



# Safety and Fitness



Presented by the 2007 KSC interns

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# WHAT ARE WE TALKING ABOUT???

- SAFETY FACTS
- WORK INJURIES
- PAIN PREVENTION
- ERGONOMICS
- POSTURE
- LIFTING TECHNIQUE
- PROPER WAY TO WORKOUT (RESISTANCE TRAINING AND CARDIOVASCULAR ACTIVITY)
- CONTACT INFORMATION

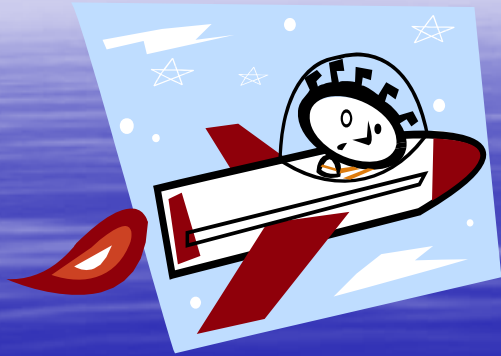
# NASA CORE VALUES

**Safety**

**TEAMWORK**



**INTEGRITY**



= MISSION  
SUCCESS



“That’s one small STEP for man, one giant LEAP for mankind  
~Neil Armstrong



# You May Ask



- What Does Safety AND Fitness have to Do With Me ???
- **GOOD QUESTION!!!!!!!!!!!!!!**

# Here is the ANSWER

- The Number of Continuation of Pay Cases in 2004 was 55K
- The trend for NASA Workers' Compensation costs was more than 6.5 million dollars in the year 2004



# The COLD Hard Facts

- **FY COP Cases COP Costs NASA**
- **workforce**
- 2000 74 \$116,245 18,601
- 2001 69 \$109,098 18,939
- 2002 48 \$88,026 18,874
- 2003 48 \$81,983 18,908
- 2004 36 \$55,653 18,909 (est).

- AND THAT IS WHY THE **KSC**  
**FITNESS CENTER** WAS BORN

# The Culprits of Injuries and PAIN

1. Poor Posture-----
2. Improper Ergonomics----
3. Weak Core Muscles-----
4. Weak Knee and Leg Muscle-----

# Reported Injuries

- Rehab Works (1/1/04 to 12/31/06 work related injuries):
  - Lumbar strains: 66
  - Carpal tunnel syndrome: 10
  - Ankle sprains: 20
- ~Amy Rembert- Medical Secretary
- Occupational Health Facility (OHF) Most Reported
  - Slips and Falls
  - Knee Injuries
  - Strains and Sprains

~Jeanine Meister- Nurse Case Manager



# What to do when pain arises

- Rest
- Ice
- Compression
- Elevation

Four components prescribed as temporary muscle or joint conditions, such as sprains or strains.



Research studies have proven that poor posture and weak muscles are the cause of back pain, slip and falls, and carpal tunnel syndrome.

# Ergonomics and Posture

- Definition of Ergonomics-  
The science of fitting the job to the worker.
- \*Musculoskeletal injuries occur when there is a mismatch between the physical requirements of the job and the physical capability of the worker

# ERGONOMICS DEPARTMENT

- “Industrial Hygiene”
- Provides ergonomic evaluations and suggestions to employees
- **WEBSITE:**  
<http://ohp.nasa.gov/resources/index.html>
- **CONTACT:** Robin Kramer at 867-3672



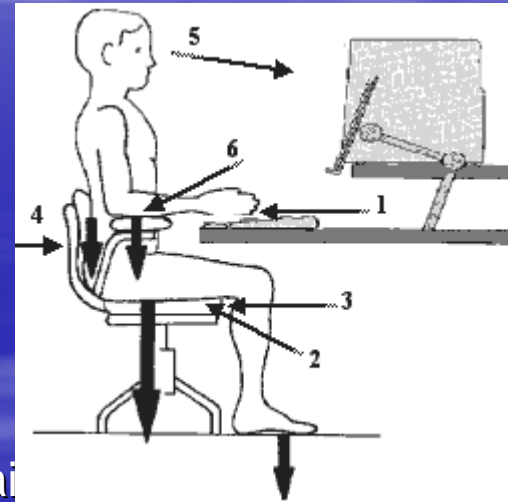
# Six Ways to Improve Posture and Ergonomics

