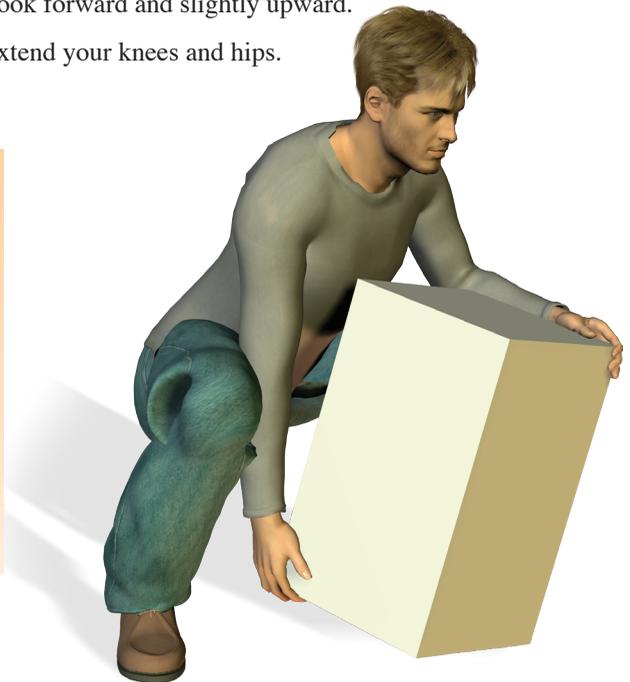
The Basic Lift

The most commonly used lifting technique is what ergonomic professionals call the Basic lift. The Basic lift is recommended for lifting objects of “normal” size with secure contents (no shifting of objects contained within the package medium).

To perform the Basic lift correctly, follow these instructions:

1. Approach the box or object from a corner and keep 8-12 inches between you and the object to be lifted.
2. Use a wide stance, feet wider than shoulder width.
3. Place one foot forward and to the side.
4. Keep your back straight and rotate the hips backward. This should result in an “inward” curve at the point of the lower back.
5. Lower yourself by bending at the hips and knees. Don't round the back!
6. Place one hand (same side as forward foot) on the side of the object furthest from you.
7. Place the other hand underneath the object at the nearest corner.
8. Tighten your stomach muscles.
9. Look forward and slightly upward.
10. Extend your knees and hips.

The basic lift is most commonly used when moving boxes, furniture, changing tires or some of the heavy equipment that we use to accomplish our work tasks. Remember to empty all drawers on furniture so that the lifting load will remain secure. Also, if you are using a lifting partner, (when moving tables and furniture for example) make sure that you are both using the same lifting technique so the load will not shift.



The Power Lift

Similar to the Basic lift, the Power lift is for wide objects and for loads equipped with handles (milk crates). The Power lift places more of an emphasis on hip strength and requires a greater amount of back and leg flexibility.

To perform the Power lift correctly, follow these instructions:

1. Using a wide stance, place one foot slightly in front of the other.
2. Keeping your back straight, bend your knees and hips and lower yourself closer to the object to be lifted.
3. Move the object to within 6-8 inches.
4. Grasp with both hands.
5. Look forward and slightly upward.
6. Lift upwards moving the shoulders and hips simultaneously.
7. Keep the back in its neutral position throughout the entire movement.

The power lift utilizes the strong inner thigh muscles instead of relying exclusively on the low back and thigh muscles where we are more susceptible to injury and fatigue. This lift is commonly used for many heavy objects such as auto parts, pumps, valves and pipe fittings. If you are using a lifting partner (when lifting a piece of pipe in place for example)—make sure you are both using the same lifting technique to avoid injury.

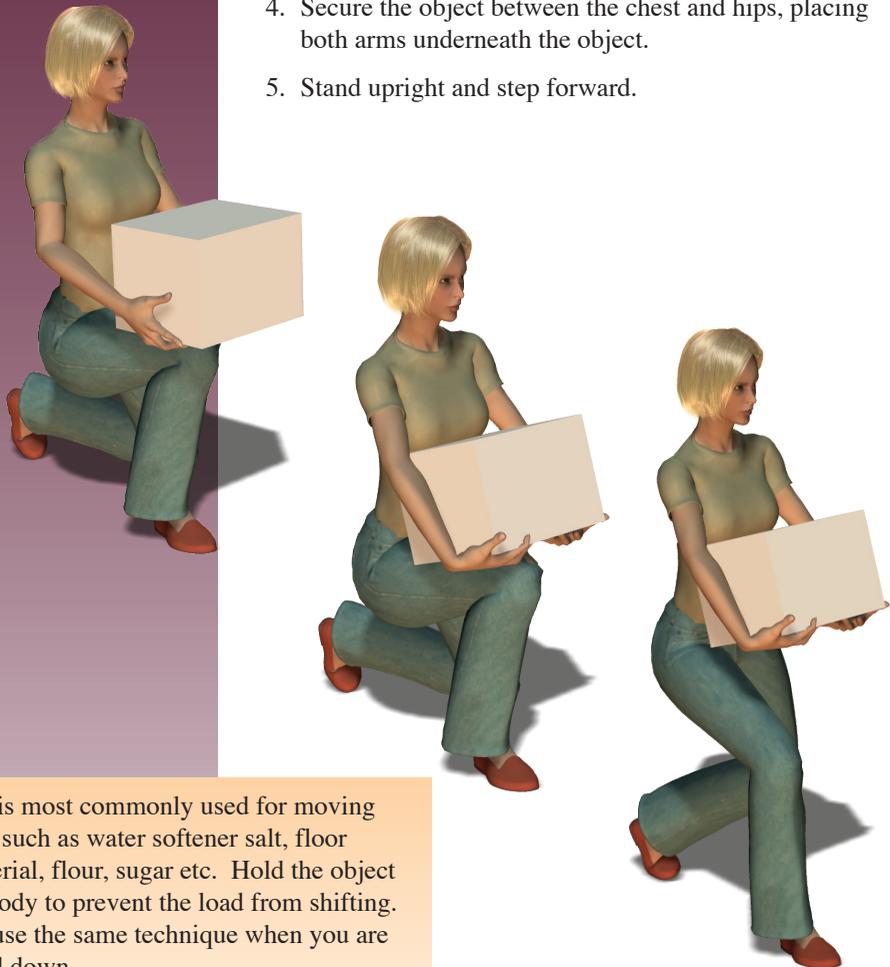


The Tripod Lift

The Tripod lift is used for lifting objects with an uneven distribution, such as sacks of food. The lift allows for “settling” to occur and limits back flexion. The Tripod lift is better suited for individuals with sufficient upper body strength and requires knee flexion greater than 90°.

To perform the Tripod lift correctly, follow these instructions:

1. Place one foot next to the object, keep back straight, tilt rear backwards and lower to one knee.
2. Position the object close to the bended knee.
3. Slide the object up onto the thigh and re-position onto bended knee.
4. Secure the object between the chest and hips, placing both arms underneath the object.
5. Stand upright and step forward.



The tripod lift is most commonly used for moving sacked objects such as water softener salt, floor absorbent material, flour, sugar etc. Hold the object close to your body to prevent the load from shifting. Remember to use the same technique when you are setting the load down.

The Golfer's Lift

The Golfer's lift is ideally suited for lifting small, light objects up off the floor or light objects held inside deep bins or boxes. The Golfer's lift has been routinely used for individuals with recurrent back pain and for individuals with knee disorders and decreased leg strength.

To perform the Golfer's lift correctly, follow these instructions:

1. Place your hand on the edge of a fixed surface. This hand will support the upper body during the lift.
2. Keep your back straight and raise one leg straight out behind you as you lean down to grasp the object. (The weight of the rear extended leg acts as a counter weight for the upper body)
3. Firmly grasp the object with one hand.
4. To stand upright, apply pressure upon the fixed surface as you lower your leg. Keep your back straight and breathe out as you lift.



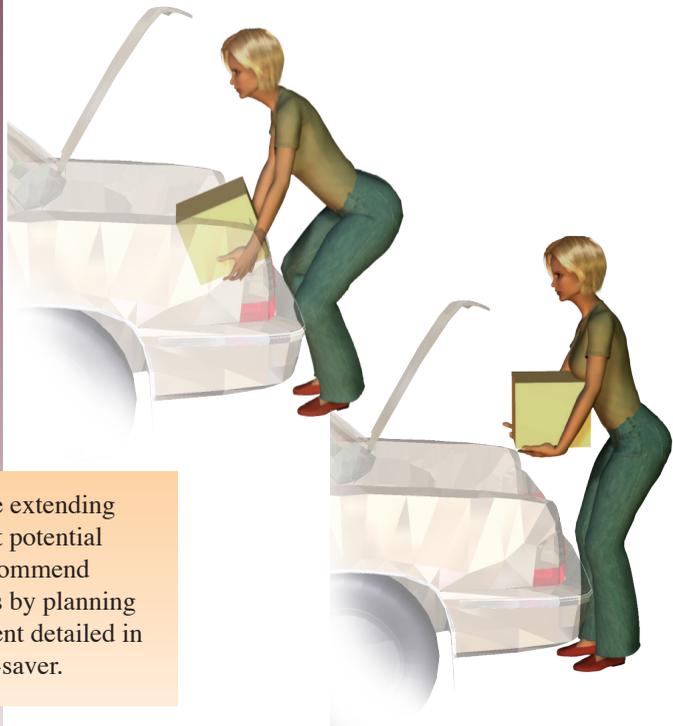
This lift is ideal for retrieving small objects off the floor, getting an item out of a shopping cart or load/unloading a washing machine. Whatever the situation might be, the Golfer's lift provides users with a supported range of movement. Try this lift the next time you drop a pen on the floor of your office.

The Straight Leg Lift

Use the Straight Leg lift when obstacles such as a shelf, grocery cart, or car trunk prevent you from fully bending your knees. Lifts such as these place workers at the greatest risk. If unavoidable, the Straight Leg technique can be used to reduce the risk.

To perform the Straight Leg lift correctly, follow these instructions:

1. Stand as close to the object as possible with knees slightly bent.
2. Bend slightly at the waist, form an inward curve at the lower back.
3. If the obstacle is stable (trunk of the car) rest your thighs upon the obstacle for support.
4. Keeping your head angled upward, lower your arms and chest to grasp the object.
5. Support the object with both hands and keep close to the chest.
6. Extend upwards maintaining the inward curvature of the lower back.



Situations that require lifting while extending the trunk forward have the greatest potential for injury. If possible, I would recommend avoiding these particular situations by planning ahead, if unavoidable, the movement detailed in the Straight-Leg lift can be a back-saver.

The Partial Squat Lift

The Partial Squat is used to lift objects with a topside handle such as a toolbox or briefcase. The Partial Squat technique uses the body's own stability for back support.

