

U.S. Army Pregnancy/Postpartum Physical Training Program



Soldier Workbook

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**U.S. Army
Pregnancy and Postpartum
Physical Training**

**Soldier Workbook
May 2004**

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Pregnancy and Postpartum Physical Training (PPPT) Soldier Workbook

Foreword

Few other professions require the physical fitness levels that are expected of US Army soldiers. Being in the military service, you are expected to meet strenuous physical fitness standards when you return to your job after having a baby.

It is part of the job of every soldier, including a soldier who has recently delivered a baby, to be fit and, if necessary, ready to deploy at a moment's notice.

The purpose of a Pregnancy/Postpartum Physical Training (PPPT) program is to assist pregnant and postpartum soldiers in maintaining fitness throughout their pregnancy and to assist them in returning to required fitness levels after the pregnancy has ended.

The PPPT program is designed to promote—

- Easier transition back to unit physical training.
- Higher pass rates for the Army Physical Fitness Test.
- Improvement in meeting Army Regulation 600-9 height/weight standards.
- Reduction of physical discomforts and stress during pregnancy.

Successful participation in this PPPT program will provide the soldier with a physical fitness training program that meets the unique needs of pregnant and postpartum soldiers. This will enhance the soldier's ability to meet the physical requirements for readiness after pregnancy.

An ideal compliment to this physical fitness training program is a health education program to encourage a positive self-image and increased parenting skills through consistent pre/postnatal education to soldiers. This educational component is available through collaboration with the OB/GYN clinic and community health nursing.



Figure 1. Transitioning back to unit PT.

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Chapter 1

Pregnancy and Postpartum Physical Training

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Program benefits.
- Responsibilities of program personnel.
- Participant responsibilities throughout the stages of pregnancy and postpartum.
- Operational procedures of the program.

Section I. Background and Scope

As you are well aware, exercise is a part of maintaining the health and readiness of every soldier, including those who are pregnant. Safe exercise and good nutrition have been proven to—

- Maintain basic fitness levels according to the performance abilities of the pregnant/postpartum soldier. Promote faster return to physical readiness and assist in transition back to unit physical training (PT).
- Contribute to the prevention of excessive gains in weight and body fat.
- Reduce physical discomforts and stress during pregnancy.
- Promote a healthy pregnancy.

Most soldiers are able to continue to exercise safely throughout their pregnancy within the guidelines published by the American College of Obstetrics and Gynecology (ACOG) and under the advice of their health care provider.

Just as a soldier practices specific skills to prepare for a training event, a pregnant soldier must exercise in a way to promote a healthy delivery and a quick return to physical readiness. Appendix A contains a listing of Program Resources.

Section II. Personnel

There are four personnel roles involved in Pregnancy and Postpartum Physical Training (PPPT)—

- Medical Experts (MEs) – They have successfully completed and maintain PPPT fitness program training IAW AR 350-1, Army Training and Education, and FM 3-22.20, Army Physical Fitness Training and are the medical consultant. The ME will have an exceptional understanding of the issues involved in pregnancy and postpartum fitness. They may be appointed from any of the following fields:

physical therapy, physician, family nurse practitioner, physician assistant, obstetric nurse, community health nurse, or nurse midwife.

- Instructor Trainers (ITs) – They operate the day-to-day functions of the PPPT program. They have successfully completed and maintain PPPT fitness program training IAW AR 350-1, Army Training and Education, and FM 3-22.20, Army Physical Fitness Training in order to operate the program and to train ELs. It is beneficial for the IT to have a background in fitness, such as an aerobics instructor or fitness trainer.
- Exercise Leaders (ELs) – They are designated by the unit commander with the coordination of the IT. They are trained by the ITs to lead and monitor the PPPT exercise sessions, assist with soldier accountability and attendance, respond appropriately to medical emergencies and complaints, and report to the ITs for guidance and questions.
- Pregnant and Postpartum soldiers – Eligible participants are enrolled by the IT. The program is mandatory for any pregnant or postpartum active duty soldier with physician approval. With Commander's approval, U.S. Army Reservists and National Guard may participate in the installation PPPT program, contingent upon space and resource availability. The soldier will provide a medical profile from the health care provider stating the soldier is cleared for participation in the PPPT program, personal demographic information, a memorandum from the first-line supervisor releasing the soldier from unit physical training and enrolling the soldier into the PPPT program, and a copy of the soldier's last DA Form 705, *Army Physical Fitness Test Scorecard*. If the pregnant soldier is disapproved for all physical fitness activities, unit commanders may require the soldier to attend formation and the health education classes. All Soldiers are strongly encouraged to attend pregnancy and parenting health education offered through collaboration with health care professionals at the Medical Treatment Facility (MTF).

My EL is: _____

Unit: _____

Unit Phone: _____

Section III. Facilities

The following are the facilities that will likely be used for the program activities. Be sure you know where they are located.

- Gym.
- Gym cardiovascular machines.
- Swimming pool.
- Running track.

Section IV. Stages of Pregnancy and Postpartum

a. Early Pregnancy

Before your pregnancy is confirmed, you may be tired, irritable, have sore breasts, or be nauseous. Get a pregnancy test and confirm your situation.

b. Prenatal PT

Once you know you are pregnant and have health care provider authorization, you may join the Pregnancy PT program. This program is designed to help you maintain the highest level of fitness you can throughout your pregnancy. Follow the Pregnant Soldier's Checklist for best results! (See Appendix B.)

c. Birth

Having strength, endurance, and the ability to calm yourself will help during the birth experience and recovery process. Giving birth is a powerful experience in a woman's life.

d. At-Home Exercise Program

About 6 weeks before your due date, you will see a video about exercises you should do while you are at home during the first six weeks postpartum. Take notes and discuss these exercises with your EL. As soon as you come home from the hospital, you can begin these activities.

e. Postpartum PT

After 6 weeks, you must be ready to join the Postpartum PT group. You need to be able to jog continuously for 30 minutes, do 3 sets of 10 push-ups, curl-ups and sit-ups, have no more bleeding or discharge, and no incontinence.

f. Meeting Army Physical Fitness Test (APFT) Requirements

After you participated in the Postpartum PT group for four weeks, you will have a monthly diagnostic APFT. Your exercises will give special attention to preparing for the diagnostic test as you prepare for your record APFT at six months postpartum.

g. Return To Regular PT

You must meet APFT requirements by six months postpartum. If you meet APFT and height/weight requirements before this time, you may return to regular unit PT with commander, IT, and health care provider approval.

Section V. Forms

As a participant, you will be required to complete several forms for program administration. Sample forms are provided for you to use, or your IT will provide forms to you.

- PPPT Program Health Care Enrollment Form (Appendix C).
- Sample Program Participation Agreement Memorandum (Appendix D).
- PPPT Program Evaluation Final Questionnaire (Appendix E).

Chapter 2 Changes During Pregnancy

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Basic anatomical changes during pregnancy.
- Physiological changes during pregnancy to the cardiovascular, thermoregulation, metabolic, respiratory, and biomechanical systems.
- Postural changes to the skeletal alignment and muscles of the body.
- Positive impact of exercise on the psychological changes that occur during pregnancy.
- Specific changes to expect during each trimester of pregnancy.

Section I. Background

The body and mind undergo major changes during pregnancy. Safe exercise and good nutrition help prepare the pregnant soldier for the rigors of pregnancy, delivery, and postpartum. They contribute to a healthy pregnancy and delivery. Having a baby is a major life event; you want to be prepared for all the challenges.

This chapter reviews basic anatomical, physiological, and psychological changes and how exercise positively affects these changes. The following is a basic anatomy lesson of body parts that play key roles during pregnancy.

Section II. Basic Anatomy of Pregnancy

a. Pelvis

It is important to understand the role the pelvis plays in movement during pregnancy. The pelvis is the bony structure surrounding the uterus. The non-pregnant uterus lies near the center of gravity in the female pelvis.

The bones of the pelvis, the sacrum, and the abdominal muscles form a bowl. This structure must support the growing baby, who can weigh on an average seven or more pounds.

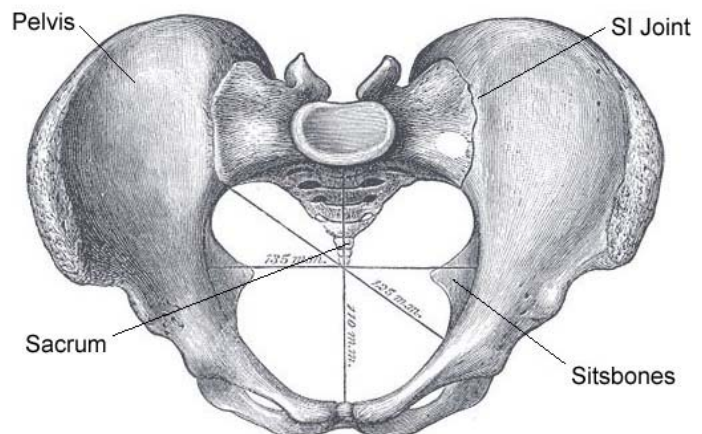


Figure 2. Pelvis provides support. Bartleby.com

As the baby grows, the center of gravity moves forward and slightly up. This change affects all movement.

The same bones form both the left and right sides of the pelvis. During infancy, these bones grow together at the ball and socket joints usually called the hip joints. The sockets are at the front of the pelvis, a few inches to the left and right of the pubic bone. The ball is the top of the thighbone. When you sit down, you bend at these joints.

At the bottom of the pelvis, the bones curve under to form surfaces you can sit on. There is one on the left and one on the right. These bones are sometimes called the sits bones.

The sacrum, or next to last section of the spine, fits into the space created at the back of the pelvis between the left and right bones. This forms the sacroiliac (sak ro il' e ak), or SI joints. The SI joints are often the source of discomfort during the pregnancy and the postpartum period.

The forward shift of the center of gravity, especially in the latter stages of pregnancy, causes the sacrum to be pulled forward, contributing to the instability of the SI joint. As the SI joint becomes more lax, it can be very uncomfortable.

The sciatic nerve can also contribute to discomfort in this area. The muscle that covers the sciatic nerve in the back of the hip contracts because it is stretched by the forward pull on the sacrum and can cause the sciatic nerve to be pinched.

b. Pelvic Floor Muscles

The pelvic floor muscles are located between the pubic bone in the front, the tailbone in the back, and the sits bones on the sides. These muscles support the internal organs. This area is called the perineum (per e ne' um).

Within the pelvic floor muscles are the outlets for the urethra, vagina and anus. The pelvic diaphragm forms the muscular floor of the pelvic cavity. Squeezing the openings, closing and lifting the pelvic floor, and then releasing these muscles are known as the "Kegel exercises." They are vital to pelvic floor fitness.