1. Take Mini Breaks to stretch and move
2. Keep the body in alignment while sitting in the office chair and while standing
3. Use props such as a pillow in the office chair
4. Use EXERCISE to help prevent and promote good posture
5. Wear footwear with good support while standing
6. Avoid Overprotecting posture



# Proper Alignment while Sitting in an office Chair

1. Elbow measure- Sit comfortable as close as possible to your desk so that your upper arms are parallel to your spine
2. Thigh Measure- Check the placement of your thigh, if too tight then you will need a foot rest
3. Calf Measure- Pass a clenched fist between the back of you calf and the front of your chair. If you cannot do this easily then adjust the backrest
4. Low back Support- Your bottom should be pressed against chair, and a cushion should be placed in the chair that will cause your back to arch slightly to avoid slouching forward or sown in the chair when you begin to become tired
5. Resting eye level- Your gaze should be aimed at the center of your computer screen. If not raise or lower your chair to reduce neck strain
6. Armrest- Adjust the armrest of the office chair so that it just slightly lifts your arms at your shoulders



# PROPER LIFTING TECHNIQUE

- Plan ahead before lifting
- Lift closely to your body
- Have feet shoulder width apart
- Bend your knees and keep your back straight
- Tighten abdominal muscles
- Lift with your legs

# PROPER LIFTING TECHNIQUE



# Top Myths of Back Pains

- Myth: Back Pain and back problem won't happen to me.



- Facts: About 8 of 10 people will experience back pain
- The leading cause of disability in men over 45 years old—
- The second most common reason for a visit to a primary care doctor—
- The third most frequent reason for surgical procedures—
- The fifth most frequent cause of hospitalization So, unfortunately, the fact is that most people do experience back pain and back problems at some point in their lives

- Myth- The back pain is so bad, there must be ongoing damage to my back

Fact- With acute pain, the level of pain correlates to the level of damage (e.g. if you touch a hot iron, you will immediately feel a great deal of pain). However, with chronic back pain (greater than 6 weeks) the amount of pain does not typically correlate to the amount of damage.



- Myth- I'm physically active, so I shouldn't get back pain



- FACT: While it's true that well-conditioned individuals are less likely to have an episode of back pain than sedentary individuals, back pain can affect all people regardless of the level of activity. Some sports are more likely to cause back pain, such as golf, volleyball and gymnastics. In all cases, however, the back should be considered a priority in conditioning, because it creates a stable platform from which the arms and legs work.

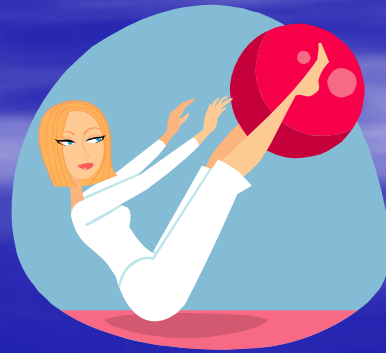


The Best Way to fix Back Pain is  
with?????

**EXERCISE**

So now that we covered the Easier techniques to help back pain

- Let's Focus on the **Fun** Stuff!!!!!!
  - Time to Exercise





**EXERCISES YOU CAN DO !!**



# Why start a resistance program?

- **Increases ability to perform daily activities such as lifting**
- **Prevents falls and trips due to strong core and leg strength**
- **Increases Bone Mineral Density**
- **Increases your confidence in performing activities**
- **Lowers body fat and increases muscles mass**



# EXERCISE GUIDELINES by American College of Sports Medicine (ACSM)...

- Start with 8-12 repetitions and 1-2 sets
- 8-10 exercises a session for major muscles groups
- Frequency.. 2-3 days a week (beginner) OR 4-5 days a week (advanced)
- Sequence.. LARGE muscles before small muscles
- TECHNIQUE IS KEY, if your technique is poor decrease weight or don't use weight at all
- Perform exercises in a slow controlled manner
- Use proper breathing technique