To perform the Partial Squat lift correctly, follow these instructions:

1. Stand with the object close to your dominant side.
2. Place feet shoulder width apart with one foot slightly in front of the other.
3. Keep your back straight, tilt the hips backward and slowly bend at the knees and hip.
4. Grasp the handle with the dominant hand and place the non-dominant hand atop of non-dominant thigh.
5. Extend the knees and hip, while gently pushing down upon the non-dominant thigh.

Always inspect the load prior to lifting to ensure it is not overly heavy, and that the weight is evenly distributed in the package. If this technique is performed correctly the weight will be distributed evenly across the entire body alleviating strain on the lifting side.



The Pivot Technique

Use the Pivot technique when an object must be transported in an opposing direction. The Pivot technique, when used correctly, limits the amount of twisting that occurs at the lower back when changing directions.

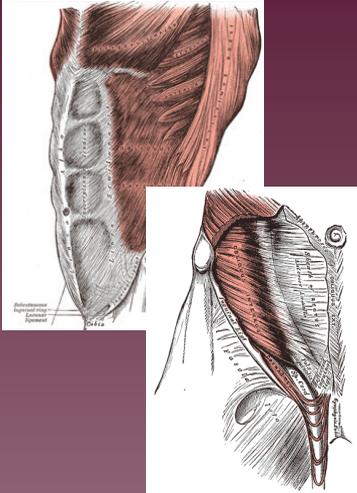
To perform the Pivot technique correctly, follow these instructions:

1. Lift and support the object using any of the previous discussed techniques.
2. Hold the load close to your body and at waist level.
3. To turn: (1) move the head towards the direction you wish to travel; (2) pivot the lead foot 90° towards the direction you wish to travel; (3) move the trailing foot, shoulders and hips in unison 90° towards the direction you wish to travel.
4. Do not twist.



This technique is an excellent tool for jobs such as office moves where space is limited, and you need to travel in an opposing direction. Never back up under load. This technique also works well for individuals that experience lower back or hip discomfort.

Exercise for Back Endurance



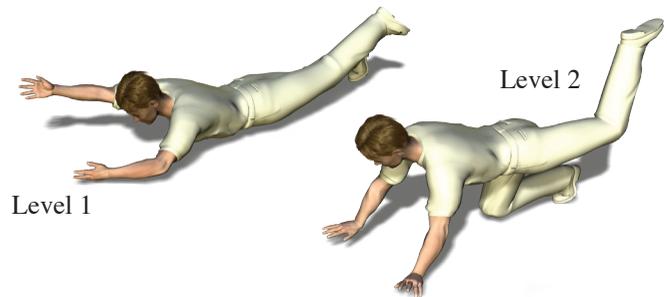
Core strength plays an important role in the prevention of back-related injuries by improving posture and enhancing movement. I strongly encourage everyone reading this manual to look closely at the exercises displayed on these two pages, talk with your doctor, then consider incorporating them into your daily routine. In only eight minutes a day, three days a week, each of us can begin to experience enhanced postural stability and improved walking mechanics.

For improved muscular endurance, perform each of the following exercises for one minute three times per week.

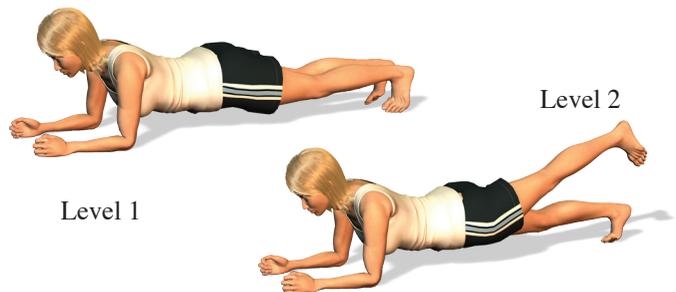
1. Side Hip flexion and extension



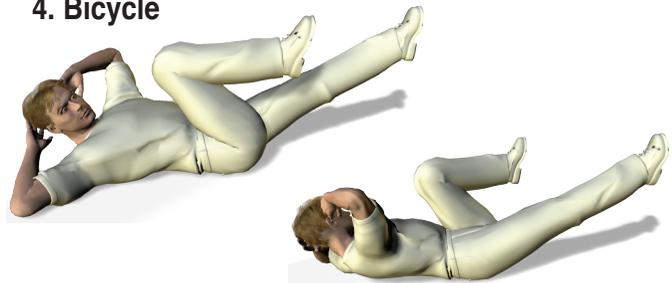
2. Back Extension



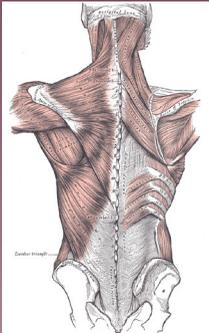
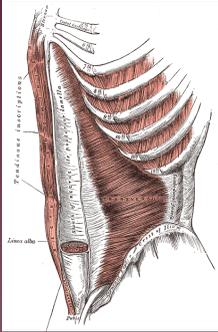
3. Plank



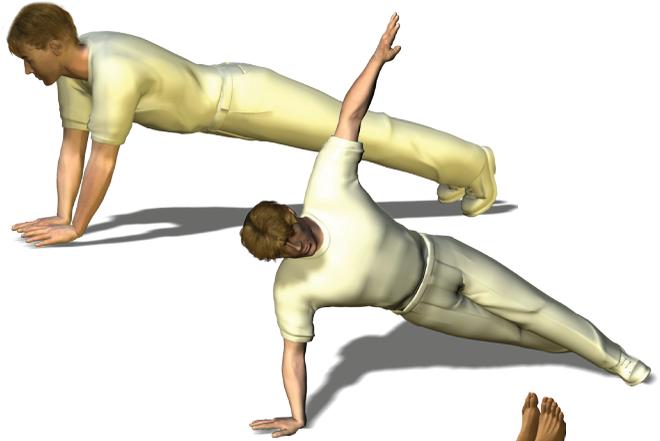
4. Bicycle



Exercise for Back Endurance



5. Ab Twist



6. 100's



7. Supine Core Stabilization

Level 1



Level 2



References

Back Care Boot Camp

A free site that offers back pain suffers a number of tips to reduce symptoms and avoid re-injury. A must see site for high-risk employees.

<http://www.backcarebootcamp.com/>

National Institute for Occupational Safety and Health (NIOSH)

A great reference for understanding low back injuries. Many free documents provided by NIOSH and is a must read for anyone interested in prevention a low back injury.

<http://www.cdc.gov/niosh/docs/97-141/ergotxt6.html>

National Ag Safety Database

The following site, published by the National Ag Safety Database emphasizes important points related to back injury prevention.

<http://www.cdc.gov/nasd/docs/d001601-d001700/d001607/d001607.html>

Northeast Rehab Health Network

A good site with plenty of videos and illustrations. Developed for non-physical therapist and easy to understand information. Site developed by the Northeast Rehabilitation Health Network.

<http://www.northeastrehab.com/Guides/goodtoback.htm>

Occupational Safety & Health Administration

A comprehensive site by OSHA detailing back injuries and prevention methods for occupational settings. A great reference.

http://www.osha.gov/dts/osta/otm/otm_vii/otm_vii_1.html

Safe Lifting Portal

This pro-bono healthcare site is designed to support safe lifting and caregiver injury prevention programs. A good site, well worth the visit.

<http://www.safeliftingportal.com/>

The Saunders Group

The Saunders Group, supplies rehabilitation products to physical therapists, chiropractors, athletes, athletic trainers, physicians, and patients with musculoskeletal pain. Wide selection of products and information.

<http://www.thesaundersgroup.com/>

Spine Health

Site provided by the professionals at Spine-Health. A good one-stop site for information pertaining to the back. Information for both the practitioner and patient.

<http://www.spine-health.com/topics/intro/top01.html>

Biography's

Living well!

Brad Snedden, DSM, MPH, CSCS

Brad is the disease & injury prevention coordinator for the Division of Occupational Medicine at the Idaho National Laboratory. Dr. Snedden holds advanced degrees in community health, athletic administration, sport management and is certified by the National Strength and Conditioning Association.

Before coming to the INL, Dr. Snedden was affiliated with several NCAA Division I-AA universities and worked closely with several local hospitals in the development of their physical conditioning and wellness programs.

David Fry, Ed.S, MS

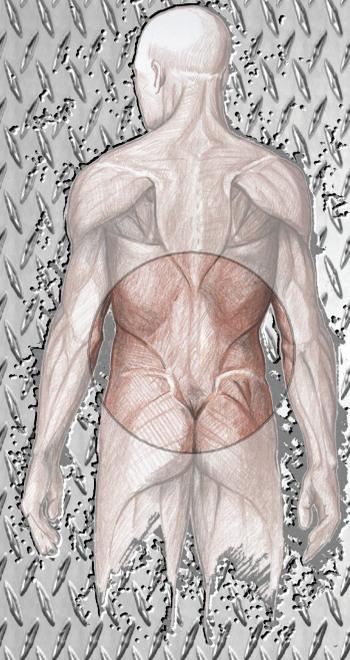
David is currently the INL Union Safety & Health Representative and has almost 30 years experience in maintenance at both nuclear and non-nuclear facilities at the INL. Having witnessed disabling musculoskeletal injuries in his family and among his fellow workers, David conceived the idea of The Personal Blueprint.

A lifelong learner and non-traditional student. Mr. Fry holds advanced graduate degrees in Safety & Health and in Adult & Organizational Learning from the University of Idaho which he accomplished through 27-years of night school while maintaining his craft as a pipefitter. Through the Steelworkers Charitable and Educational Organization, David is a worker trainer.

William (Bill) Nelson

Bill is currently the ICP Union Safety & Health Representative. An Idaho native, Bill has been employed at the INL for 26 years as a Rad-Con Technician (RCT). Mr. Nelson is a graduate of Eastern Idaho Technical College. Bill has been actively involved in the implementation of the stretching and balance programs at the INL. Bill expects this program will be the next great conditioning and personal fitness tool for workers everywhere.





Your Personal Blueprint



*Nutrition,
Immunization
and Illness
Prevention
Guide*

Welcome



The following booklet is designed to be *Your* reference for health and disease prevention information.

With an increasing number of Americans being diagnosed with a chronic disease, the importance of prevention cannot be overstated. However, lifestyle interventions are only effective if the prevention-based changes are implemented correctly. This suggests a certain level of knowledge is needed before prevention-based methodologies are used. Based on this principle, it is the aim of this booklet to provide employees with the right information regarding nutrition and exercise, making prevention possible.

As *you* look through the pages of this booklet, I hope *you* will take the steps necessary to protect yourself. The booklet is a mixed bag of exercise and nutritional suggestions, preventative screenings and recommended immunizations. In addition, we have made an attempt to address a number of frequently occurring illnesses, insofar as research is suggestive of a lifestyle link that can be positively impacted by nutrition and exercise.