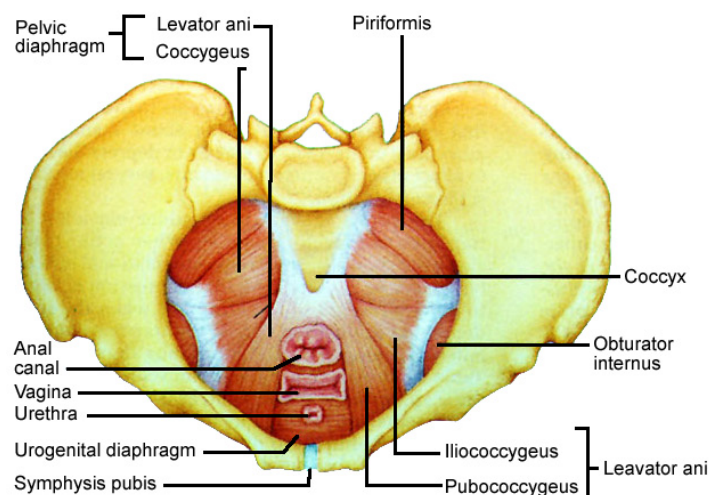


Figure 3. Pelvic floor muscles.
Addison Wesley Longman, Inc.

The functions of the pelvic floor muscles are to:

- Maintain alignment and support of the internal organs.
- Control of urine flow.
- Sexual enhancement.
- Eliminate waste from the rectum.

Problems associated with a weak pelvic floor are—

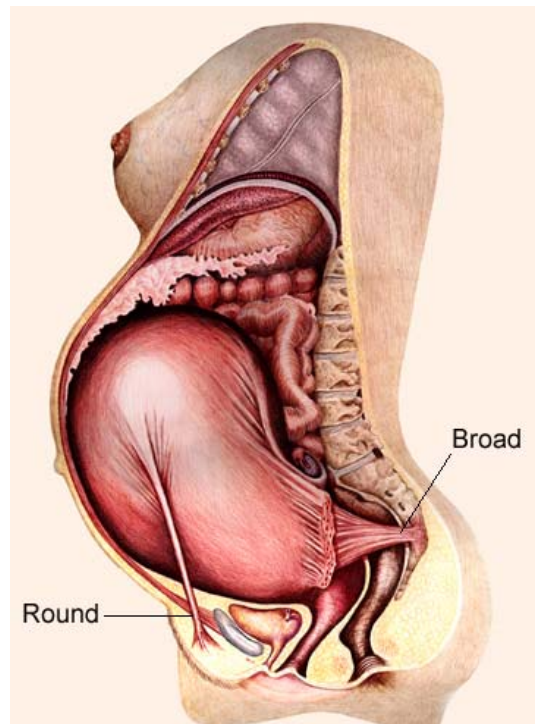
- Bladder or uterus falls through the pelvic floor muscles due to lack of support.
- Uncontrollable leakage of urine especially during exercise or when coughing or sneezing.
- Limited sexual pleasure during intercourse.
- Delayed healing of tissue if the pelvic floor is cut or torn during delivery.

c. Uterine Ligaments

These ligaments hold the uterus in place and undergo prolonged stretching during pregnancy.

The round ligaments attach the uterus to the pubic bone in the front and help maintain the uterus in the center of the pelvis. They can be a source of discomfort as they are stretched upward. Either a sharp pain or a dull ache near the hip joint is common. To relieve the discomfort, bend into the pain at the hip joint so that the ligament is shortened and tension relieved. If pain continues, the soldier should check with her health care provider.

The broad ligaments connect the uterus to the sacrum and are often involved in backaches during pregnancy. Pain in the low back is the result of weak abdominal muscles, poor posture, and the weight of the abdomen pulling on the back ligaments.



**Figure 4. Uterine ligaments.
Maternity Center Associates.**

d. Uterus

The uterus is a hollow bag of involuntary muscle. The non-pregnant uterus weighs slightly more than two ounces. It is the size of a pear and can hold approximately two teaspoons of fluid.

In pregnancy, the uterus grows to a weight of about 2.5 pounds and has a capacity of approximately 1.5 to 2.5 gallons. It enlarges through the stretching of muscle fiber to the size of a watermelon.

After the first trimester (first 13 weeks of pregnancy), the uterus begins to prepare for labor and delivery by contracting involuntarily and irregularly. These are the Braxton-Hicks contractions. Braxton-Hicks contractions are prelabor contractions that work toward shortening and widening the tube-shaped cervix and stretching the bottom of the uterus. The contractions also soften the cervix. This process is called “ripening;” it indicates that the cervix is becoming ready for labor. Braxton-Hicks contractions do not increase in length, frequency, or the intensity associated with labor. They are usually not painful but can be uncomfortable. In labor, the uterus contracts with increasing frequency and intensity and pushes the baby through the birth canal.



Figure 5. Female reproductive system. Krames Co.

e. Placenta

About 10 days after conception, implantation in the uterine wall begins. Within a few days of implantation, a primitive placental circulation is established with further development occurring around the 8th –10th week.

There are two components of the placenta: the fetal placenta (part of the baby's circulation) and the maternal placenta (part of the mother's circulation). There is space for each of their bloods to flow and a membrane barrier between the blood of the baby and the blood of the mother. The umbilical cord contains one vein and two arteries and serves to connect the fetus with the placenta, which is attached to the uterine wall of the mother.

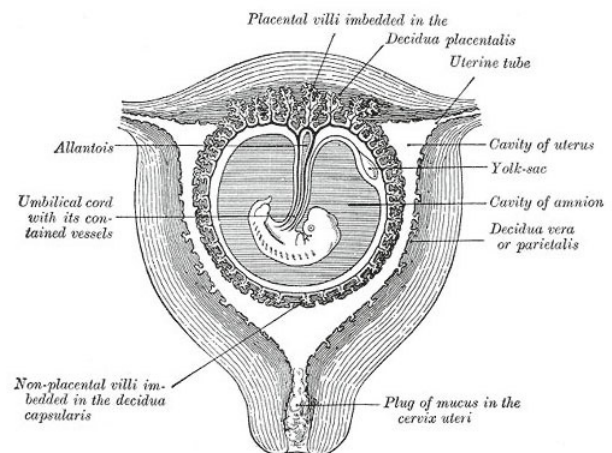


Figure 6. Fetus and Placenta. Bartleby.com

The placenta produces hormones and proteins that direct the mother's physiology to supply the fetus with nutrients and oxygen needed for fetal growth. Maternal blood vessels provide nutrients and oxygen to the fetal blood vessels while collecting waste products from them. The exchange occurs by diffusion through the placental membrane. The placental membrane and the hormones are considered "barriers" because there is no actual mixing of mother/fetal blood. Oxygen, glucose, water, vitamins, minerals, proteins, and other chemicals, including infections, alcohol and drugs, go from the mother to the fetus. Carbon dioxide goes from the fetus to the mother.

The maternal arteries bring blood to the placenta, and the veins take it away. Factors such as the mother's blood pressure, body position, blood volume, and uterine contractions affect the transfer of blood to and from the placenta.

Blood volume and cardiac output begin increasing early in pregnancy. Blood pressure, however, should remain within normal limits for the mother's age. A health care professional should evaluate elevations or drops in blood pressure.

Blood pressure, especially near delivery, may be altered by changes in position. Decreased blood pressure may result when lying flat on the back, and this position should be avoided after the first trimester. This is caused by the enlarged uterus compressing the vein returning blood to the heart or artery delivering nutrients to the fetus and removing carbon dioxide. Nausea, sweating, changing emotions, etc., may be experienced.

You must eat a healthy diet, drink plenty of water, be active, and get enough rest in order to develop and maintain the placenta as the pregnancy progresses to delivery.

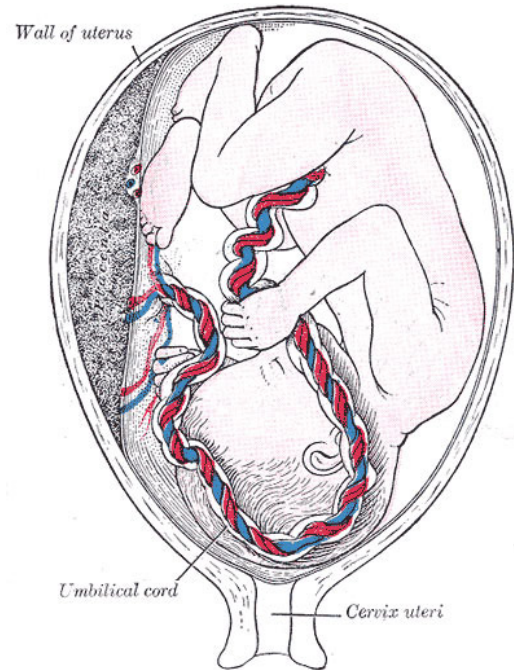


Figure 7. Umbilical cord. Adam.com

f. Amniotic Sac and Amniotic Fluid

As the placenta develops, the amniotic sac that surrounds the fetus also develops. The sac is made up of membranes that enclose the fetus and is filled with a colorless liquid called amniotic fluid. This fluid-filled sac cushions the fetus and provides a clean environment for growth.

Amniotic fluid helps the fetus grow uniformly, helps bones and muscles develop, and allows the baby to move within the uterus. It also keeps the amniotic membrane from sticking to the fetus. The fetus breathes this fluid in and out of its lungs helping the lungs grow. The fluid is swallowed and passes through the stomach and intestines.

When a soldier says her "water broke", this means that the membranes broke and the amniotic fluid came out. If this happens before a soldier is in active labor, it is called a premature rupture of the membranes (PROM).

If PROM occurs, the soldier must immediately stop all activity. She must contact her health care provider immediately and prepare for the delivery of the baby.

Section III. Physiological Changes During Pregnancy

The anatomical changes that occur are just the beginning of the changes in the body that happen during pregnancy. Changes related to maternal physiology, or how the body functions, also occur. These changes during pregnancy alter the effects of exercise on the body and the kind of safety measures that must be followed.

There are five major systems that are affected by pregnancy. More than 30 changes in these systems affect the body and its response to exercise. The systems are—

- Cardiovascular.
- Thermoregulation.
- Metabolism.
- Respiratory.
- Biomechanical.