# PROPER SEQUENCE OF YOUR WORKOUT (THE 3 W'S)

- 1. WARM UP** (CARDIOVASCULAR ACTIVITY)
- 2. WORKOUT** (RESISTANCE TRAINING OR MORE CARDIOVASCULAR ACTIVITY AT A HIGHER INTENSITY)
- 3. WIND DOWN BY A COOL DOWN AND STRETCHING!!!**

# AREAS OF RESISTANCE CONCENTRATION...

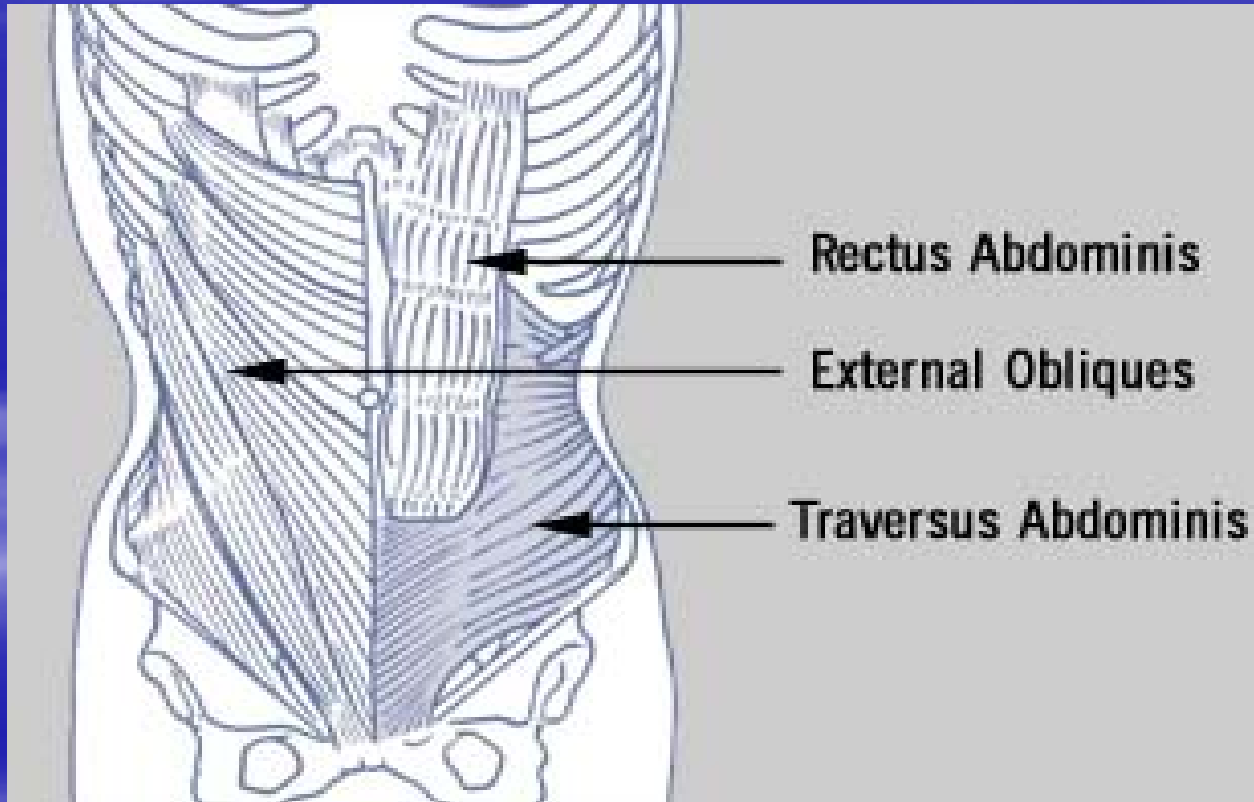
- CORE (ABDOMINAL AND BACK)
- LEGS
- ARMS
- CHEST
- SHOULDERS

# CORE

- The trunk, or core of the body, is your center of gravity.
- Strong core muscles — abdominal, back and pelvis — provide support to your spine for everything from walking, lifting and standing to sitting.
- Weak core muscles may lead to poor posture, lower back pain and injury.