Each of the areas addressed in the booklet has been researched extensively to provide only the scientifically defensible modes of prevention and maintenance. We have chosen to leave out speculative concepts, popular media suggestions, and untested or improperly studied theories. We further suggest talking with a health care professional regarding any change that might positively or negatively impact a preexisting condition.

I hope that as *you* look through the pages of this book *you* find the information useful not only for yourself, but for *your* loved ones. Share the information with a spouse, parent, or adult child, but most importantly, start the journey towards a healthier *You* today.

Yours in Health

Brad Snedden, DSM



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Immunizations



Immunization

The immunizations recommended in this booklet are for adults over the age of 19 and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection). It is recommended that employees address their questions and concerns pertaining to immunizations with the Site appointed Occupational Physician as certain medical conditions and/or environmental exposures can change the immunization recommendation.

Vaccine ▼	Age Group ►	19-49 years	50-64 years	->65 years
Tetanus, Diphtheria, Pertussis (Td/Tdap)		1-dose of Td booster every 10 years		
Human papillomavirus (HPV) ²		3 doses (female)		
Measles, Mumps, Rubella (MMR) ³		1 or 2 doses	1 dose recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)	
Varicella		2 doses	2 doses recommended if some other risk factor is present.	
Influenza			1 dose annually	
Pneumococcal				1 dose

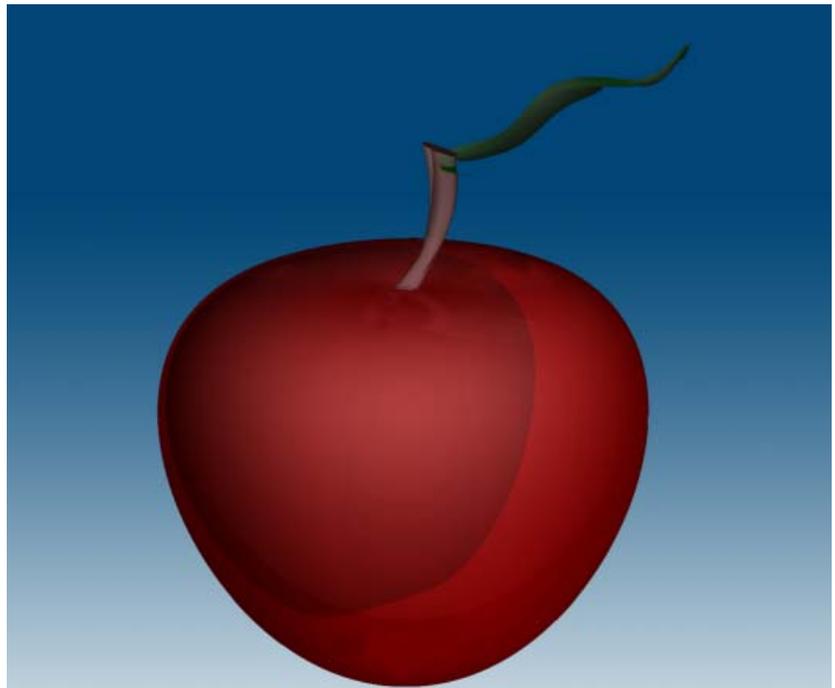
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Screenings

The following table highlights the major screening tests for healthy adults. The recommendations contained in this booklet are largely based on the recommendations of the U.S. Preventative Task Force.

Service	Who Needs	How Often	Comments
Blood Pressure Measurement	All adults	Once every 2 years for those with normal blood pressure.	More frequent monitoring for those with readings of 130/85 or higher.
Cholesterol Measurement	All adults	Once every 5 years. More often if total or LDL ("Bad") cholesterol is high, HDL ("good") is low, and/or physician advised.	Those at high risk for heart disease need medical advice about lifestyle and possible drug therapy.
Pap Smear (for early detection of cervical cancer)	All women with a cervix, starting at age 18.	If 3 annual tests are normal, then once every 3 years. More often if you smoke or have multiple sex partners.	None
Breast Cancer (Mammography)	All women over the age of 50; those 40-49 should discuss risk factors with a physician.	Annually	None
Colorectal cancer screening	Everyone over 50; earlier for those at a high risk.	Occult blood testing annually; sigmoidoscopy every 5 years or colonoscopy every 10 years.	Individuals suffering with Irritable Bowel Disease should discuss the risk with a physician.
Prostate cancer screening	Age 40 for men of African decent and those with a family history. Age 50 for all others.	Physician discretion	None
Diabetes screening	All adults over 45, earlier for those at a high risk.	Every 3 years	Hispanics, Asians, Native Americans, African Americans, obese Americans, and those with a strong family history need more frequent screening starting at age 30.
Thyroid disease screening	Women over 50, individuals with high cholesterol or family history of thyroid disease.	N/A	None
Chlamydia screening	Women 25 and younger, if sexually active.	Annually	Men and Women of any age who are at risk for sexually transmitted diseases such as gonorrhea, syphilis and HIV should make an appointment with a physician.
Glaucoma screening	Individuals over 65, diabetics, those with sleep apnea, and individuals with a family history of glaucoma.	Eye specialist discretion	Most eye specialist recommend screening adults every 3-5 years, starting at age 39.
Dental checkup	All adults	Every 6 months	Should include cleaning and exam for oral cancer.

Diet and Nutrition



Healthy Eating

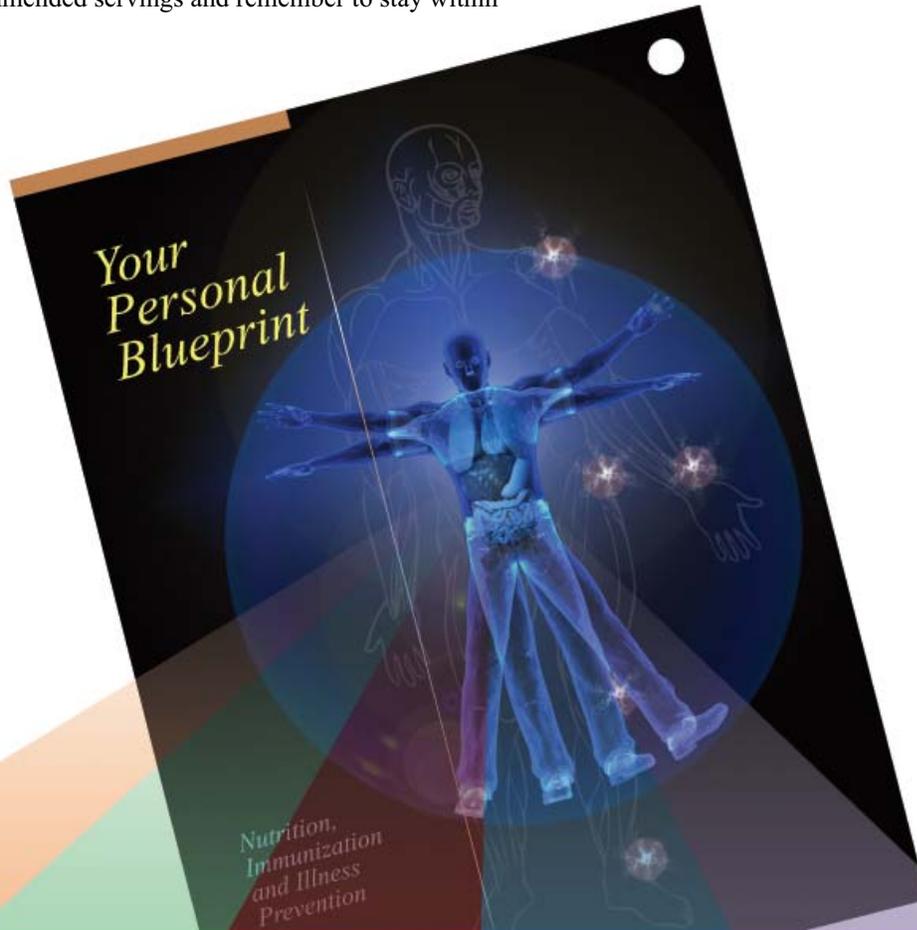
Healthy eating is essential at every stage of human development and provides the foundation for wellness. Nutrition directly effects individual health, performance, psychological outlook, and the ability to keep up with everyday events. The following section will help to make sense of healthful nutrition and provide general recommendations.

1. Eat a variety of foods (No one food can give you all you need for optimal health).
2. Balance food intake with physical activity (Energy in vs. Energy out).
3. Choose a diet with plenty of grain products, vegetables, and fruits (Only plant foods provide the combination of vitamins, minerals and carbohydrates).
4. Choose a diet low in fat (Less than 30% of total calories).
5. Choose a diet moderate in sugar (Natural sugars in fruits are good for energy, limit sugars from sweets and soft drinks).
6. Choose a diet moderate in salt.
7. Drink alcoholic beverages only in moderation.
8. Eat lean meats, poultry, fish, beans, eggs, and nuts.



USDA Food Guide Pyramid

Use the USDA food guide pyramid to help you make the right food choices. Make an effort to eat the recommended servings and remember to stay within your calorie limit.



Grains

Make half your grains whole

Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day

1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or ½ cup of cooked rice, cereal, or pasta

Vegetables

Vary your vegetables

Eat more dark-green vegetables like broccoli, spinach, and other dark, leafy greens

Eat more orange vegetables like carrots and sweet potatoes

Fruits

Focus on fruits

Eat a variety of fruit
Choose fresh, frozen, canned, or dried fruit

Go easy on fruit juices

Milk

Get your calcium-rich foods

Go low-fat or fat-free when you choose milk, yogurt, and other milk products

If you don't or can't consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages

Meat and Bean

Go lean with protein

Choose low-fat or lean meats and poultry

Bake it, broil it, or grill it

Vary your protein routine – choose more fish, beans, peas, nuts, and seeds

Eat more dry beans, kidney beans, and lentils

For a 2,000-calorie diet, you need the right amounts from each food group. To find the amounts that are right for you, go to MyPyramid.gov

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Eating to Lower Cholesterol

The most significant contributing factor to elevated blood cholesterol levels is saturated fat. Saturated fat is found mainly in animal foods, coconut and palm oil. To reduce blood cholesterol levels, the American Medical Association recommends individuals follow the National Cholesterol Education Program's TLC diet.