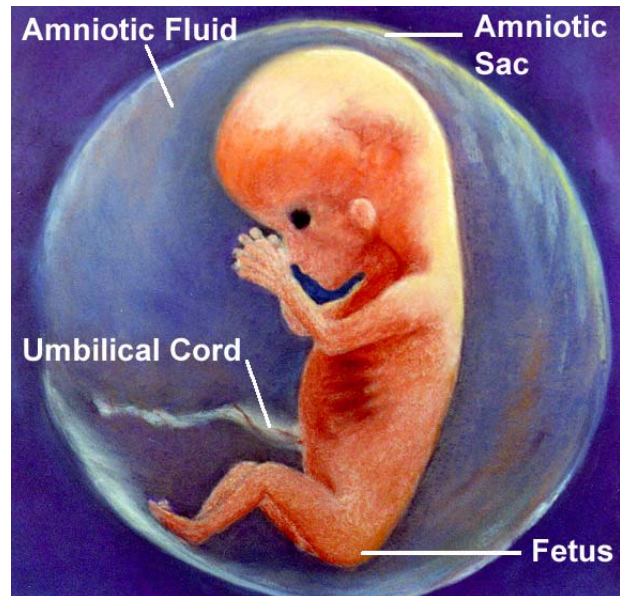


Figure 8. Amniotic sac and amniotic fluid.
Linda M. Brenegan.

a. Cardiovascular

This system includes the heart, blood, arteries and veins. The cardiovascular system delivers oxygen and nutrients to all parts of the body. It works not just for the pregnant soldier but also for the growing baby. As a result, the pregnant soldier's heart becomes more efficient at pumping the blood to her own body and to the baby.

Some of the major changes that occur in the cardiovascular system are—

- Blood volume increases.
- Heart output increases.
- Heart pumps more blood per heartbeat.
- Resting pulse increases.
- Blood plasma increases and percentage of red blood cells decreases.
- Ratio of red blood cells to white blood cells decreases, but can increase when vigorous exercise is performed.
- Blood pressure decreases somewhat; this is normal.
- In pregnancy-induced high blood pressure, blood pressure increases and **exercise must stop**; relaxation activities should continue.
- Blood supply to the uterus decreases 50 percent temporarily during continuous moderate recreational activity. This intensified activity appears to be okay as long as there are no other medical problems.
- Blood left in the heart on each stroke decreases.

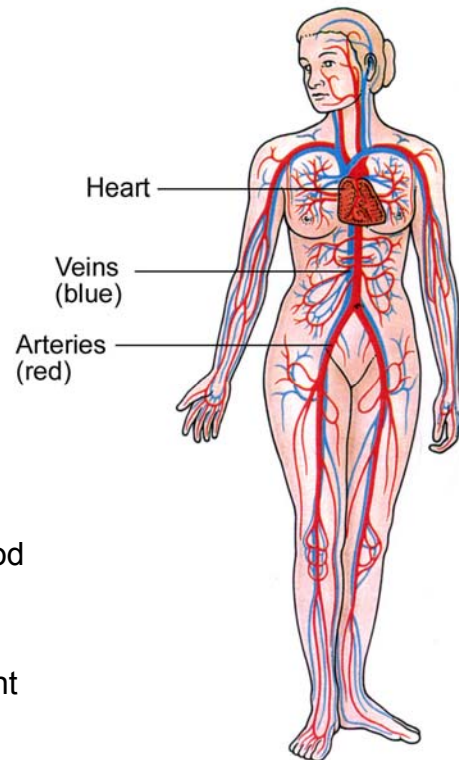


Figure 9. Cardiovascular system. DK Images. London @ Dorling Kindersley.

When exercising, you should not exercise to the point of exhaustion or breathlessness. This is a sign that your body cannot get the oxygen supply it needs, affecting the oxygen supply to the baby as well. You should not engage in activities that involve low oxygen states, such as scuba diving or mountain climbing.

b. Thermoregulation

This system regulates body temperature. After the first trimester, a pregnant soldier's body temperature tends to be slightly higher than a non-pregnant soldier's. She perspires more rapidly, helping her body cool more efficiently. However, if her temperature rises above 100.5 degrees Fahrenheit, this could be a fever related to illness, and the soldier should see her health care provider.

The major changes that occur in thermoregulation are—

- Basal metabolic rate probably declines in early pregnancy, but then increases steadily during the remainder of the pregnancy - this affects internal (core) temperature.
- Core temperature at rest increases, but during the first few minutes of vigorous exercise, it decreases because pregnant soldiers are more efficient at cooling; after that the core temperature increases steadily.

c. Metabolism

This system includes energy production. The amount of energy burned is measured in calories. When a soldier exercises, her metabolic rate increases and she uses more calories. A pregnant soldier's metabolic rate also increases to provide more energy for herself and her baby. The extra energy required for pregnancy is only about 300 calories per day. Metabolism also involves hormone production, which increases in pregnancy.

Major changes in metabolism include—

- Because insulin is released more often in a normal pregnancy, the amount of time glucose (sugar that provides energy) remains in the blood decreases. The soldier should eat approximately six small meals a day to provide the body's energy requirements.
- Insulin level increases (the body seeks to store energy more often). As the placenta produces hormones to preserve the pregnancy, these hormones block the effect of insulin causing the pancreas to increase insulin production. In some soldiers, the pancreas cannot make enough insulin to counter the effect of

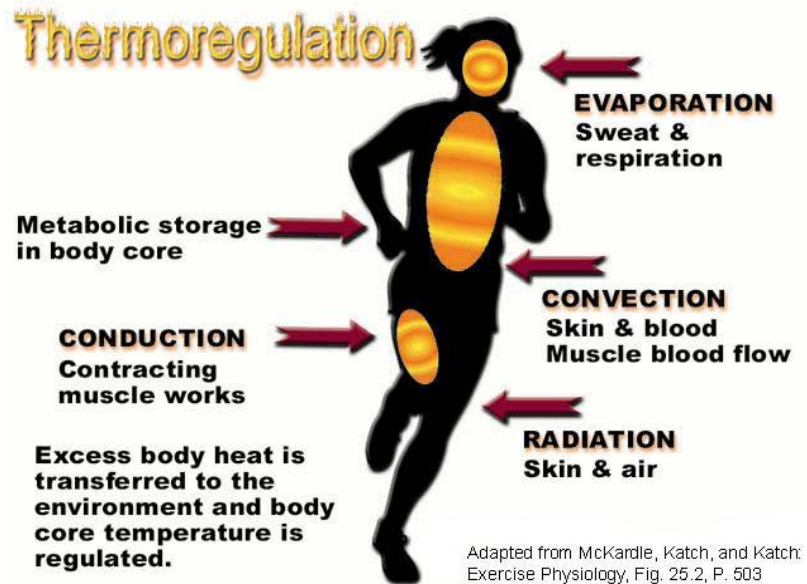


Figure 10. Thermoregulation regulates body temperature.

placental hormones resulting in too little insulin production to metabolize food properly. This condition is called gestational diabetes, but it usually goes away once the pregnancy is completed. Routine and consistent exercise is beneficial in the reduction of high blood glucose levels caused by the insufficient levels of insulin.

- Carbohydrate utilization during exercise increases as weight increases, requiring higher energy requirements.
- Estrogen increases, which promotes fetal growth and uses energy.
- Progesterone increases, which help the uterus nurture the placenta.
- Relaxin, a protein hormone, increases. It works with estrogen to soften connective tissue and affect movement by causing joint laxity or looseness.
- Protein and fluid requirements increase in order to make additional blood to nourish the placenta, fetus, and mother.

d. Respiratory

Pregnancy also affects the respiratory system. In the first trimester, changing hormones make the soldier feel short of breath. In the third trimester, the uterus pushes up on the diaphragm causing the soldier to feel short of breath again. She has enough oxygen; she just needs to take a deep breath to ease the sensation. The physiological changes to the respiratory system may require that the soldier adjust the intensity level and duration of her exercise. The major changes that occur are—

- The respiratory capacity increases.
- Due to pressure changes on the lungs and the amount of oxygen going to the fetus, there is less oxygen available for aerobic exercise, except in very physically fit soldiers. This causes shortness of breath, especially during periods of activity.
- Carbon dioxide sensitivity is increased.
- Pulmonary reserve decreases. As exercise increases to moderate and maximal levels, pregnant soldiers demonstrate decreased respiratory frequency, lower amount of air expired in a single breath, and maximum oxygen consumption.
- There is increased risk of muscle fatigue and soreness when high intensity exercise is maintained for long periods in the last few weeks of pregnancy.

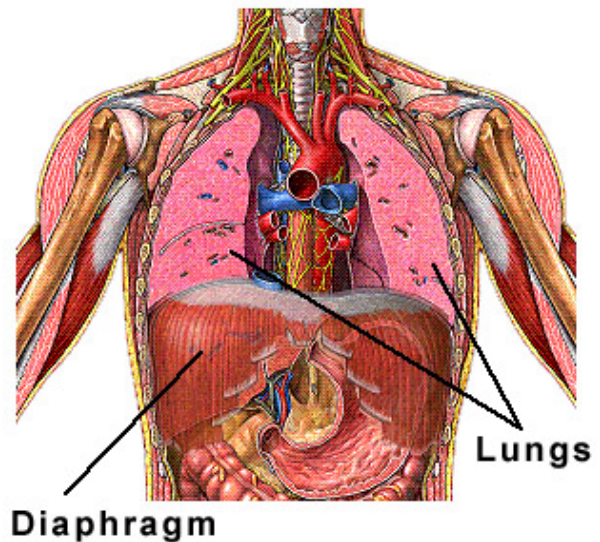


Figure 11. Respiratory System. Adam.com

e. Biomechanical

Biomechanics includes the bones and muscles, and how they work together to make the body move. One of the most significant changes in the body is the change in the center of gravity as the baby grows in size during the second half of pregnancy. The center of gravity changes from the center of the pelvis to a point forward from the center of the pelvis.

To compensate for the forward gravitational pull, the soldier's posture changes to maintain a balanced erect position. The back of the waist curves in, the top of the pelvis tilts forward and the curves in the upper spine increase. These changes put stress on muscles and joints. In addition, hormone changes that affect the looseness of ligaments and tendons make the joints more mobile. Although this helps with the birth of the baby, it can stress joints and muscles.

The major changes that occur in the biomechanical system are—

- Weight distribution shifts as the center of gravity moves forward and slightly up, changing the balance when standing, including increased bending in the hip sockets.
- Joint movement due to more weight on one side of a joint than the other.
- Balance of muscle strength around the joint changes to accommodate the new weight distribution.
- Spinal curves increase, placing a greater load on the vertebrae.
- Joint laxity becomes greater, increasing risk for injury.
- There can be more structural discomfort, such as low back pain.
- There is increased potential for nerve compression and blood vessel entrapment, such as chronic pain in the lower back and hip radiating down the leg or increased pressure on the nerves at the wrist.