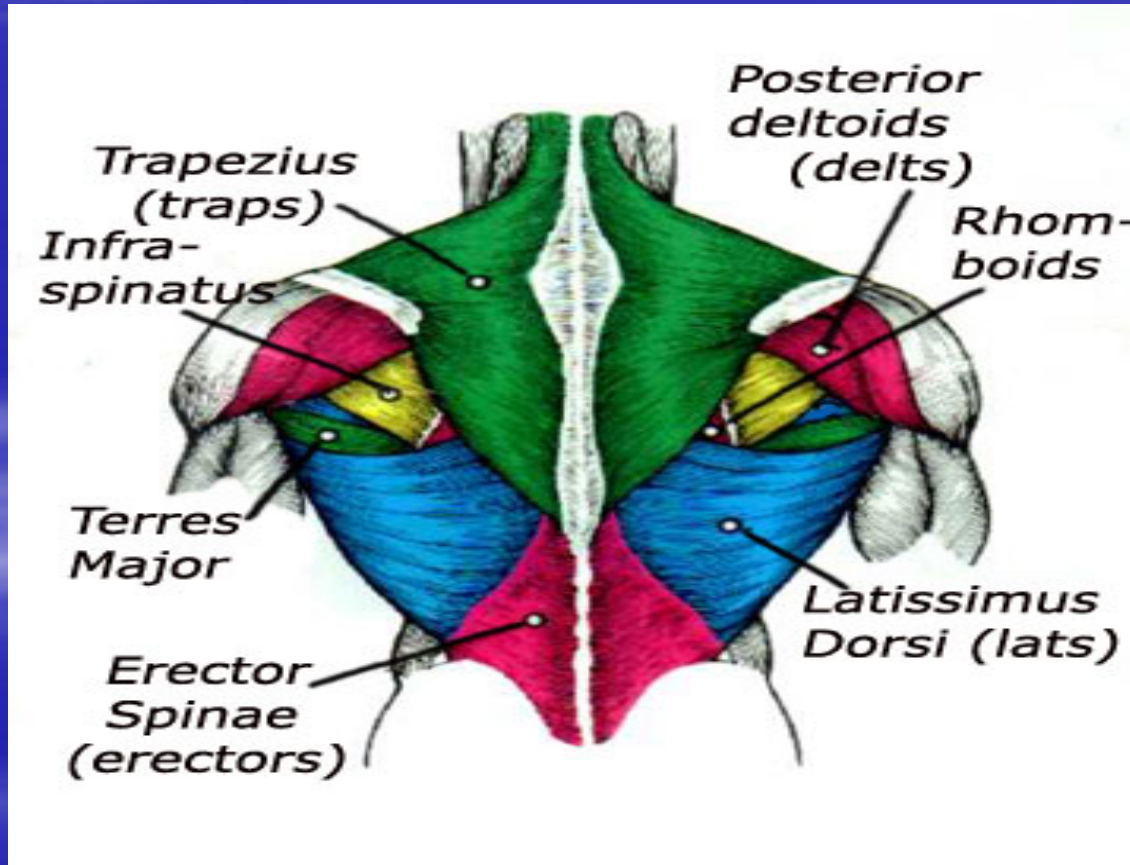
# CORE

- ABDOMINAL



# CORE

- BACK



# EXAMPLES OF CORE EXERCISES...

## MODIFIED PLANK POSITION



HOLD THIS POSITION FOR 15 SECONDS AND  
GRADUALLY INCREASE THE DURATION.



# EXAMPLES OF CORE EXERCISES...

## SIDE PLANK



HOLD THIS POSITION FOR 15 SECONDS AND GRADUALLY  
INCREASE THE DURATION.