Therapeutic Lifestyle Change Nutritional Plan (TLC)

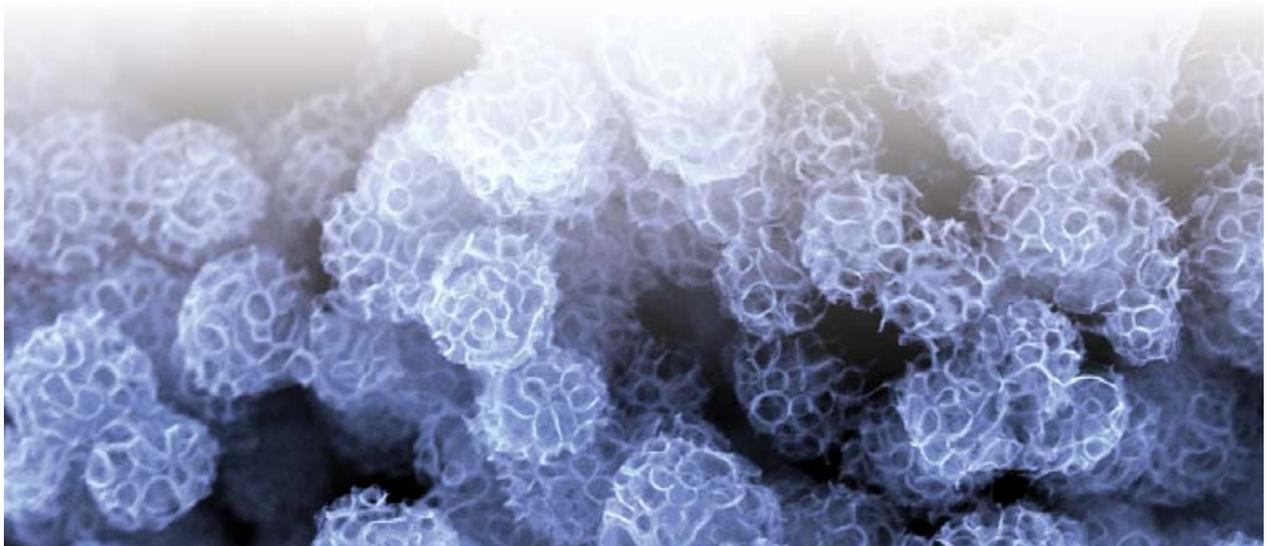
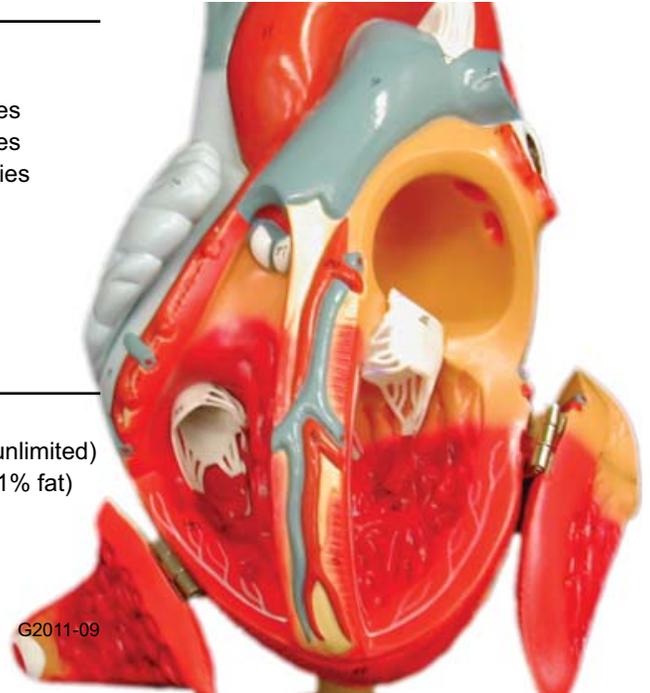
The TLC diet was introduced in May 2001 and accepted by the American Heart Association (AHA) for individuals needing to make dietary and lifestyle modifications as attributed to high blood cholesterol. The TLC diet plan consists of the following:

Summary of the TLC Diet for High Cholesterol

Total Fat	25% total calories
Saturated fat	< 7% total calories
Polyunsaturated fat	up to 10% total calories
Monounsaturated fat	up to 20% total calories
Carbohydrates	50% - 60% total calories
Protein	~15% total calories
Cholesterol	< 200 mg/dL
Plant Sterols	2g
Soluble Fiber such as psyllium	10g - 25g

Examples of food in the TLC Diet

Lean Meat/Fish/alternatives	< 5 oz/day
Eggs	< 2 yolks/wk (whites unlimited)
Low Fat Dairy	2 - 3 servings/day (< 1% fat)
Fats/Oils	< 6 - 8 tsp/day
Grains especially whole grains	> 6 servings
Vegetables	3 - 5 servings/day
Fruits	2 - 4 servings/day





Carbohydrates

Good: Whole grain or enriched breads and rolls. Low-fat or homemade muffins, pancakes, waffles, and biscuits. Corn, soft flour tortillas made with unsaturated oils. Noodles, spaghetti, macaroni, brown rice (preferred), white rice, wild rice, unsalted crackers, pretzels, popcorn prepared with air popper or mono/polyunsaturated oil.

Bad: Butter or cheese rolls and breads. Commercial biscuits, muffins, pancakes, pastries, sweet rolls, donuts, croissants, popovers. Soft flour tortillas made with lard, shortening, hydrogenated fats, coconut, and palm oils. Canned or boxed noodle and macaroni dishes. Canned spaghetti dishes. Salted crackers or snacks; fried snack foods; any snacks or crackers containing saturated fats, coconut or palm oils, hydrogenated or partially hydrogenated fats; cheese crackers or snacks; potato chips; corn chips; tortilla chips; chow mien noodles; commercial buttered popcorn.

Protein

Beef: (round, sirloin, chuck, loin, super lean hamburger/ground beef).

Corned beef, regular pastrami, ribs, luncheon meats.

Lamb: (leg, arm, loin).

Mutton (arm, leg, loin).

Pork: (tenderloin, fresh leg, shoulder-arm, picnic).

Sausage, frankfurters.

Poultry: chicken and turkey with skin removed. Processed poultry products such as turkey.

Processed poultry products, such as turkey franks, chicken franks, turkey bologna.

Eggs: Egg whites and low cholesterol egg substitutes.

Egg yolks, prepared foods containing egg yolks.

Seafood: Swordfish, mackerel, albacore tuna, salmon, walleye, pollack.

Caviar, roe, anchovy, shrimp, eel, oysters, squid.

Cheese: Mozzarella, ricotta, cottage cheese, special low-fat/low cholesterol cheeses, swiss.

Cream cheese; processed cheese and cheese spreads; all other cheeses.

Wild game: Elk, deer (venison), pheasant, rabbit, wild duck.

Domestic duck and goose.

Fruits and Vegetables: Fresh, frozen, or low-sodium canned; low-sodium tomato and vegetable juices. Fresh, unsweetened dried fruits; canned or frozen packed in water, own juice or light syrup preferred; all fruit juices (unsweetened preferred).

Regular tomato sauce and puree; spaghetti sauce; creamed, breaded, or deep-fat fried vegetables; vegetables in sauces; regular tomato and vegetable juices. Canned or frozen packed in heavy syrup, sweetened dried fruits, coconut, fried fruit snack chips.

Fats

Oils: Sunflower, safflower, corn, soybean, cottonseed, sesame oils, canola, olive, peanut oils.

Coconut, coconut oil, palm and palm kernel oil, hydrogenated fats, butter, lard, beef tallow, salt pork, bacon, bacon drippings, ham hock, animal fat, shortening, suet, chocolate, cocoa butter.

Nuts & Seeds: Unsalted pumpkin seeds, sesame seeds, sunflower seeds, any nuts not on the avoid list.

Cashews, macadamia, pistachio, brazil, salted seeds & nuts.

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Diabetic Nutrition



Whether it is Type I, Type II or Gestational Diabetes, the nutritional goals are similar: to keep blood glucose as near as possible to that of a person without Diabetes. Nutritionally, the three factors that impact blood glucose levels most significantly are the following:

1. The amount of carbohydrate you eat – especially at one sitting
2. The form of the carbohydrate – liquid or solid
3. Whether the carbohydrate is eaten alone or mixed with protein and fat.

As far as carbohydrates go, *your* nutritional plan should look like the following:

1. Contain only moderate amounts of carbohydrate.
2. Distribute carbohydrates evenly throughout the day.
3. Mix carbohydrates with proteins and fats together in meals and snacks.
4. Contain only small or limited amounts of liquid carbohydrates.

Carbohydrate Budget Guidelines

	Weight Loss	Weight Maintenance	Added carbs for the physically active	
Women	40-50 grams 3 times per day	50-60 grams 3 times per day	15-20 grams Added between meals	
Men	50-60 grams 3 times per day	60-70 grams 3 times per day	15-20 grams Added between meals	G2011-12

What does a Serving of Carbs Look Like?

Every serving listed is equal to approximately 15 grams of carbohydrate

Bread (any variety)	1 slice
Bread sticks	2
Hamburger / Hot dog buns	1/2 (1oz.)
English muffin	1/2
Flour, dry	3 Tbsp
Oats	1/2 cup
Pasta	1/2 cup
Rice, white or brown	1/3 cup
Tortilla, flour, 7-8"	1
Popcorn	3 cups
Snack Chips	17
Chow mein noodles	1/2 cup
Croutons	1 cup
French fried potatoes	20
Taco shell, hard	2
Corn	1/2 cup
Mixed veggies with corn, peas or pasta	1 cup
Potato, mashed	1/2 cup
Potato, baked	1 (3 oz.)
Baked beans	1/3 cup
Beans	1/2 cup
Apple	1/2 large or 4 oz.
Banana	1 (4 oz)
Cherries, fresh	12
Kiwi, large	1
Pineapple, fresh	3/4 cup
Raisins	2 tbsp
Strawberries	1 cup
Watermelon	1 1/4 cup
Apple juice	1/2 cup
Orange juice	1/2 cup
Milk	1 cup
All vegetables	1 1/2 cup

Nutrition & Blood Pressure

What you choose to eat affects your chances of developing high blood pressure, or hypertension. Recent studies show that blood pressure can be lowered by following the Dietary Approaches to Stop Hypertension (DASH) eating plan – and by eating less salt.