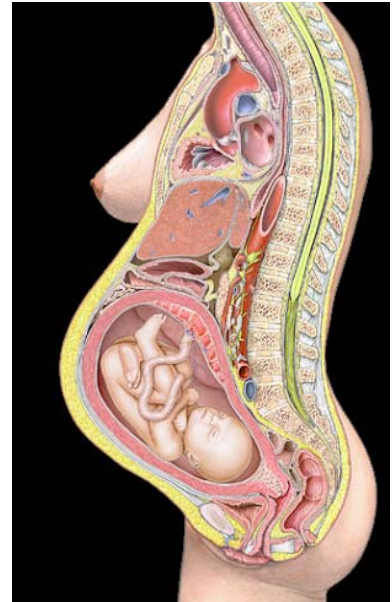


Figure 12. Anatomical and physiological changes to the body. Adam.com

Figure 13 shows how these changes affect the pregnant female soldier's body. For example, as the weight shifts forward, her body's weight is carried more by the arch of her foot during pregnancy than by her ankle, which distributes the weight evenly forward and back in the non-pregnant soldier's body. This, coupled with softening ligaments, often leads to the pregnant soldier having foot discomfort and swollen feet.

Postural Dynamics

The specific changes in bony alignment include—

- Increased back of waist curves in.
- Top of pelvis tilts forward.
- Hip joint is flexed more.
- Increased thoracic spine curve and neck curve.
- Tailbone is pushed back.

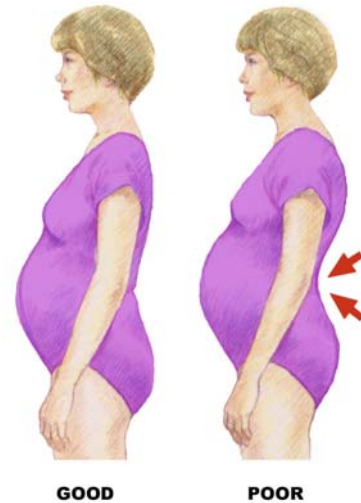


Figure 13. Postural dynamics.

Muscles are realigned causing the following shifts—

- Overstretching and weakening of buttocks and back of leg.
- Overstretching and weakening of abdominal muscles and pelvic floor muscles.
- Overstretching and weakening of upper back muscles.
- Shortening and tightening of low back and hip flexor muscles.
- Shortening of upper back flexors and chest muscles.
- Body's weight carried over the foot arch, often leading to swollen feet and foot discomfort.

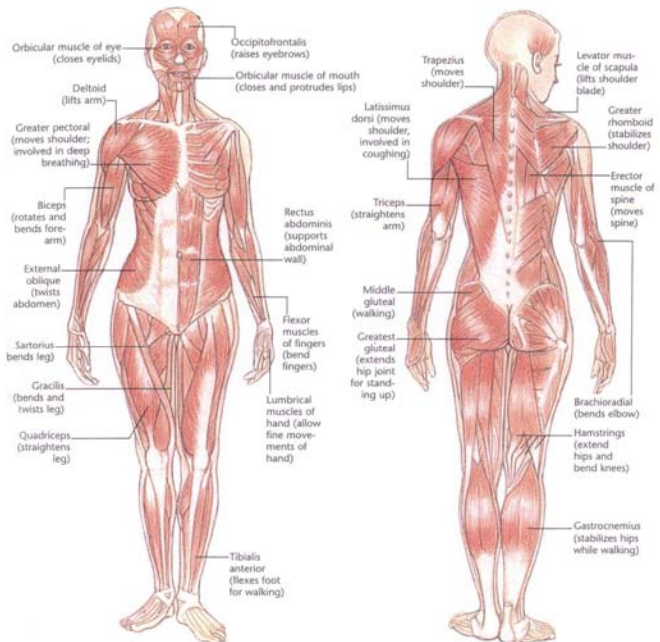


Figure 14. Front and back muscles of the female body. American Medical Association Complete Guide to Women's Health, (c) 1996 by AMA, used by permission of Random House, Inc.

In summary, pregnancy alters the body from head to toe. The effects of these changes vary as the pregnancy progresses through the trimesters. In the first trimester, the baby begins to grow and the mother experiences increased urination, changes in skin and hair, and a thickening waistline. Changes in the cardiovascular system and metabolism can cause nausea and fatigue.

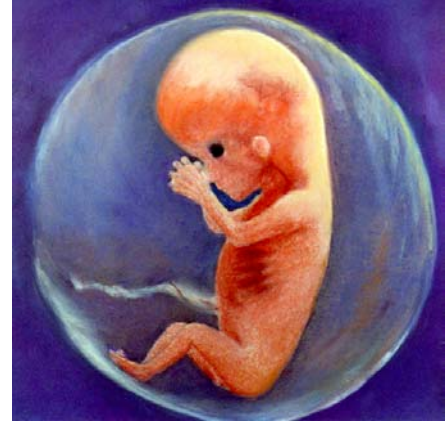


Figure 15. First trimester.
Linda M. Brenegan



Figure 16. Second trimester.
Linda M. Brenegan

In the second trimester, the baby's weight increases from an ounce to more than a pound. The pregnant soldier's energy level improves, but she may experience heartburn, leg cramps, and her pelvis may relax, causing discomfort to her SI joint.



Figure 17. Third trimester.
Linda M. Brenegan

During the third trimester, the baby has more rapid growth and weight gain. The pregnant soldier may have backaches, swelling of the hands, legs, and feet, and may feel warmer. She may experience breathlessness and more frequent urination as additional weight is placed on the bladder. Most changes that occur will be normal and will go away after delivery.

Section IV. Psychological Impact of Pregnancy

With all these physical changes, it is not surprising that most pregnant soldiers have emotional changes as well. Childbearing is a major life event. As the baby grows and your body changes, you must also prepare psychologically and emotionally for motherhood.

Exercise positively influences the mental, emotional, and social aspects of life during pregnancy by—

- Helping prevent depression.
- Promoting relaxation and restful sleep.
- Encouraging concentration and facilitates problem solving.
- Helping prepare for the challenges of childbirth and parenthood.
- Preventing excess weight and body fat gain when combined with proper nutrition.

- Providing support and encouragement through group activities and teamwork.
- Improving self-esteem and well being.

All of these factors will improve your experience with pregnancy and will help you accomplish your career and pregnancy goals.

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Chapter 3

Exercise and Nutrition During Pregnancy

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Benefits associated with exercise during pregnancy.
- Importance of good nutrition.
- Recommended calorie intake and extra nutrients required during pregnancy.
- Proper weight gain in a normal pregnancy.
- Guidance for healthy food servings.

Section I. Positive Outcomes of Exercise In Pregnancy

Regular, moderate exercise during pregnancy has many advantages for a healthy pregnant soldier. These advantages range from relief of common physical discomforts in pregnancy to lower perceived exertion during labor.

This chapter presents the positive outcomes associated with exercise and pregnancy and also covers some basic information on recommended prenatal nutrition.

The positive effects of exercise include—

- Reducing discomforts resulting from biomechanical changes by stretching tight muscles, strengthening weak muscles, providing support to joints and ligaments, and helping improve balance and posture. The muscles of the abdomen, pelvic floor, legs, chest, and back are all helped by exercise.
- Enhancing readiness for labor and delivery. When a soldier is in good condition and is well nourished, she is better prepared for the stress of labor.
- Enhancing the baby's health. Exercising promotes delivery of oxygen and nutrients. During the first half of pregnancy, exercise increases the size of the placenta, helping the baby grow.
- Helping prevent excessive weight and body fat gain; exercising burns calories.
- Promoting faster return to physical fitness levels after birth.
- Improving mental and emotional health reduces stress and improves concentration.
- Contributing to the soldier's sense of well-being through teamwork and camaraderie.

Section II. Healthy Nutrition in Pregnancy

Good nutrition is important in physical performance. Good nutrition is also important for the healthy growth and development of the baby. Therefore, healthy nutrition is a requirement for a pregnant soldier. If you need dietary advice, you need to see a registered dietitian. The following are some basics that will help you with healthy eating habits:

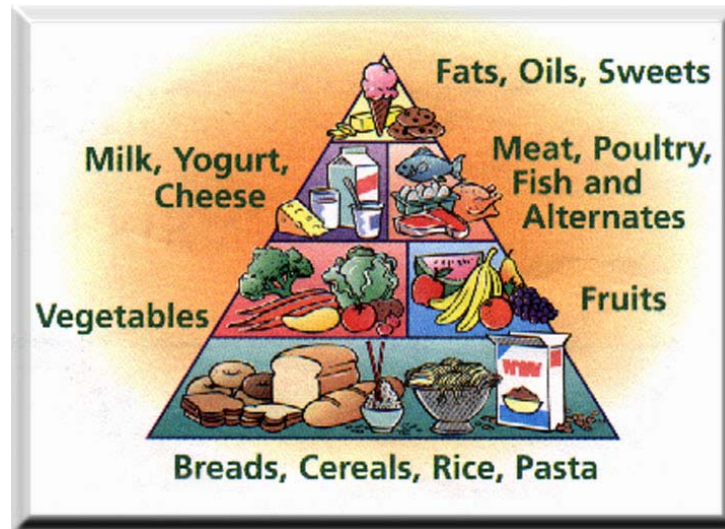


Figure 18. Follow the food guide pyramid.

a. Why is Good Prenatal Nutrition Important?

Good prenatal nutrition is important to nurture a healthy placenta, uterus, baby, and mother. Soldiers who practice good nutritional behaviors will—

- Maintain a healthy weight.
- Meet increased demand for iron and prevent anemia.
- Provide needed energy.
- Speed recovery after delivery.
- Prevent or minimize common pregnancy problems, such as heartburn, constipation, and fatigue.
- Reduce risk of birth defects.
- Supply needed nutrients for baby's growth.
- Ensure healthy birth weight.

b. What is Good Prenatal Nutrition?

A healthy diet will include proteins, fluids, carbohydrates, vitamins, fats, and minerals. Good prenatal nutrition includes—

- Intake of adequate protein (70-90 grams/day) and water (8 glasses or 2 quarts/day) for blood and tissue formation.
- High-quality carbohydrates (whole grain breads, cereal, and pasta) and fats for energy and hormones production.
- Intake of vitamins and minerals for energy, hormones, and cell function.

A pregnant soldier should consume an additional 300 calories per day. There is more chance of excess weight and fat gain if you follow the myth of “eating for two”. These additional calories can easily be obtained by eating 3 small meals and 2-3 small snacks daily. A small snack might consist of a 1/2 tuna salad sandwich or two slices of cheese and a few crackers and a piece of fresh fruit. Eating small frequent amounts will also help prevent fatigue. If you are experiencing nausea, eating small frequent meals and snacks will be easier to tolerate.