# EXAMPLES OF CORE EXERCISES...

## PROPER CRUNCH



# EXAMPLES OF CORE EXERCISES...

## QUADRUPED



# EXAMPLES OF CORE EXERCISES...

- SUPER MAN



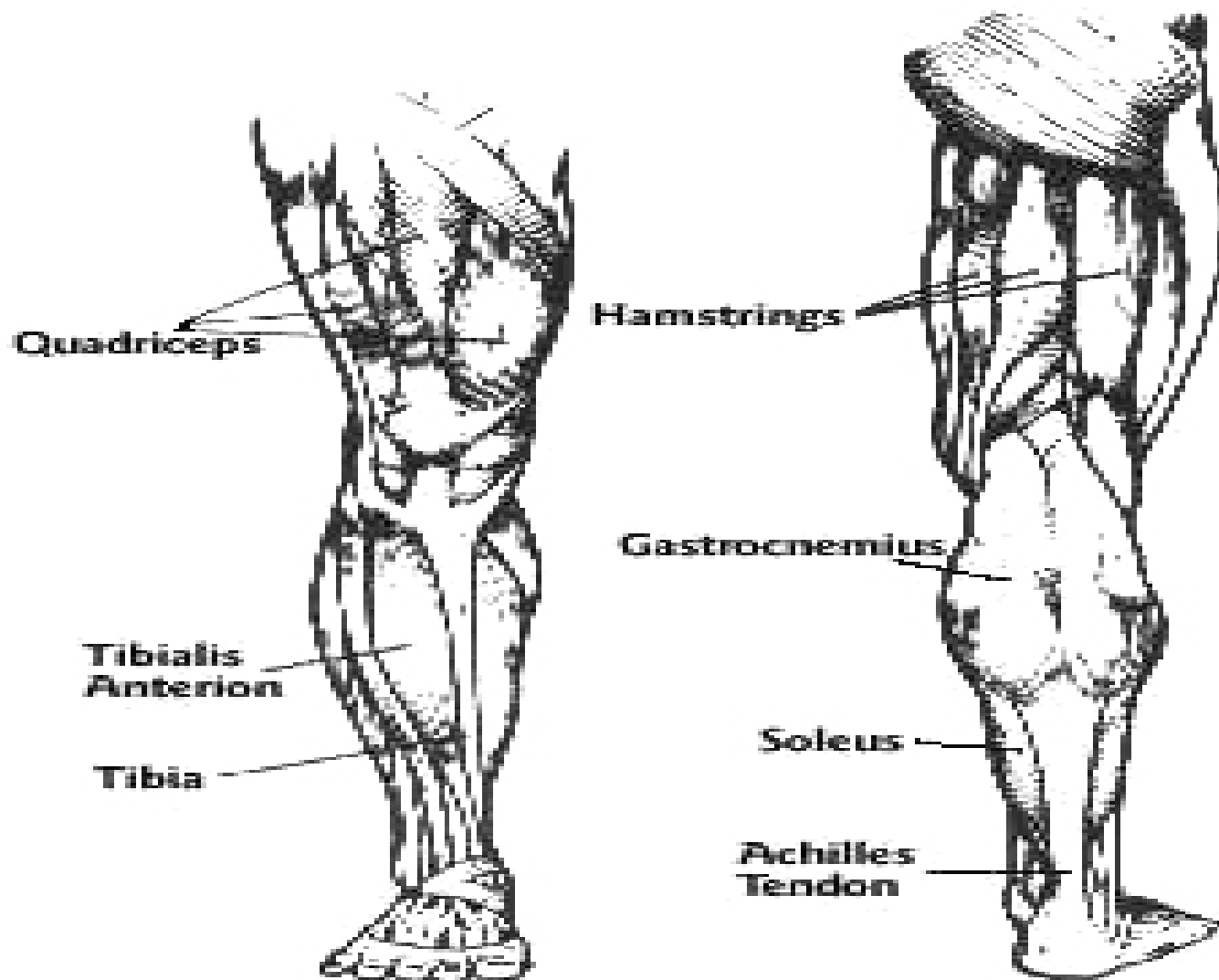
# EXAMPLES OF CORE EXERCISES...

- BACK EXTENSION





# LEGS





# EXAMPLES OF LEG EXERCISES

- SQUAT



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Add weight to challenge yourself or a ball for stability!