THE DASH EATING PLAN AT A GLANCE

Total Fat	27% of calories	Sodium	2,300 mg.
Saturated Fat	6% of calories	Potassium	4,700 mg.
Protein	18% of calories	Calcium	1,250 mg.
Carbohydrate	55% of calories	Magnesium	500 mg.
Cholesterol	150 mg.	Fiber	30 grams

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Food Group	Daily Servings	Serving Sizes	Servings/Day		
			1,600 calories	2,600 calories	3,100 calories
Grains	6-8	1 oz dry cereal ½ cup cooked rice, pasta or cereal 1 slice of bread	6	10-11	12-13
Vegetables	4-5	1 cup raw ½ cup cooked ½ cup juice	3-4	5-6	6
Fruits	4-5	medium fruit ¼ cup dried ½ cup canned ½ cup juice	4	5-6	6
Dairy	2-3	1 cup 1 1/2 oz cheese	2-3	3	3-4
Meats	6 or less	1 egg 1 oz. cooked meat	3-6	6	6-9
Nuts, seeds	4-5 per week	1/3 cup nuts ½ oz seeds	3/week	1	1
Fats	2-3	1 tsp oil 2 tbsp salad dressing 1 tbsp butter	2	3	4
Sweets	5 or less per week	1 tbsp sugar 1 cup lemonade	0	≤ 2	≤ 2

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Tips to Reducing Dietary Salt

1. Choose low-or reduced sodium, or no salt added versions of foods and condiments when available.
2. Choose fresh, frozen, or canned (low sodium or no salt added) vegetables.
3. Use fresh poultry, fish and lean meat, rather than canned, smoked, or processed types.
4. Choose ready-to-eat breakfast cereals that are lower in sodium.
5. Limit cured foods (such as bacon and ham); foods packed in brine (such as pickles, pickled vegetables, olives, and sauerkraut); and condiments (such as mustard, horseradish, ketchup, and barbecue sauce).
6. Cook rice, pasta, and hot cereals without salt. Cut back on instant or flavored rice, pasta, and cereal mixes, which usually have added salt.
7. Choose convenience foods that are lower in sodium. Cut back on frozen dinners, mixed dishes such as pizza, packaged mixes, canned soups or broths, and salad dressings—these often have a lot of sodium.
8. Rinse canned foods, such as tuna and canned beans, to remove some of the sodium.
9. Use spices instead of salt in cooking and at the table, flavor foods with herbs, spices, lemon, lime, vinegar, or salt free seasoning blends.

Eating for Weight Loss

Its all about calories. We have become a society that eats for pleasure and our indulgences have led to a rapid increase in weight-related diseases. Eating for weight loss doesn't involve keeping up-to-date with new diet trends, but rather re-thinking our relationship with food.

Why We Eat

Chapter six provides the necessary calculations to determine how much we should be eating and what, based on how active we are. This newly acquired knowledge might not be enough, especially if we are unaware of why we eat and what keeps driving us to eat more.

Eating Trigger	Effect	Approach
Culture	Studies suggest we are what we eat. Food and nutrition is intertwined with our cultural identity, especially mainstream foods with commercial appeal. Often we feel obligated to eat these particular types of foods and eat excessively. Example: Italian/Pasta.	Many commercialized "traditional" foods are rich in calories and loaded in fat and/or sugar. Be creative and go untraditional with your choices. Separate personal and cultural identity from food.
Social	As a society, we gather to eat. Studies suggest when individuals gather socially around food, they will over eat.	Design gatherings around nonfood based events. If unavoidable, eat before attending and watch your snacks.
Hunger	All animals eat when hungry, however, most stop when full. The physiological need to eat is quickly satiated when food is consumed.	Listen to your body. Eat slowly to allow your stomach to catch up with your brain.
Chemical	Certain foods initiate hunger. Foods such as sugar, sweeteners and caffeinated beverages can falsely send signals of hunger.	Avoid diets rich in simple sugars, sweeteners, and caffeine.
Memory	Recent research illustrates the emotional component of food and the desire to overeat to stimulate an emotional response. A food can remind an individual of a happier time, a lost one, or the feeling of companionship.	The best thing here is to recognize the fact that what your feeling is temporary and that what you will be left with are unwanted pounds. The best way to deal with unresolved emotional feelings is to talk with someone.



Fitness



One size doesn't fit all when it comes to exercise. As a rule of thumb: Strength & Muscular Endurance are best improved by resistance training; Cardiovascular endurance is best improved by aerobic activity; Flexibility is best improved by stretching. See table one for general strength training recommendations and/or table two for cardiovascular.

Strength & Muscular Endurance			
Training Methods	Weight Training Goals		
Training Variables	Endurance	Muscle Size	Strength
Sets	2-3	3-6	3-5
Reps	12-15	8-12	1-6
Resistance (% of maximum)	< 70%	71-80%	>80%
Rest between sets (seconds)	30-60	60-90	120+
How long (minutes)	30-60	60-90	30-60
How often (days)	2-3	4-6	4-6
Rest between workouts (days)	1-2	1-2	1-2

Weight Training Exercises			
Muscle Groups	No Weights	Free weights	Resistance Machines
Back (Upper)	Pull-Up	Dumbbell Row	Lat Pull Down
Legs (Upper Front)	Squat	Squat	Leg Extension
Chest	Push-Up	Bench Press	Chest Press
Legs (Upper Back)	Lunge	Lunge	Leg Curl
Shoulders	Dip	Press	Shoulder Press
Stomach	Crunches	Crunch	Ab Curl
Arms (Front)	Chin-Up	Bicep Curl	Curl Machine
Calves	Heel Raise	Heel Raise	Heel Raise
Arms (Back)	Dip	Triceps Extension	Triceps Press

Table 1.

Cardiovascular Exercise

Active Living		Health Moderate activity		Fitness Aerobic Range		Performance High Intensity
Age	Level 1 (<50%)	Level 2 50-60%)	Level 3 (60-70%)	Level 4 (70-80%)	Level 5 (80-85%)	Level 6 (85%)
20	< 100	100 – 120	120 – 140	140 – 160	160 – 170	170 <
25	< 98	98 – 117	117 – 137	137 – 156	156 – 166	166 <
30	< 95	95 – 114	114 – 133	133 – 152	152 – 162	162 <
35	< 93	93 – 111	111 – 130	130 – 148	148 – 157	157 <
40	< 90	90 – 108	108 – 126	126 – 144	144 – 153	153 <
45	< 88	88 – 105	105 – 123	123 – 140	140 – 149	149 <
50	< 85	85 – 102	102 – 119	119 – 136	136 – 145	145 <
55	< 83	83 – 99	99 – 116	116 – 132	132 – 140	140 <
60	< 80	80 – 96	96 – 112	112 – 128	128 – 136	136 <
65	< 78	78 – 93	93 – 109	109 – 124	124 – 132	132 <
70	< 75	75 – 90	90 – 105	105 - 120	120 – 128	128 <

Choosing an Aerobic Activity

	Dance	Bicycle (I)	Bicycle (O)	Cross Country (I)	Cross Country (O)	Jog/Run	Row (I)	In-Line Skate	Jump Rope	Stair Machine	Swimming	Treadmill (Walk/Run)	Walking (O)	Water Exercises
Easy to learn		•	•		•	•	•		•	•	•	•	•	•
Good beginner activity		•	•		•	•	•		•	•	•	•	•	•
I'm out of shape	•	•	•	•	•	•	•	•	•	•	•	•	•	•
I'm in great shape	•	•	•	•	•	•	•	•	•	•	•	•	•	•
I'm overweight		•	•	•	•	•	•	•	•	•	•	•	•	•
I'm older		•	•	•	•	•	•	•	•	•	•	•	•	•
Low injury rate		•	•	•	•	•	•	•	•	•	•	•	•	•
Burns many calories	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bone building	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Outdoors			•		•	•		•	•		•		•	•
Indoors	•	•		•			•	•	•	•	•	•	•	•
Group activity	•		•		•	•		•	•	•	•	•	•	•
Solo activity	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Inexpensive	•					•			•		•		•	•
Equipment/facility required		•	•	•	•		•	•		•	•	•		•
I'm busy	•	•	•		•	•	•	•	•	•	•		•	•
Can do anywhere	•	•	•		•	•	•	•	•	•		•	•	•
Time efficient				•		•	•		•	•		•		
Hate to sweat											•			•
I need variety	•		•		•			•						•
I'm competitive	•		•		•	•					•			•
Develops muscular endurance	•			•	•		•		•		•			•
Develops flexibility	•			•	•		•				•			•

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Table 2.

Warming Up & Cooling Down

1. A pre-exercise warm-up should be included before any exercise routine. The pre-exercise routine should include at least 5 to 10 minutes of light calisthenics (jumping jacks, walking in place, etc) sufficient enough to increase body temperature while improving blood flow and muscle oxygenation.
2. A post-exercise cool-down should be included after any exercise routine. The post-exercise routine should include 10 to 15 minutes of gradual tapering of intensity followed by light stretching. The post-exercise routine should be sufficient enough to assist in the return of blood to the heart, thereby reducing post-exercise cardiac stress. A light stretching routine (appendix C) should promote both flexibility and reduce muscle soreness.



Exercise Recommendations for Special Populations

Condition	Description	Exercise	Prescription	Exercise Considerations
Hypertension	Hypertension is a disease characterized by elevated blood pressure (135/85). Blood pressure is determined by cardiac output and total peripheral resistance, and therefore can be elevated either as a result of elevated cardiac output, increased resistance, or both.	Mode Frequency Duration Intensity	1. Aerobic exercise recommended. 2. Weight training should involve low resistance with high reps. 4-5 times per week. 30-60 minutes. Activity should be maintained at a level equal to 40-70% of maximum effort.	1. Avoid holding your breath during the activity. 2. Avoid isometric activities (periods of exertion with no joint movement.) 3. Consult your physician as certain medications used to treat hypertension can interfere with the body's response to exercise.
High Cholesterol	Hyperlipidemia or high cholesterol is characterized by elevated levels of the substance cholesterol in the blood (>200). Blood cholesterol levels are determined by genetics and lifestyle, including nutrition, exercise, stress and sleep.	Mode Frequency Duration Intensity	1. Aerobic exercise recommended. 2. Light weight training. 3-5 times per week. 30-60 minutes. Activity should be maintained at a level equal to 60-80% of maximum effort.	1. Avoid holding your breath during the activity. 2. Avoid activities that require short bouts of movement followed by short periods of rest, e.g. tennis, racquetball. 3. Consult your physician as certain medications used to treat high cholesterol can interfere with the body's response to exercise.