Good prenatal nutrition requires you to consume a variety of foods to help meet your nutrient needs. For help in choosing what to eat, refer to Figure 18, the Food Guide Pyramid. The table below gives tips on the types of foods you can eat to follow the Food Guide Pyramid.

Table 1. Suggested Daily Food Choices

Food Group	Number of Daily Servings Needed	Examples of a Single Serving
Bread, Cereal, Rice, Pasta	9	1 slice of bread; 1 ounce of dry cereal; or ½ cup cooked cereal, rice, or pasta
Vegetables	4	1 cup of salad greens; ½ cup of other cooked vegetables; 1 cup raw vegetables; or ¾ cup of vegetable juice
Fruit	3	1 medium piece of fresh fruit; ¼ cup of raisins; or 4 ounces of juice
Poultry, Fish, Dry Beans, Meat, Eggs, and Nuts	3	2-3 ounces of cooked lean poultry, fish or meat; 1 ounce of meat = ½ cup dry beans, 1 egg, 1 ounce low-fat cheese, or 2 tablespoons of peanut butter
Milk, Yogurt, and Cheese	3	1 cup of milk or yogurt; or 1½ ounce of low-fat cheese

Good prenatal nutrition also means avoiding alcohol (i.e., beer, wine, or mixed drinks), which may cause birth defects. To prevent birth defects, you should also avoid smoking, and using drugs.

c. Extra Nutrients

A pregnant soldier's body demands extra nutrients for her health as well as the health of the baby. These extra nutrients include iron, vitamins B6 and B12, and calcium. It is difficult to consume enough food to meet these nutrient demands; so health care providers usually prescribe prenatal vitamins and minerals. It is very important that the pregnant soldier take her prenatal vitamins. If a pregnant soldier feels nauseous after taking her prenatal vitamin, she might try taking it with her evening meal or snack. A soldier should always check with her health care provider prior to taking any vitamins, dietary supplements or herbs. Many are not safe to take during pregnancy.



Figure 19. Eat a wide variety of foods.

The nutritional needs of the baby are small at first, but there is one nutrient that is vital for healthy development from the start - folic acid. This B vitamin helps prevent neural tube defects, which affect the spine and skull. Folic acid is also used to make the extra blood that the soldier's body needs during pregnancy. A pregnant soldier should have 0.4 milligrams of folic acid daily throughout her pregnancy. This vitamin is found in many food sources—

- Dark, leafy greens and vegetables like spinach, collard and turnip greens, Romaine lettuce, broccoli, and asparagus.
- Whole-grain breads and cereals.
- Citrus fruits and juices like strawberries, oranges, and orange juice.
- Organ meats like liver.
- Peas and beans such as pinto, black, navy, and lima beans and chickpeas and black-eyed peas.

d. Weight Gain During Pregnancy

During pregnancy, your body changes so that it can support the growth of the baby and prepare for delivery. The intake of fluids and nutrients, some of which must be taken in increased amounts, and the resulting weight gain is needed to support the birth process.

How much weight a soldier gains depends on activity level and food consumption. If a pregnant soldier is eating well, drinking plenty of fluids and performing a suitable amount and type of exercise, she will gain the weight she needs to grow a healthy baby. A healthy weight gain for most women is 25-35 pounds. The pregnant soldier is likely to gain 3-5 pounds in the first 3 months. During the rest of the pregnancy, she may gain 1-2 pounds each week. This weight gain is not all fat. It is mostly from retaining water and from the weight of the growing baby. The following table shows how much weight an average soldier gains in parts of her body during pregnancy:

Table 2: Normal Pregnancy Weight Gain

Body Part	Weight in Pounds	
Breasts	1.0	- 1.5
Blood	3.0	- 4.5
Extra Water	4.0	- 6.0
Uterus	2.5	- 3.0
Placenta	1.5	- 2.0
Amniotic Fluid	2.0	- 3.5
Baby	7.0	- 8.0
Fat Stores	4.0	- 6.5
Totals	25.0	- 35.0

e. Special Concerns

If a soldier is a vegetarian, she can continue her vegetarian diet during pregnancy. She will need to plan her meals with care to ensure that she gets all of the nutrients she and her baby needs. This is best achieved by eating a variety of foods from all of the food groups. Ask your health care provider for a referral to a registered dietitian to provide you with additional guidance.

Milk and other dairy products are the best sources of calcium. However, some soldiers experience bloating, diarrhea, gas and indigestion after consuming milk or dairy products. Soldiers who experience these symptoms may need to select non-dairy calcium food sources such as—

- Tofu.
- Sardines.
- Collards.
- Spinach.
- Soy Milk.
- Navy Beans.
- Calcium-fortified orange juice.

f. Nutritional Status

The first step toward healthy eating is to look at the foods in your daily diet. Keeping track of your nutrition is an important step in ensuring that your baby will be as healthy as possible and that you will gain the proper amount of weight.

To do a quick nutrition check, answer the following questions:

- How many eight-ounce glasses of water, juice, milk or other non-caffeine, non-alcoholic fluids do you drink each day?
- How many times a day do you eat?
- How much food do you eat each time (describe a meal or snack)?
- How many servings of dairy products or other calcium-rich foods did you eat yesterday?
- How many servings of fruit and vegetables did you eat yesterday?
- Did you take your prescribed prenatal vitamin today?

Now review your answers. Did you follow the guidelines previously discussed in this chapter or do you need to make some improvements?

To help you keep track of your nutrition, this Weekly Nutrition Chart can be copied. Look at the serving information and check off the items you eat each day.

Table 3. Food By Servings

Monday

Fats, Oils, Sweets (1)							<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tuesday

Fats, Oils, Sweets (1)							<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Wednesday

Fats, Oils, Sweets (1)					<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thursday

Fats, Oils, Sweets (1)					<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Friday

Fats, Oils, Sweets (1)					<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Saturday

Fats, Oils, Sweets (1)					<input type="checkbox"/>
Milk, Cheese, Yogurt (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit (2 - 4)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (3 - 5)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grains: Cereal, Pasta, Bread, Rice (6 - 11)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sunday

Fats, Oils, Sweets (1)					
Milk, Cheese, Yogurt (2 - 3)					
Meat, Poultry, Fish, Beans, Eggs, Nuts (2 - 3)					
Fruit (2 - 4)					
Vegetables (3 - 5)					
Grains: Cereal, Pasta, Bread, Rice (6 - 11)					

g. Serving Sizes

(1) Fats, Oils, Sweets

This category includes foods high in fat and/or sugar; items such as ice cream, sour cream, salad dressing, butter or margarine, mayonnaise, french fries, chips, sausage, hot dogs, cake, cookies, pastries, pies, corn syrup and sugar. Use these sparingly: a cup of ice cream now and then, a couple of cookies, a couple tablespoons of salad dressing on a garden salad, tea with a spoonful of honey on a cold day.

(2) Milk, Cheese, Yogurt

- 1-c. lowfat, nonfat or soymilk
- 1-c. lowfat yogurt or pudding
- 1½ – 2 oz. lowfat hard cheese
- 1½ c. cottage cheese



Figure 20. Eat a wide variety of foods.

(3) Meat, Poultry, Fish, Beans, Eggs, Nuts

2 oz. beef, veal, lamb, chicken, turkey, pork, fish, shellfish
1 c. tofu, dry beans (kidney, lima, soy, lentil, navy, mung, black, peas)
¼ c. peanut butter
½ c. nuts or seeds
2 med. eggs

(4) Fruit

1 orange, tangerine, mango, pear, papaya, apple, banana, peach
2 apricots, nectarines, plums
1-c. grapes
⅔-c. raisins
½-c. strawberries, cantaloupe, grapefruit, pineapple, cherries

(5) Vegetables

1-c. raw or ⅔ c. cooked celery, tomato, cauliflower, corn, lettuce, carrots, broccoli, peas, zucchini, squash, potato, cabbage, spinach, yams, greens

(6) Grains: Cereal, Pasta, Bread, Rice

1 slice whole grain bread
1 med. muffin, biscuit, tortilla
½ bagel, hamburger bun, English muffin
½-c. pasta, rice, cooked cereal
3 - 4 crackers
¾-c. dry cereal

h. Things to Avoid:

As a reminder, good prenatal nutrition means avoiding alcohol (i.e., beer, wine, or mixed drinks), which may cause birth defects. To prevent birth defects, you should also avoid smoking and using drugs.

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Chapter 4

Pregnancy PT Program

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Definitions of the major components of fitness.
- Function, important elements, and performance of the types of exercises included during the pregnancy portion of the program.
 - Centering.
 - Muscular strength and endurance.
 - Flexibility.
 - Special pregnancy exercises.
 - Cardiovascular conditioning.
 - Relaxation and stress management.
- Specific exercises to be learned for different areas of the body.
- Procedures used to check for a diastasis.
- Procedures used to splint the abdomen at 20 weeks.
- Methods to monitor the intensity level of cardiovascular exercise.
- Safety tips for water aerobics and step aerobics.
- Key safety issues during pregnancy.
 - Exercise modifications during pregnancy.
 - What to do if you fall.
 - Symptoms for referral to the health care provider.

Section I. Background and Scope

This chapter will discuss the components of exercise programs and the types of exercises necessary for each component. It will also address the benefits of support and camaraderie in a positive pregnancy experience. Since safety is the most important priority of an effective exercise program for pregnant and postpartum soldiers, guidelines for pregnancy safety issues are covered in some detail as well.

Non-pregnant soldiers maintain and improve their fitness levels in order to meet Army standards, and they do this by participating in unit PT. Pregnancy changes a soldier's body in ways that not only affect her level of readiness but also require a different

approach to PT. During the pregnancy PT program, activity is designed to accommodate the needs and abilities of each soldier throughout her pregnancy. Now that you have a general understanding of the anatomical and physiological changes that occur during pregnancy, you can learn the types of exercises and safety issues important for pregnancy.

You will learn the fundamental exercises used during the Army's PPPT programs. The exercises are a combination of physical and mental activities. It includes exercises for cardiovascular endurance, strength, and flexibility, and also helps address the soldier's emotional stress and physical discomforts.

To maintain your own and your growing baby's health, you must adjust your exercise regimen to your changing body. You may have to do exercises differently from what you are used to doing, especially in the later stages of pregnancy. For example, after the first trimester of pregnancy, it is recommended that soldiers not lie on their backs during exercise to ensure maximum blood flow to the baby. As you participate in PPPT, keep in mind that you should work at your own exercise intensity level.

For the pregnant soldier, safe exercise and good nutrition are important not only for a healthy pregnancy and delivery, but also for returning to required fitness levels after giving birth.