# EXAMPLES OF LEG EXERCISES...

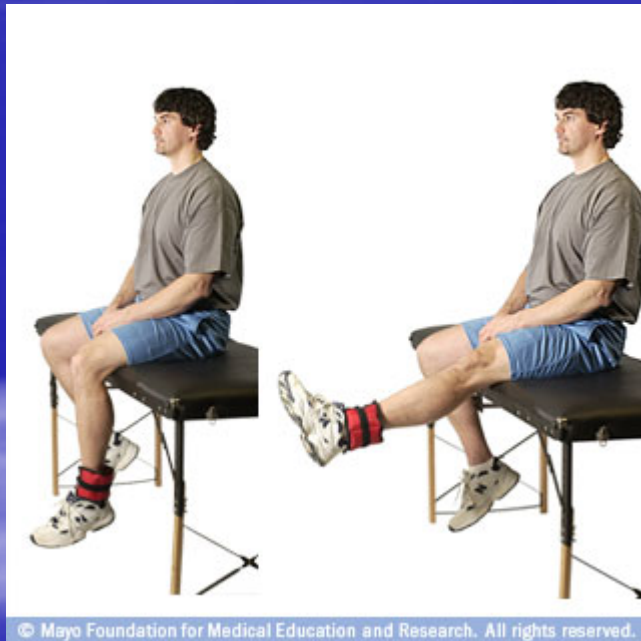
- LUNGES



Add weight to challenge yourself!