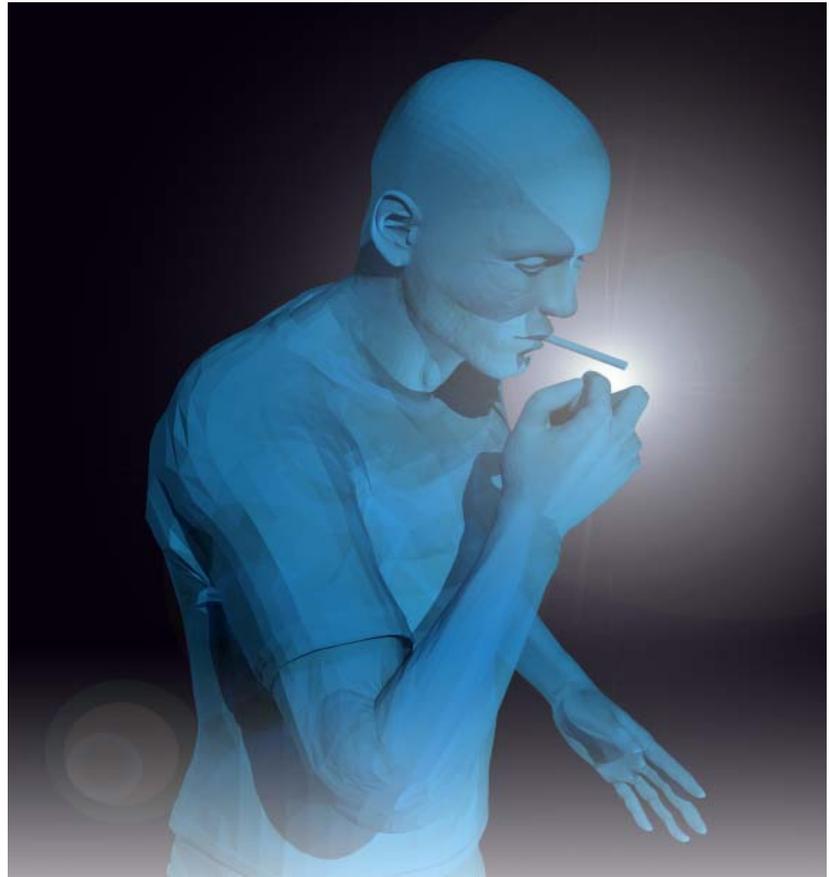
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Condition	Description	Exercise	Prescription	Exercise
Diabetes	Type 2 Diabetes or hyperglycemia is characterized by elevated levels of blood sugar. Elevated levels of blood sugar are a result of the body's inability or sluggish response to produce insulin. Insulin signals cells to allow blood sugar to enter the cell and be used as energy or to be stored.	Mode Frequency Duration Intensity	1. Aerobic exercise. 2. Weight training. Daily. 60-90 minutes. Activity should be maintained at a level equal to 50-80% of maximum effort.	1. Individuals with Insulin Dependent Diabetes (Type 1) should lower the recommended duration to 20-30 minutes per day. 2. Weight training should be included in addition to aerobic-based activity. 3. Consult your doctor before starting an exercise program, as certain medications used to treat Diabetes can interfere with the body's response to exercise.
Obesity	Obesity is classified as a condition of excess body fat that exceeds 26% (male) and 35% (female). Obesity is a result of genetic and lifestyle factors such as being sedentary and consuming a poor diet.	Mode Frequency Duration Intensity	1. Aerobic exercise. 2. Weight training. Daily. 45-60 minutes. Activity should be maintained at a level equal to 50-80% of maximum effort.	1. Primary goal is caloric expenditure. 2. Avoid activities that place extreme stress on the joints. 3. Choose comfortable settings that minimize social pressures. 4. Consult your physician and monitor muscle soreness and possible orthopedic problems.
Pregnancy		Mode Frequency Duration Intensity	1. Light aerobic activity. 2-3 times a week. 15-30* minutes. (30 minutes only with doctor approval). Maternal HR not to exceed 140 beats per minute.	1. No exercises in supine position or on right side after the 4 th month. 2. Always exercise on a non-slip surface. 3. No hard foot strikes. 4. No breath holding. 5. Stay hydrated. 6. Consult your physician.
Lower Back Discomfort	Most often lower back discomfort is characterized by chronic muscular weakness predisposing individuals to recurrent muscle strains and sprains.	Mode Frequency Duration Intensity	1. Core stability-based exercises. 2. Aerobic activity, if weight reduction is needed. 3-5 times a week. 30-60 minutes. Activity should be maintained at a level equal to 50-80% of maximum effort.	1. Correct lifting form should be paramount. 2. Emphasize movement in all three planes. 3. Pain originating from the spine should be separately evaluated.

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Smoking Cessation



Why Quit?

1. Smoking claims the lives of an estimated 430,700 Americans each year.
2. Cigarettes contain 43 distinct cancer-causing chemicals.
3. Smoking is directly related to 87% of all lung cancer cases.
4. Smoking has been linked to coronary artery disease and stroke.
5. 150,000 to 300,000 cases of lower respiratory tract infections occur each year to children of smokers.
6. Lung cancer claimed the lives of 67,000 American women last year, compared to 43,500 to breast cancer.
7. Smoking during pregnancy accounts for an estimated 20-30% of all low-birth weight babies.
8. Worldwide, 3 million people are killed from cigarette related illness each year...that is 1 person every 10 seconds.
9. 6 trillion cigarettes are consumed each year.
10. Secondhand smoke contains over 4,000 chemicals; 200 are poisons and 43-cause cancer.
11. Secondhand smoke can be very harmful to young children and make children under the age of 18 months routinely ill.
12. Children with asthma who are exposed to secondhand smoke suffer severe symptoms and can sometimes require hospitalization.

What Are The Benefits To Quitting?

20 minutes after quitting

- Blood pressure decreases
- Body temperature of hands and feet increases

8 hours after quitting

- Carbon Monoxide level in body returns to normal
- Oxygen level in blood increases to normal

24 hours after quitting

- Chance of having a heart attack decreases

1 year after quitting

- Excess risk of coronary artery disease is decreased to half that of a smoker

5 years after quitting

- Stroke risk is reduced to that of people who have never smoked

10 years after quitting

- Risk of developing lung cancer is half that of a smoker

15 years after quitting

- Risk of heart attack is now similar to that of people who have never smoked

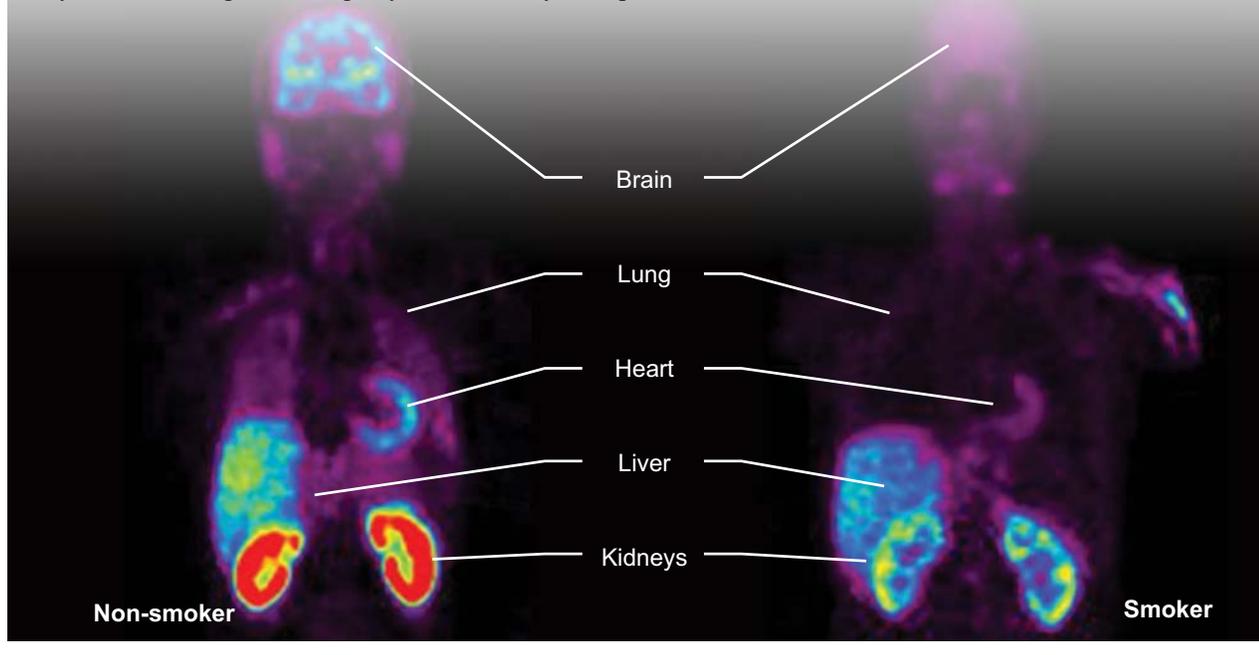


On The Day You Quit:

1. Throw away all your cigarettes and matches. Hide your lighters and ashtrays.
2. Visit the dentist and have a cleaning. This rids you of the taste of your last cigarette.
3. Make a list of rewards that you would like and estimate the cost in terms of cigarette packs.
4. Keep very busy. Get some exercise, go to a movie, and/or take a walk.
5. Remind friends and family members that this is your day to quit and ask for their support.
6. Do something special at the end of the day as a celebration of your quit day.

Immediately After Quitting:

1. Develop a clean, fresh, nonsmoking environment around yourself – at home and work.
2. The first few days after you quit, spend as much free time as possible where smoking isn't allowed.
3. Drink large quantities of water and fruit juice.
4. Try to avoid alcohol, coffee, and other beverages that you associate with cigarette smoking.
5. If you miss the sensation of having a cigarette in your hand, play with a pencil, pen, paper clip or a marble.
6. If you miss having something in your mouth, try toothpicks.



Tools Available: Many products are available to help individuals kick the habit. Some of the products include:

Type	Brand	With out prescription	How Used	Dosage	Benefits	Drawbacks	Cost
Nicotine Gum	Nicorette	Yes	Chew briefly, then "park" in mouth. Nicotine absorbed through the mouth lining.	Begin with 2 or 4 mg, no more than 20 Taper dose before stopping. Use for 2-3 months (maximum 6 months).	Convenient, lots of flexibility. Delivers nicotine quicker then patch.	Dental considerations.	\$50-\$60
Nicotine Patch	Nicoderm CQ; Nicotrol	Yes	Apply to skin every day; releases steady dose of nicotine through the skin.	Begin with either 21 or 14mg. Taper to 7mg. Use for 2-3 months. Available as 16 hour or 24 hour patch.	Very easy to use. Few side effects.	Releases nicotine more slowly than other systems; can cause skin irritation and "vivid" dreams.	\$45-\$60
	Habitrol or Prostep	No					
Nicotine Spray	Nicotrol NS	No	Every 1-2 hours,take a deep breath, spray once into each nostril, and exhale through mouth.	Use for 3 months and gradually taper off.	Delivers nicotine the fastest, so good at reducing sudden cravings.	Nose and sinus irritation common at first but usually goes away; those with allergies, asthma should not use.	\$70
Nicotine Inhaler	Nicotrol inhaler	No	Inhale nicotine when urge hits.	At least 6 cartridges per day for first 3-6 weeks, then taper off. Use for 3 months.	Delivers nicotine as quickly as gum; addresses "comfort" of hand-to-mouth;few side effects.	May cause mouth or throat irritation; not for people with asthma or chronic lung disease.	\$80
Bupropion Hydrochloride	Zyban	No	For first 3 days,take one pill a day, then take one pill in morning, one in late afternoon.	Start taking two weeks before quitting; after quitting, continue for 7-12 weeks.	Easy to use, few side effects. May be more helpful when used with patch.	Do not use if you have a history of seizures and/or eating disorder. People using Wellbutrin or MAO inhibitors; are pregnant or breast-feeding should not use.	\$45-\$55
Varenicline	CHANTIX	No	One pill for three days and two (one in the morning and one in the evening) for four days prior to quitting After the quit day, two tablets for an additional 12 weeks.	Start with .5 mg for 3 days, followed by 1 mg for four days and end with 2 mg for 12 weeks.	Easy to use, few side effects. Effective at reducing cravings.	Do not use if a history of kidney problems are present. Individuals using insulin, blood thinners, and/or asthma medications will need to discuss usage with a physician.	\$110-\$150

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Company Benefits:

The following benefits are offered to all BEA employees:

1. Coverage is provided for smoking cessation, limited to two 90-day treatment periods. This 180-day treatment period is the maximum lifetime benefit allowed under the medical plan. Reasonable and customary charges for (1) the initial office visit for smoking cessation treatment and (2) doctor recommended smoking cessation products are included in this coverage. These charges are not subject to plan deductibles if the services/products are obtained from PPO network providers. Charges for smoking cessation services and products that are not obtained through the PPO network are subject to normal plan deductibles. Regular in-network/out-of-network plan co-payments apply to all charges.
2. A total of four (4) personal counseling sessions from a certified Employee Assistance Professional (EAP) skilled in addiction and substance abuse.