After you recover from delivery, you will be transitioning from the at-home PT program to the postpartum PT program, and back to the regular unit PT program so you will be ready to take the APFT.

Section II. Components of Fitness

The major components of physical fitness are—

- Cardiorespiratory or aerobic endurance - the efficiency of the heart and lungs in delivering oxygen and nutrients to and taking away waste products from the body's cells.
- Muscular strength - the greatest amount of force a muscle group can exert in one movement.
- Muscular endurance - number of times a muscle group can repeat a movement against moderate resistance for a period of time.
- Flexibility - the range of motion around a joint.
- Body Composition - the ratio between body fat and lean body mass; when the body fat percentage is too high, this can result in excessive weight gain and obesity.
- Balance and Coordination are usually associated with specific sports or events.

Section III. PT Program – Types of Exercise

The following are the types of exercises you will be doing in your Pregnancy/Postpartum PT classes:

- Centering (includes balance, deep breathing and mental focus).
- Muscular Strength and Endurance.
- Flexibility.
- Special Exercises.
- Cardiovascular conditioning.
- Relaxation and Stress Management.

a. Centering

(1) Function

- Helps a pregnant soldier achieve physical balance as her body changes.
- Helps her relax and focus on her body in order to enhance concentration.
- Helps her prevent injury by being more aware of her movements as she exercises.



Figure 21. Standing centering.

(2) Elements of centering

- Physical balance.
- Deep abdominal breathing.
- Mental focus.

(3) Performance

Physical balance can be achieved standing or sitting. In the standing position, place the feet about 6 inches apart, knees slightly bent and relaxed. Torso is erect. Relax the shoulders and neck. Head is balanced gently at the top of the spine.

Check to make sure the body is balanced by rocking slightly forward and back and then find a middle ground. Check side to side the same way, making sure the weight is even on both feet. Balance weight equally in all directions. This balances the body around the central axis, or plumb line.

Centering can also be done seated on a chair or cross-legged on the floor. Sit up tall on the sits bones, torso erect, head, neck and shoulders relaxed. Rock forward and back, then side to side, to center the weight on the sits bones instead of the feet.

Next, begin deep abdominal breathing exercises, also called the “hiss/compress” exercise. It is used to strengthen the deep abdominal muscles. Don’t confuse the pelvic tilt with the hiss/compress done as part of centering. In the hiss/compress, there is a slight tilt of the pelvis, but the main action is strengthening the deep abdominal muscles.

Inhale, expanding the lungs. Exhale, letting the air out with a hiss, blowing the air out of the lungs between the teeth, as the abdomen compresses, pull the belly button toward the back of the waist.

Next, mentally focus by paying attention to how the body is positioned. Notice any tightness in the muscles and let them relax. Make a mental note of how the body feels when it is balanced and relaxed. Carry this feeling into the exercise program.

After practicing once or twice, it will be easy to assume this centered posture, ready for movement.

(4) Review

- Balance standing or seated.
- Do the hiss/compress exercise.
- Focus the mind.

b. Muscular Strength and Endurance

Your PPPT program includes a variety of strength exercises for the upper back, chest, shoulders, and lower body.

During pregnancy, strengthening exercises should be done before the cardiovascular workout. This helps ensure an adequate blood flow to the uterus. If these exercises are done after the cardiovascular workout, the blood may not be able to return to the trunk fast enough from the extremities to ensure a good blood supply to the baby. It may also cause lightheadedness in the mother.

(1) Function

During pregnancy, muscles and connective tissue stretch and shorten to support the changing body weight. Exercises to build strength and to stretch muscles are critical to prenatal and postpartum fitness. Strengthening exercises build muscle for carrying weight, making movements stronger, preventing fatigue, and stabilizing joints to prevent injury.

Strengthening exercises challenge the muscles to overcome resistance. You should include exercises that work all the major muscle groups but emphasize those affected by pregnancy.

(2) Elements of Strength and Endurance

- Frequency: 2 to 3 times per week. Do not exceed 3 times, except for abdominals and Kegels, which may be done 5 to 6 times per week.
- Repetitions: During the first and second trimesters and postpartum, do 3 sets of 8-12 reps for each exercise with moderate resistance. During the third trimester, do 2 sets of 8-12 reps of each exercise using moderate resistance. If you find this too easy, you may increase the number of repetitions or sets. If you find this difficult, reduce numbers. If using resistance bands, adjust the tension to your strength level.
- Equipment: Bands, hand weights, partners. Whenever you use bands or weights, make sure your hands and wrists maintain a straight line.

(3) Performance

Your EL will demonstrate the following exercises during class. Practice them in class before trying them on your own.

To begin each strength exercise—

- Place the body in neutral, centered position and stabilize.
- Exhale and contract (shorten) the muscle(s) overcoming the resistance.
- Inhale and slowly release (lengthen the muscle with control) to the starting position.

Upper Back

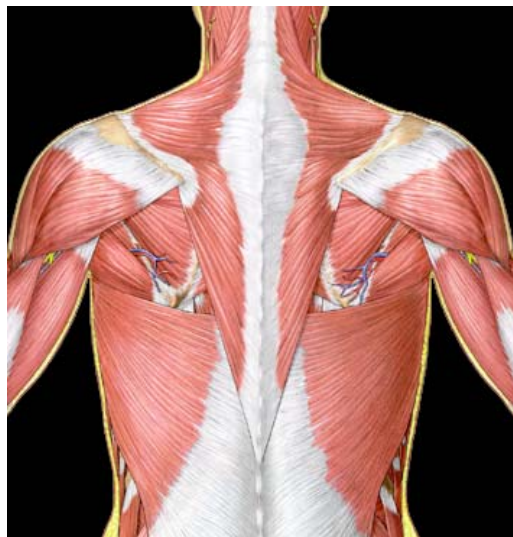


Figure 22. Upper back muscles. Adam.com.



Figure 23. Upper back exercises

Strengthening exercises for this area help maintain an upright posture as the center of gravity moves forward. They also prepare the body for carrying an infant.

- Shoulder retraction.
- Horizontal Arm Extension.
- Seated Row.
- Upper Back Extension.

Chest



Figure 24. Chest muscles. Adam.com.

Push-ups

Soldiers should work at the level that is appropriate for them.

- Regulation Army push-up.
- Push-ups *on knees*.
- Push-ups – *seated* (do both sides).
- Push-ups – *on the wall*.



Figure 25. Push-ups.

Flies

- Flies *on back with hand weights* – first trimester and postpartum.
- Flies *seated with bands* – after the first trimester.

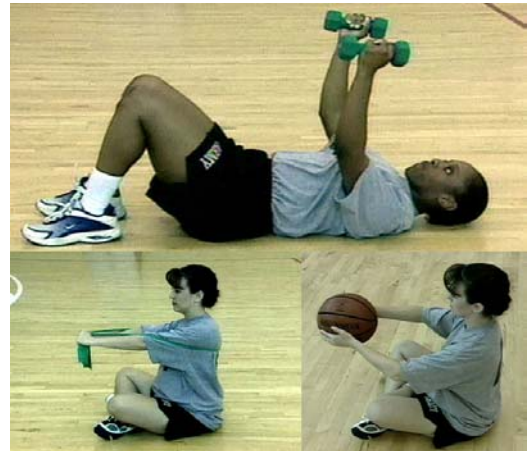


Figure 26. Flies and isometric chest exercises.

Isometric Chest Exercise

- With ball or clothing.

Shoulders

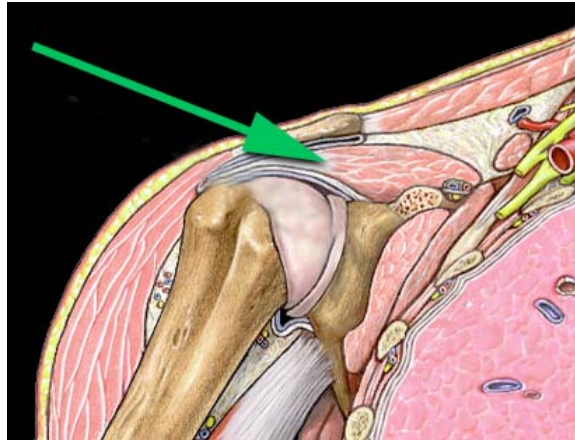


Figure 27. Rotator cuff muscle. Adam.com.



Figure 28. Rotator cuff exercises.

Inward and Outward Rotator Cuff Exercises

- Isometric rotators *with partners* - one does inward, other outward.
- Outward rotators with bands.
- Inward rotators with bands.

These additional exercises for the shoulders and arms are described in FM 21-20.

- Overhead press (strengthen triceps, shoulders, and chest).
- Pull-downs (strengthen biceps and laterals).
- Bicep curls.
- Triceps extensions.

Lower Body

Strengthening the lower body muscles is important for maintaining good posture and supporting increasing body weight.

Buttocks Exercises



Figure 29. Buttocks muscles.
Adam.com.



Figure 30. Buttocks exercises

- Hip extension *on hands and knees for 1st and second trimesters and postpartum soldiers.*
- Hip extension *standing for third trimester soldiers.*
- Pelvic tilt *standing.*

During birth the abdominal muscles work to help push the baby out, but the buttocks must be relaxed in order for the baby to get out. In a pelvic tilt, the point is to tighten the buttocks muscles.



Figure 31. Abductor and adductor muscles.

Abductors

Muscles on the Outside of the Hip and Thigh



Figure 32. Abductor exercises.

- Abduction *side-lying* for 1st and second trimesters and postpartum.
- Abduction *standing* for third trimester.

Adductors
Groin Muscles

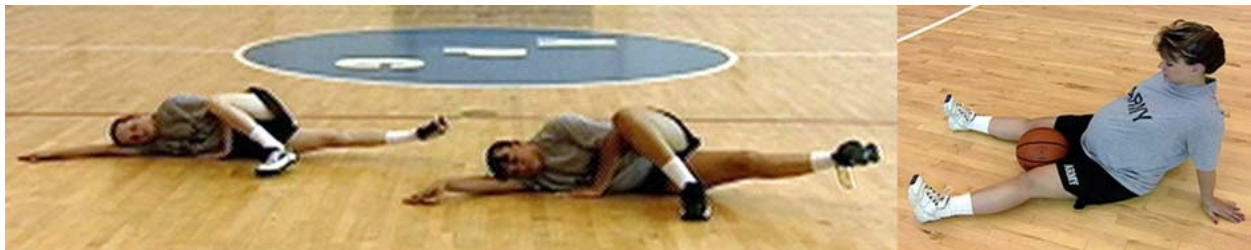


Figure 33. Adductor exercises.