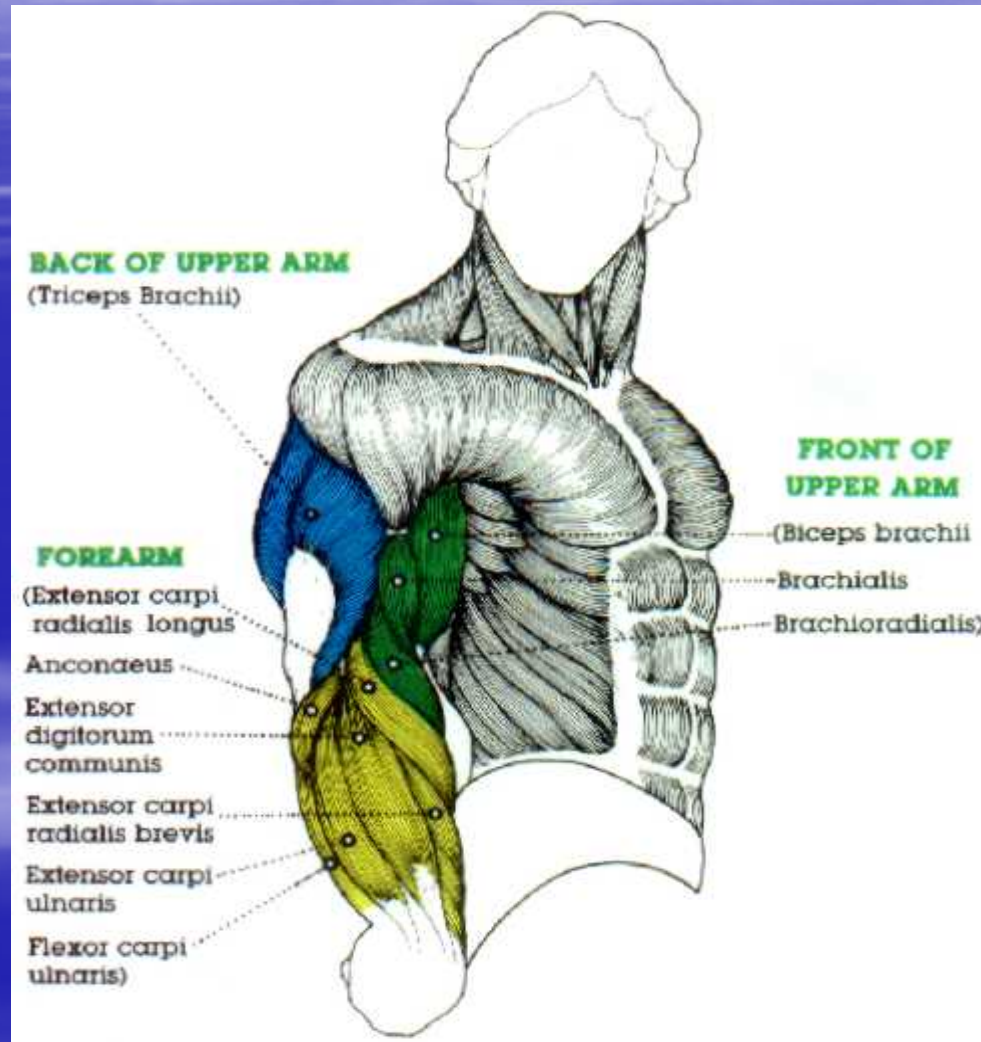
# EXAMPLES OF LEG EXERCISES

- KNEE EXTENSION



This type of exercise concentrates on working the front on your thigh or QUADRICEPS

# ARMS





# EXAMPLES OF ARM EXERCISES

## BICEPS



Basic bicep curl  
using water bottle  
as weight



Preacher Curl  
using stability ball

# EXAMPLES OF ARM EXERCISES

## TRICEPS



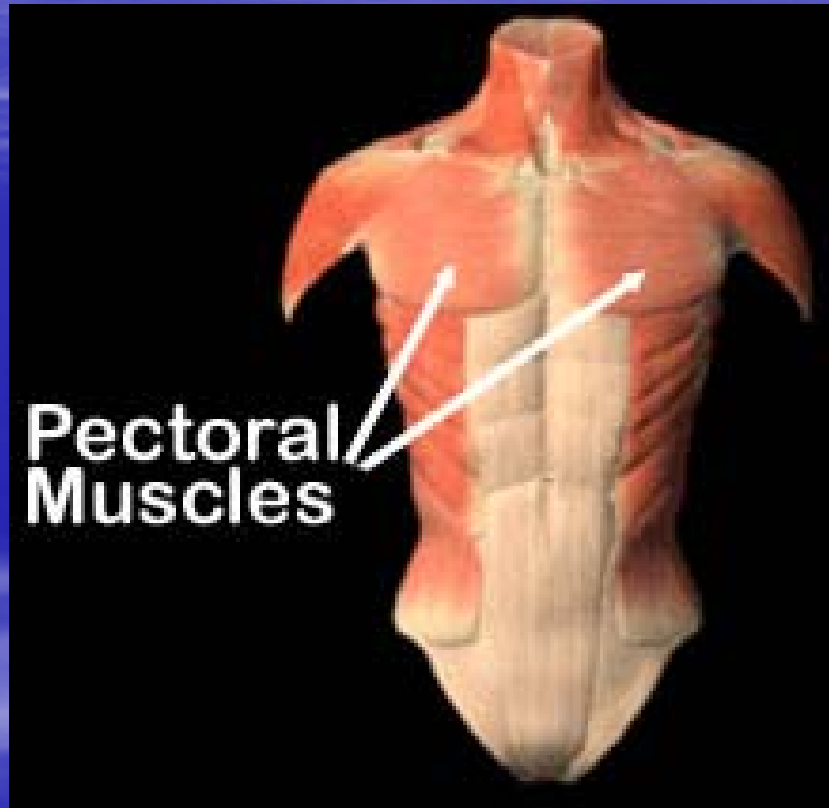
Tricep extension



Tricep dip



# CHEST



# EXAMPLES OF CHEST EXERCISES...

## CHEST PRESS



# EXAMPLES OF CHEST EXERCISES...

## PUSH UPS



# EXAMPLE OF A SHOULDER EXERCISE...

## SHOULDER PRESS





# CARDIOVASCULAR HEALTH

- Lack of physical activity is a risk factor for coronary heart disease.
- About 300,000 deaths per year in the United States are due to poor diet and a lack of regular physical activity.
- Even low-to-moderate intensity activities, when done for as little as 30 minutes a day, bring benefits. These activities include pleasure walking, climbing stairs, gardening, yard work, moderate-to-heavy housework, dancing and home exercise.
- More vigorous aerobic activities, such as brisk walking, running, swimming, bicycling, roller skating and jumping rope are best for improving the fitness of the heart and lungs and weight loss.