Assessments

Assessing Body Weight (body mass index)



Two of the most widely used methods for assessing body weight include body mass index and anthropometric measuring. Follow the instructions in this section to correctly determine your ideal weight.

*BMI (kg/m ²)	Classifications
20-24.9	Desirable range for men and women
25-29.9	Grade 1 obesity
30-40	Grade 2 obesity
Greater than 40	Grade 3 obesity

Using height in inches and weight in pounds, follow the instructions on Table 3 to calculate BMI.

*Body mass index is calculated by multiplying weight (lbs) by 703; dividing by your height (inches) and then dividing again by your height.

Anthropometric Instructions

- Males**
1. Abdomen: Measure directly over the umbilicus (Inches).
 2. Neck: Measure just below the larynx perpendicular to the long axis of the neck.

Equation $85.20969 \times (\text{abdomen circumference} - \text{neck circumference}) - (69.73016 \times \text{height}) + 37.26673 = \%BF$

- Females**
1. Abdomen: Measure just below the umbilicus, at the narrowest portion of the waistline below the ribs and above the hip with the abdomen relaxed.
 2. Hips: Measure at the widest part below the waist; landmark the greater trochanter, feet should be together.
 3. Neck: Measure just below the larynx perpendicular to the long axis of the neck.

Equation $161.27327 \times (\text{abdomen circumference} + \text{hip-neck circumference}) - 100.81032 \times \text{height}$

Anthropometric Measurement

Percent Fat	Classification
≤16 ♂ ≤ 22 ♀	Desirable range for men and women
≤18 ♂ ≤ 24 ♀	Grade 1 Obesity
≤22 ♂ ≤ 28 ♀	Grade 2 Obesity
≤25 ♂ ≤ 31 ♀	Grade 3 Obesity

Body Mass Index Table

BMI	Normal				Overweight					Obese						Extreme Obesity																						
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54		
Height (inches)	Body Weight (pounds)																																					
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258		
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267		
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276		
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285		
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295		
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76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	428	435	443		

Table 3.

Assessing Caloric Needs

Calorie Range	Sedentary	Active
Females		
19–30	2,000	2,400
31–50	1,800	2,200
51+	1,600	2,200
Males		
19–30	2,400	3,000
31–50	2,200	3,000
51+	2,000	2,800

Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life. U.S.

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Assessing Muscular Endurance

Sit-up Test

Stage 5: Easy

Assume the standard sit-up position (feet cannot be hooked under anything) with your hands placed on the floor on each side of your chest. Perform a sit-up using your hands and arms in addition to your stomach muscles. You have successfully completed this stage only if you were able to complete the full movement without lifting your feet off the floor.

Classification: Poor



Stage 4: Moderately Easy

While in the same position, move your arms so they are now stretched above your head and interlock your fingers. Perform a sit-up while throwing your arms forward toward your knees. Stop if your feet moved off of the floor.

Classification: Fair



Stage 3: Moderately Difficult

Assuming the same position, place your hands on the back of your thighs and perform a sit-up allowing yourself to use your arms to pull yourself forward. Stop if your feet lift off the ground.

Classification: Average



Stage 2: Difficult

While in the same position, cross your arms over your chest and perform a sit-up. Watch your feet, this one is hard, but the same rules apply.

Classification: Good

Stage 1: Very Difficult

Last one, this time assume the same position as in stage four; however, keep your arms extended and locked above your head behind your ears during the movement. Don't be discouraged, few people can do this one.

Classification: Excellent



Assessing Muscular Strength (upper body)

Four-part Push-up Test

Stage 4: Easy

Assume the standard "modified" push-up stance (prone body position, arms extended, resting on knees, ankles crossed). Bend at the elbows, lowering yourself to approximately a "clenched fist" distance away from the floor to chest. Repeat motion 25 times.

Classification: Fair



Stage 3: Moderate

Assume the standard push-up stance (prone body position, arms extended, resting on forefeet, feet shoulder width apart). Bend at the elbows, lowering yourself to approximately a "clenched fist" distance away from the floor to chest. Repeat motion 25 times.

Classification: Average



Stage 2: Moderately Difficult

Assume the standard push-up stance (prone body position, arms extended, resting on forefeet, feet shoulder width apart). Cross ankles, resting on one leg (forefoot). Bend at the elbows, lowering yourself to approximately a "clenched fist" distance away from the floor to chest. Repeat motion 25 times.

Classification:
Good



Stage 1: Difficult

Assume the standard push-up stance (prone body position, arms extended, resting on forefoot, feet shoulder width apart). Raise one foot off the ground by a minimum of 6 inches. Bend at the elbows, lowering yourself to approximately a "clenched fist" distance away from the floor to chest. Repeat motion 25 times.

Classification: Excellent



Assessing Muscular Strength (lower body)

Four-Part Wall Squat Test

Stage Four:

Lean against a wall or other non-movable vertical surface. Lower yourself until your knees form a 120 degree angle. Keep contact with the wall with both the shoulders and hips and keep the knees behind the toes. Place arms across chest and hold position for 1 minute.

Classification: Fair

Stage Three:

Lean against a wall or other non-movable vertical surface. Lower yourself until your knees form a 90 degree angle. Keep contact with the wall with both the shoulders and hips and keep the knees behind the toes. Place arms across the chest and hold position for 1 minute.

Classification: Average

Stage Two:

Lean against a wall or other non-movable vertical surface. Lower yourself until your knees form a 90 degree angle. Keep contact with the wall with both the shoulders and hips and keep the knees behind the toes. Lift one foot 6 inches off the ground while placing one hand on hips other hand on the supporting leg. Hold position for 1 minute.

Classification: Good

Stage One:

Lean against a wall or other non-movable vertical surface. Lower yourself until your knees form a 90 degree angle. Keep contact with the wall with both the shoulders and hips and keep the knees behind the toes. Lift one foot 6 inches off the ground while placing arms across the chest. Hold position for 1 minute.

Classification: Excellent



Assessing Cardiovascular Endurance

Cardiovascular Fitness Assessment Walk Test

<p>What You Need:</p> <p>1. Stop watch 2. Good pair of walking shoes</p> <p>Record your results</p>	<ol style="list-style-type: none"> 1) Warm up by walking a few minutes then slowly stretch your muscles. 2) Look at your watch. Note the time. Start the stopwatch. 3) Walk one mile as fast as you can. No running or light jogging. If you are using a school track, one mile is four laps. The Walk Path in Freeman Park is one mile around. 4) When you have completed the mile, immediately make note of the time to the nearest quarter of a minute. 5) Continue to walk, but slow down and find your pulse as quickly as possible. Count the pulse for 15 seconds. 6) Cool down by walking slowly for several minutes and by performing a few stretches afterward. These stretches will help reduce any soreness that you may experience later. 1-mile walk time: __:__(to nearest quarter of a minute) 15-sec heart rate: __ x 4 = __ beats per min
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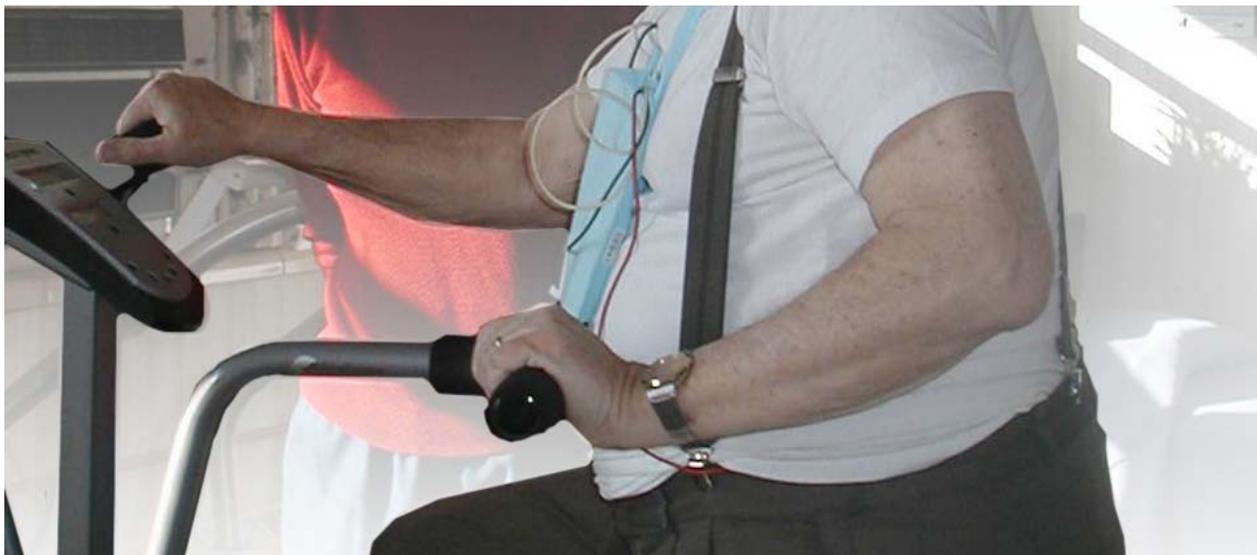
To calculate your maximal aerobic capacity , use the following calculation

How do you rate?