- Medial leg lifts *for 1st and second trimesters and postpartum.*
- Isometric exercise for adductors *for third trimester.*

Hamstrings
Back of Thigh

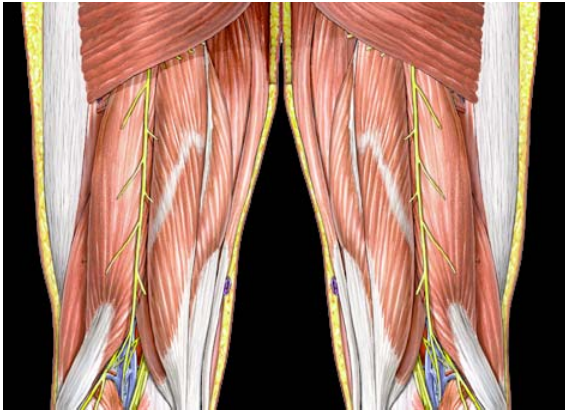


Figure 34. Hamstring muscles. Adam.com

- Leg curls *standing*.
- Leg curls *standing with band*.



Figure 35. Leg curls without and with bands.

Quadriceps
Front of Thigh

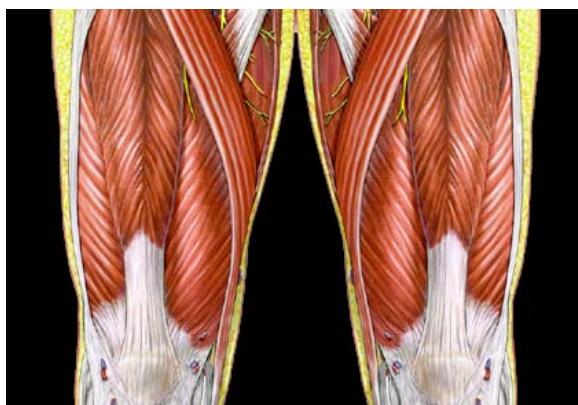


Figure 36. Quadricep muscles. Adam.com.



Figure 37. Knee bender modified.

- Knee bender *modified*.

Abdominals

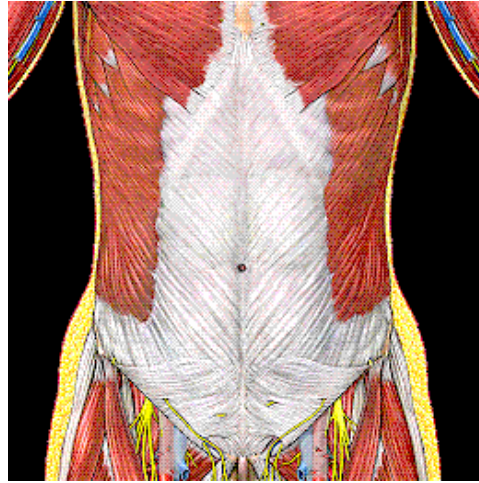


Figure 38. Abdominal muscles.
Adam.com.

During birth, the deep abdominal muscles help in the pushing stage to get the baby out. In the postpartum period, abdominal muscles are strengthened to support the trunk and restore good body alignment. There are three layers of abdominal muscles: the deep abdominal muscles, the rectus abdominal muscles, and the obliques.

Transverse Abdominals Deep Abdominal Muscles

After you are able to do the hiss/compress correctly, progress to a more advanced version of the deep abdominal exercises, called the C-curve—

- Hiss/compress *on the back* for first trimester and postpartum only.
- Hiss /compress *on side or hands and knees* for 2nd and third trimester.
- C-curve, *standing or seated*.



Figure 39. Transverse abdominal muscle exercises.

Rectus Abdominal Muscles

The top layer of muscles is the rectus abdominal muscle. They run from the rib cage to the pelvic bone. To strengthen these muscles in the first three months of pregnancy, soldiers may do the curl-up or head lift exercise.



Figure 40. Curl-up.

- Curl-up *for first trimester and postpartum only*. To increase difficulty, place your hands behind your head.
- Head lift exercise *for first trimester or postpartum (same as curl up, but lift head only)*.

After the third month of pregnancy, modifications in position need to be made to the abdominal exercises, changing to curl-downs and side curl-ups. These positions ensure there is adequate blood flow to the uterus and protect the rectus abdominal muscles from separating at the midline. This abdominal muscle separation is called a diastasis and can lead to a loss of abdominal strength. After 20 weeks of pregnancy, all soldiers should splint their abdomens with their hands while doing abdominal exercises to help prevent the development or widening of a diastasis.

- Curl-downs *for 2nd and third trimester*.
- Curl-ups, *side-lying for 2nd and third trimester*.
- Splinting the abdomen.

To make sure your abdominal muscles function appropriately during the previous exercises, your EL may occasionally check your abdomen. If you are doing the exercises correctly, the abdomen will pull in or compress during the exercise. If this does not occur, you might need to focus mainly on deep abdominal strengthening exercises (hiss/compress) before adding the rectus or oblique exercises.



Figure 41. Splinting and curl-ups.

As a separate issue, if you have a bulge in your abdomen while doing abdominal exercises, even while splinting, check with your EL to be sure you are doing it correctly. If you are, then discontinue the exercise and follow-up with your health care provider to determine exercise restrictions.

Diastasis Check

You can check for a postpartum diastasis yourself. Learn how to do this while you are pregnant. It is slightly different to check for an abdominal muscle separation when a soldier is pregnant versus postpartum. The EL will coach you on both techniques so you can do it when you are at home.

If you are unsure about a diastasis, ask the EL to check it. Remember, if the bulge persists during exercise, even with splinting, discontinue exercises for the rectus abdominal muscles and follow-up with a health care provider.

- Diastasis check – *pregnancy*.
Soldier lies on her back (even after 3rd month this temporary position is okay for the check).
Have the soldier do a regular curl-up.
Check the abdomen above the belly button.
If there is an outward bulge along the midline, this is a separation or diastasis.



Figure 42. Diastasis check.

Oblique muscles

The middle layer of abdominal muscles, also known as the obliques, enables twisting of the trunk and side-bending. In the first three months of pregnancy and the postpartum period, the obliques can be exercised by using a twisting motion during the curl-up—

- Oblique curl-ups, *both feet on floor or one leg crossed over the other for first trimester and postpartum*.

A good way to work the oblique muscles after the first three months of pregnancy is for the soldier to do the exercise on hands and knees—

- Obliques - *on hands and knees for 2nd and third trimesters*.
- Obliques - *seated, side-bending*.



Figure 43.
Oblique exercises.

Pelvic Floor Muscles

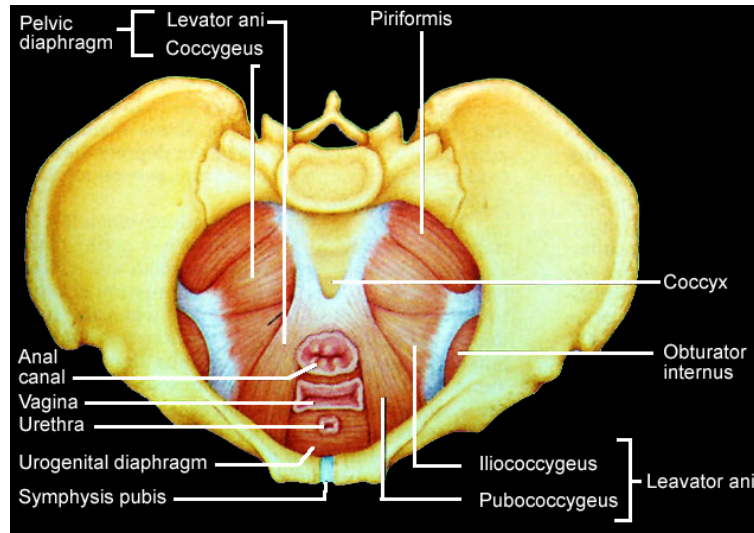


Figure 44. Pelvic floor muscles.
Addison Wesley Longman, Inc.

The internal muscles in the pelvis and the muscles that surround the birth canal are called pelvic floor muscles. They support the weight within the abdomen, including the baby and other internal organs.

Obviously, it is important to strengthen these muscles, but it is also important to learn how to relax these muscles to make it easier for the baby to pass through the birth canal.

Kegel exercises strengthen the pelvic floor muscles. There are three kinds of Kegel exercises. All three can be done in any position, but it is the easiest to learn them seated.

- Kegel #1 - strengthening the whole pelvic area
Focus on closing the pelvic opening. Squeeze tailbone, sits bones and pubic bone together - pull toward center. Hold 10 seconds then slowly release - this relaxing motion is needed to help the baby emerge from the birth canal.
- Kegel #2 - squeeze sphincter muscles (around openings in the pelvic floor)
These muscles form a figure 8 around the anus in back and the vagina and urethra in front. Squeeze the anus to close and hold then squeeze the vagina and urethra and hold 10 seconds, release slowly.
- Kegel #3- lifting up the pelvic floor (support exercise)
These muscles form a sling from the pubic bone to the tailbone. Contract these muscles, lifting the pelvic floor. (Helpful hint: Think of an elevator rising from the ground to the top). Relax the muscles (let the elevator slowly go back down).

c. Flexibility

(1) Function

Good flexibility improves or maintains normal range of motion, relieves discomfort and prevents injury. Stretching helps develop and maintain flexibility. Stretching exercises help to stretch tight or shortened muscles. They should be static stretches - no bouncing.

(2) Performance

Your EL will demonstrate the following exercises during class. Practice them in class before trying them on your own—

- Place the body in neutral position and stabilize the body.
- Stretch the muscle until you feel a gentle pull—never pain.
- Breathe as you hold the stretch for at least 15 to 30 seconds.
- Deep breathing helps to relax the muscles.

Repeat each stretch 2 or 3 times. Perform at least 3 times per week, but they may be done every day.

Upper Back

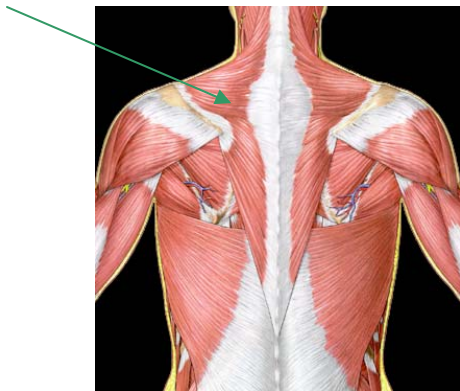


Figure 45. Upper back muscles. Adam.com.



Figure 46. Upper back stretch.