# Keep your heart healthy



- ACSM suggest all adults should engage in 30 minutes or more of moderately intense physical activity daily

# Ways to Increase your cardiovascular fitness at the WORK PLACE

- Take the stairs instead of elevators
- Park your car farther away
- Walk around the facility during lunch break
- Go for a bike ride during lunch break
- Wear pedometer to monitor steps and increase steps each day
- Go to the fitness center before or after work or during your break

# THE ACTIVITY PYRAMID

**EACH WEEK, TRY TO INCREASE YOUR PHYSICAL ACTIVITY USING THIS GUIDE. HERE'S HOW TO START...**

## IF YOU ARE INACTIVE

*(Rarely do activity)*

Increase daily activities at the base of the Activity Pyramid by

- taking the stairs instead of the elevator
- hiding the TV remote control
- making extra trips around the house or yard
- stretching while standing in line
- walking whenever you can

## CUT DOWN ON

WATCHING TV  
COMPUTER GAMES  
SITTING FOR MORE THAN 30 MINUTES AT A TIME



## IF YOU ARE SPORADIC

*(Active some of the time, but not regularly)*

Become consistent with activity by increasing activity in the middle of the pyramid by

- finding activities you enjoy
- planning activities in your day
- setting realistic goals

## 2-3 TIMES A WEEK

### LEISURE ACTIVITIES

GOLF  
BOWLING  
SOFTBALL  
YARDWORK



**FLEXIBILITY AND STRENGTH**  
STRETCHING/YOGA  
PUSH-UPS/CURL-UPS  
WEIGHT LIFTING



## IF YOU ARE CONSISTENT

*(Active most of the time, or at least four days each week)*

Choose activities from the whole pyramid by

- changing your routine if you start to get bored
- exploring new activities

## 3-5 TIMES A WEEK

### AEROBIC EXERCISE (20+ MINUTES)

BRISK WALKING  
CROSS-COUNTRY SKIING  
BICYCLING  
SWIMMING



### RECREATIONAL (30+ MINUTES)

SOCCER HIKING  
BASKETBALL TENNIS  
MARTIAL ARTS DANCING



**ABOVE ALL...  
HAVE FUN  
AND  
GOOD LUCK!**

## EVERYDAY

*(AS MUCH AS POSSIBLE)*

WALK THE DOG  
TAKE LONGER ROUTES  
TAKE THE STAIRS INSTEAD OF THE ELEVATOR



**BE CREATIVE  
IN FINDING A  
VARIETY OF WAYS  
TO STAY ACTIVE**

WALK TO THE STORE OR THE MAILBOX  
WORK IN YOUR GARDEN  
PARK YOUR CAR FARTHER AWAY  
MAKE EXTRA STEPS IN YOUR DAY





# **KSC Fitness Center**

## **MISSION STATEMENT...**

**To provide all Spaceport employees the opportunity to become more active and healthy by welcoming each person each day into our facilities, and staying focused in order to be present when our customers and team members most need us.**

# KSC Fitness Center

- **LOCATION** : O& C building(867-7829) & OSB building (861-2133)
- **HOURS**: M-F 5:30 AM-7:00 PM
- **WEBSITE**: <http://fitness.ksc.nasa.gov>
- We offer Daily Group Fitness classes such as BOSOU Blast Off, Upper Cut, Hardcore, and Cardio Boot Camp as well as Personal Training and Fitness Assessments for FREE to all NASA & subcontractor employees 😊



# REHAB WORKS

- **LOCATION:** O & C BUILDING ( 867-7497)
- **HOURS:** M-F 7 AM- 5PM (Last appointment at 4 PM)
- **WEBSITE:** <http://rehabworks.ksc.nasa.gov>
- **APPOINTMENTS ONLY!**

# THAT'S ALL FOLKS

- YOU ARE NOW READY FOR TAKE OFF!!!