- 1) Weight ___ lbs x 0.0769 = ___
 - 2) Age ___ yrs x 0.3877 = ___
 - 3) Walk time ___ min. x 3.2649= ___
 - 4) Heart rate ___ b/min x 0.1565= ___
 - 5) Subtotal (add steps 1 to 4)= ___
 - 6) Subtract Step 5 from 139.168= ___
- Write your rating here:= ___

Results of Step 6 is your estimated maximal aerobic capacity, compare to the chart below to find how you rate.

Age	20-29	30-39	40-49	50-59	>60
Excellent	54+	53+	50+	47+	44+
Good	48-53	47-52	44-49	41-46	38-43
Average	44-47	42-46	40-43	37-40	34-37
Fair	41-43	39-41	37-39	34-36	31-33
Poor	Under 41	Under 39	Under 37	Under 34	Under 31



Assessing Static Balance

4-Part Static Balance Test

Stage 4

Stage 3

Stage 2

Stage 1



Stage 4:

Stand with hands on hip, right foot wrapped behind left ankle. Hold position for 30 seconds. Classification: Fair

Stage 3:

Stand with hands on hip, right foot wrapped behind left ankle. Lift left heel 1-2 inches off the ground. Hold position for 30 seconds. Classification: Average

Stage 2:

Stand with feet shoulder width apart, hands on hip. Lift one heel 1-2 inches off the ground. Hold position for 30 seconds. Classification: Good

Stage 1:

Stand with feet shoulder width apart, hands on hip. Place foot against the inside of supporting leg's upper thigh. Lift heel 1-2 inches off the ground. Hold position for 30 seconds. Classification: Excellent



Appendices

Appendix A

Par-Q

Before you start the self-assessments, or if you are planning to become more physically active than you are now, answer the seven questions below. If you are between the ages of 18 and 35, the PARQ will tell you if you should check with your doctor before you start a new exercise program. If you are over 35 years of age, check with your doctor before beginning an exercise program.

Common sense is your best guide when you answer these

Yes No

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you feel pain in your chest when you do physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | In the past month, have you had chest pain when you were not doing physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you lose your balance because of dizziness or do you ever lose consciousness? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you have a bone or joint problem that could be made worse by a change in your physical activity? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition? |
| <input type="checkbox"/> | <input type="checkbox"/> | Do you know of any other reason why you should not do physical activity? |

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Yes to one or more questions—Stop Here

If you answered: Talk with your doctor BEFORE you start a new exercise program. Tell your doctor about the PAR-Q and which questions you answered **YES**

No to all questions

If you answered no to all PAR-Q questions, you can be reasonably sure that you can start becoming more physically active. Begin exercising slowly and build up gradually as this is the safest and easiest practice. Carefully follow the directions on the self-assessment tests.

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Appendix B



iBalance

Warm Up:

Heat muscles through large muscle group rhythmic activity

- Step side to side
- Add shoulder shrug motion, stepping side to side
- Bench press motion, stepping side to side
- Incline press motion, stepping side to side
- Overhead press motion, stepping side to side



(1) Static single leg stand

- Feet shoulder width apart, relaxed knees, upright posture.
- Flex hip, knee and ankle.
- Hold for one minute.
- Rest and alternate leg.



(2) Runner's stride

- Flex hip, knee and ankle.
- Swing leg slowly downwards and backwards until you leg is extended behind your body.
- Repeat 20 times slowly and rhythmically.
- Repeat using opposite leg and arm.



(3) Hip flex into knee extension

- Begin by flexing the hip, knee and ankle.
- Extend the calf of your leg so that your knee is fully extended.
- Slowly lower the knee and foot to the ground.
- Repeat the knee extension 20 times.
- Rest, and perform the exercise 20 times with the other leg.



(4) Plantar flexion

- Feet shoulder width apart, relaxed knees, upright posture.
- Raise so you are standing on your toes.
- Hold this position one minute.



(5) Dorsi flexion

- Feet shoulder width apart, relaxed knees, upright posture.
- Lift your toes so that you are standing on your heels.
- Hold this position one minute.



(6) Cross-body leg swing

- Stand with your feet slightly wider than shoulders.
- Raise one foot a few inches off the ground.
- Slowly swing the leg across the front of your body.
- Repeat this motion 15 times with erect body posture and good balance.
- Repeat 15 times using the other leg.



Balance Principles

- Maintain good balance, posture and stability at all times
- Concentrate on "total body" stabilization
- Move slowly throughout the exercise
- Breathe throughout the exercise
- Wear stable footwear or remove shoes
- Do not participate in balance-based activities if you have a history of proprioceptive disorders (e.g., inner ear dysfunction).

(7) Dynamic single-leg stand

- Feet shoulder width apart, relaxed knees, upright posture
- Flex the knee, hip, and ankle, as you would during the act of running.
- Swing your arms back and forth, controlled and rhythmically, mimicking the arm action associated with running.
- Continue this motion for one minute, rest, and then repeat using the opposite leg.



(8) Lunge squat (advanced)

- Position one foot forward in a lunge stance (make sure the forward knee doesn't extend past toes).
- With rear foot flexed lower back knee until the knee almost touches the ground.
- Stand up from this position with heels off the ground.
- Complete 10 repetitions, rest, repeat using the opposite leg.

(9) "Blind" static single-leg stand (advanced)

- Feet shoulder width apart, relaxed knees, upright posture.
- Flex hip, knee and ankle.
- Close your eyes.
- Hold this position for one minute.
- Rest and repeat with alternate leg.



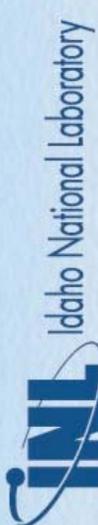
(10) One-footed heel raise (advanced)

- Stand straight, feet shoulder width apart.
- Elevate a single leg, flexing at the knee so that your shin is parallel with the ground.
- Raise unto the toes and hold this "tip-toe position" for 20-25 seconds.



Living Well!

Appendix C



Stretch

Warm Up:
Heat muscles through large muscle group rhythmic activity

- Step side to side
- Add shoulder shrug motion, stepping side to side
- Bench press motion, stepping side to side
- Incline press motion, stepping side to side
- Overhead press motion, stepping side to side

Stretching Principles

- Concentrate on target muscles
- Move slowly in and out of stretch 2-3 seconds
- Hold 10-30 seconds at gentle stretch (no bouncing)
- Keep breathing during the stretch
- Emphasize relaxation
- If there is any pain or an increase in muscle tension, slowly back out of the stretch
- Wear stable footwear-no high heels
- Any problems with musculoskeletal system, don't do

Forearm Stretch



- Arms to front parallel to ground
- Back of wrists touching
- Move fingers toward elbows

Shoulder Stretch



- Place fingers on back of neck
- No pressure on neck
- Move elbows backward

3-Point Shrug Stretch



- Arms to sides-lift shoulders up-hold
- While up, move shoulders back-hold
- Move shoulders down - hold

Chest Stretch



- Place hands on lower hips/buttocks
- Move shoulders and elbows back

Neck-Shoulder Stretch



- Place hands behind back and grasp wrist
- Tilt head to left and pull wrist in same direction
- Tilt head to right and pull wrist in same direction

Triceps Stretch



- Place right hand between shoulder blades
- Lightly grasp elbow with opposite hand and pull up gently
- Repeat on opposite side

Inner Thigh Stretch



- Hands on hips and legs slightly more than shoulder width apart
- Move left hip toward right leg
- Repeat on opposite side

Hamstring Stretch



(If you have any medical problems with a knee or hip- do not do this stretch)

- Stand with one foot in front of the other
- Keep the front leg straight with toes off the floor
- Bending opposite knee, slowly press the hips backwards and lower towards floor
- Keep weight on back leg

Calf Stretch



- Stand with one foot in front of the other-hands on hips
- Front knee slightly bent and toes flat on the floor-back leg fairly straight
- Slowly press the hips backwards and lower towards the floor
- Keep weight on back leg

Inner Thigh Stretch



- Hands on hips and legs slightly more than shoulder width apart
- Move left hip toward right leg
- Repeat on opposite side

Hamstring Stretch



(If you have any medical problems with a knee or hip- do not do this stretch)

- Stand with one foot in front of the other
- Keep the front leg straight with toes off the floor
- Bending opposite knee, slowly press the hips backwards and lower towards floor
- Keep weight on back leg

(Optional) Quad Stretch



(If you have any medical problems with a knee or hip- do not do this stretch)

- Stand with one foot in front of the other
- Gently kneel down on one knee
- With hands on front knee, move hips

Living well!

Biography



Brad Snedden, DSM, MPH, CSCS

Brad is the disease & injury prevention coordinator for the Division of Occupational Medicine at the Idaho National Laboratory. Dr. Snedden holds advanced degrees in community health, athletic administration, sports management and is certified by the National Strength and Conditioning Association.

Before coming to the INL, Dr. Snedden was affiliated with several NCAA Division I-AA universities and worked closely with several local hospitals in the development of their physical conditioning and wellness programs.



David Fry, Ed.S, MS

David is currently the INL Union Safety & Health Representative and has almost 30 years experience in maintenance at both nuclear and non-nuclear facilities at the INL. Having witnessed the devastating impacts of chronic illnesses and musculoskeletal injuries in his family and among his fellow workers, David conceived the idea of The Personal Blueprint.

A lifelong learner and non-traditional student, Mr. Fry holds advanced graduate degrees in Safety & Health and in Adult & Organizational Learning from the University of Idaho which he accomplished through 27-years of night school while maintaining his craft as a pipefitter. Through the Steelworkers Charitable and Educational Organization, David is a worker trainer.



David Boyce, MS

David has a Master of Science Degree from the University of Idaho in Environmental Health and Safety and a Bachelor of Science degree from Brigham Young University, Provo, in Environmental / Occupational Health and Safety. David is a Certified Safety Professional, Certified Hazardous Materials Manager, Certified Fitness Coordinator, Certified Traffic Control Supervisor,

and Certified Emergency Medical First Responder. He is also an affiliate professor at the University of Idaho, in Idaho Falls and Instructor at Eastern Idaho Technical College where he teaches courses on Traffic Control, Fall Protection, Hazardous Materials Packaging and Shipping. He is also a temporary Black Belt in Tae Kwon Do, and a practicing cellist.



William (Bill) Nelson

Bill is currently the ICP Union Safety & Health Representative. An Idaho native, Bill has been employed at the INL for 26 years as a Rad-Con technician (RCT). Mr. Nelson is a graduate of Eastern Idaho Technical College. Bill has been actively involved in the implementation of health and safety programs at the INL.

References

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American Diabetic Association
American Heart Association
American Academy of Family Physicians
National Strength and Conditioning Association
National Cholesterol Education Program
National Heart, Lung, and Blood Institute
National Institutes of Health
The University of California at Berkley
US Department of Agriculture
US Department of Health and Human Services