- Upper back stretch – *standing or seated.*

Chest and Biceps

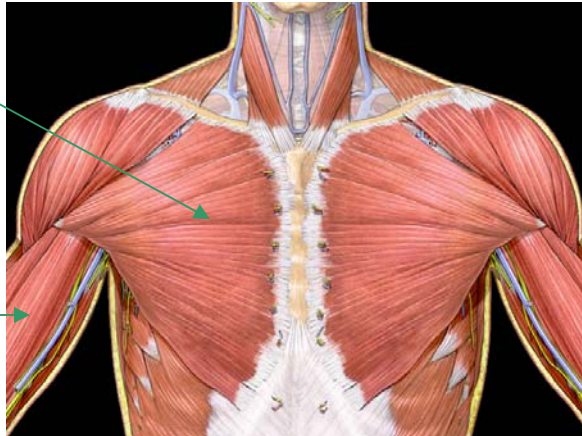


Figure 47. Chest and biceps muscles. Adam.com.



Figure 48. Chest and bicep stretches.

- Chest and biceps stretch – *standing or seated.*

Triceps



Figure 49. Triceps muscles. Adam.com

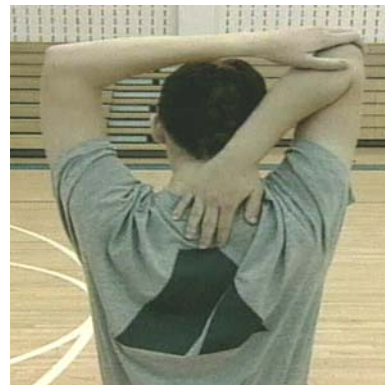


Figure 50. Overhead arm pull.

- Overhead arm pull (triceps stretch) – *standing or seated.*

Low Back and Buttocks

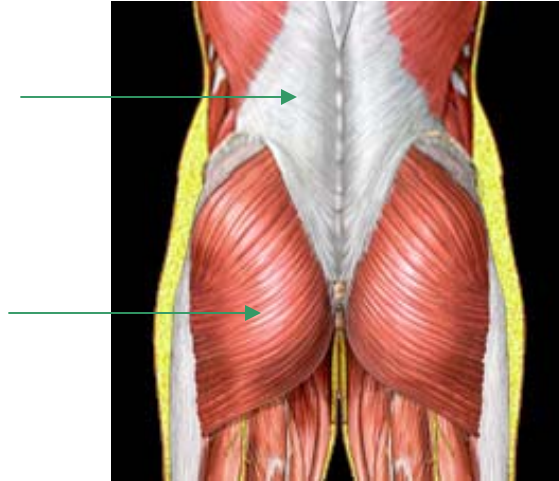


Figure 51. Lower back and buttocks muscles.
Adam.com.

- Deeply folded position.
- Hip and back stretch.
- Hands and knees stretch.



Figure 52. Lower back and buttocks stretches.

Hamstring

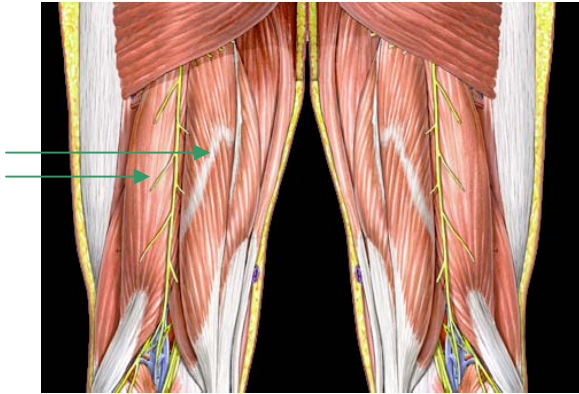


Figure 53. Hamstring muscles.
Adam.com



Figure 54. Hamstring stretch.

- Hamstring stretch – *standing*.

Calf muscles

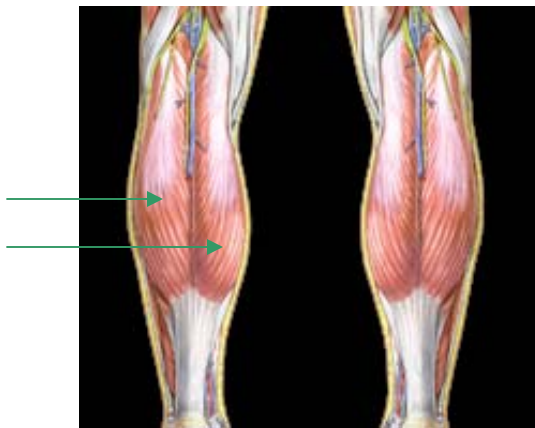


Figure 55. Calf muscles.
Adam.com.



Figure 56. Calf stretch.

- Calf stretch – *standing*.

Quadriceps (Front of Thigh)

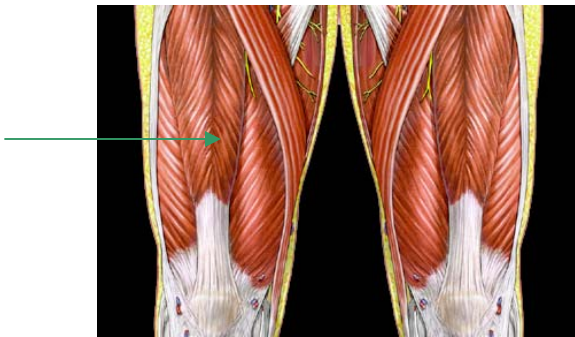


Figure 57. Quadriceps muscles.
Adam.com.



Figure 58. Quad stretches.

- Quad stretch – *standing and holding one foot.*
- Quad stretch – *standing on both feet.*

Hip Flexor



Figure 59. Hip flexor.
Adam.com.



Figure 60. Hip flexor stretch.

- Hip flexor stretch.

Adductors (Groin Muscles)

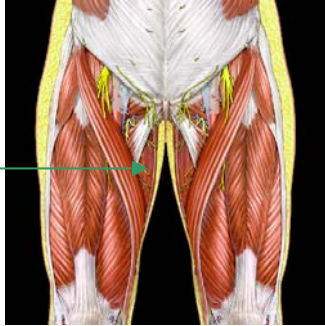


Figure 61. Abductors and adductors muscles.



Figure 62. Groin stretch.

- Groin stretch – *seated*.

Abdominals

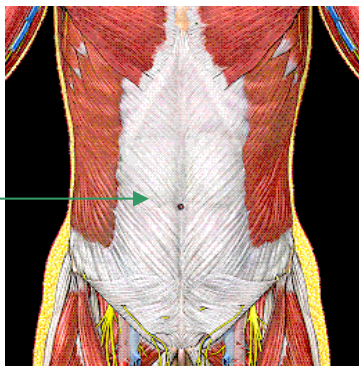


Figure 63. Abdominal muscles. Adam.com.



Figure 64. Abdominal stretches – standing or prone.

- General stretch for abdominal muscles – *standing or prone*.

d. Special Exercises

There are special exercises designed just for pregnant soldiers to help them prevent or ease some of the discomforts that can occur during pregnancy.

(1) Birth squat

The birth squat is the first special exercise. This exercise stretches the pelvic floor and creates space at the pelvic outlet where the baby comes out. Birth squats should be done at least three times a week during pregnancy to be useful during delivery.



Figure 65. Birth squat.

(2) Carpal tunnel release

The carpal tunnel release is the next special exercise. It relieves pressure that can cause or contribute to carpal tunnel discomfort.

- Carpal tunnel release - *at the wrist.*

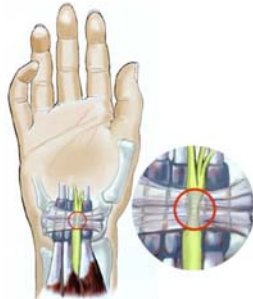


Figure 66. Carpal tunnel syndrome.



Figure 67. Carpal tunnel release at wrist.

If this alone does not work, try the following steps to relieve pressure on the nerves at the neck and shoulder:

- Carpal tunnel release - *at neck and shoulder.*



Figure 68. Carpal tunnel release at neck and shoulder.

(3) Piriformis muscle release and stretch

The piriformis muscle release and stretch relaxes the piriformis muscle, which runs across the low back and back of the hip, and helps relieve SI joint pain and sciatic nerve problems.



Figure 69. Piriformis release and stretch.

e. Cardiovascular (Aerobic) Conditioning

Cardiovascular conditioning exercise strengthens the lungs and heart for delivery of oxygen and nutrients. It also improves and maintains stamina and helps create a sense of well being.

Examples are walking, jogging, marching, aerobic dancing, treadmill, stair stepping, cycling, stationary cycling, rowing and swimming.

Different levels and types of cardiovascular exercise may be appropriate for different trimesters of pregnancy. Some forms of activity may be appropriate for early stages of pregnancy but not for later stages. Consult the activity guide below for specific recommendations.



Figure 70. Aerobic dancing is cardiovascular conditioning.

Table 4. Activity Guide – Prenatal Cardiovascular Activities

KEY: 1 = first trimester 2 = second trimester 3 = third trimester

@ = requires special skills and/or familiarity with equipment that should already be present and poses dangers because of demands of those skills or equipment

* = risky even with previous experience because of contraindicated effort/shape or lack of control in the environment, and becomes increasingly dangerous as pregnancy progresses

REMINDERS: The appropriateness of any activity is ultimately a matter that only the expectant mother herself can assess. The absence of a number indicates this activity is not recommended at this point in pregnancy.



Figure 71. Aerobics can be done in all trimesters.

ACTIVITY	INACTIVE	A LITTLE ACTIVE	ACTIVE	VERY ACTIVE	COMPETITIVE/ PROFESSIONAL
walking	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
speed walking		2 3	1 2 3	1 2 3	1 2 3
@jogging			1 2	1 2 3	1 2 3
@running			1 2	1 2	1 2 3
@track events			1	1 2	1 2
@treadmill		1 2	1 2 3	1 2 3	1 2 3
@stair machine			1 2	1 2 3	1 2 3
*@slide					
*@glidewalker				1 2	1 2
stationary cycling	1 2	1 2	1 2 3	1 2 3	1 2 3

ACTIVITY	INACTIVE	A LITTLE ACTIVE	ACTIVE	VERY ACTIVE	COMPETITIVE/ PROFESSIONAL
*@recreational cycling		1 2	1 2	1 2	1 2
*@competitive cycling					1
*@recreational swimming	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
water aerobics	2	1 2 3	1 2 3	1 2 3	1 2 3
@lap swimming			1 2 3	1 2 3	1 2 3
@competitive swimming				1 2	1 2
*@snorkeling		1 2	1 2 3	1 2 3	1 2 3
*@water skiing					
*@scuba diving					
*@surfing					
*@day sailing			1 2	1 2	1 2 3
*@sailboarding				1	1
*@rowing or sculling, carefully				1 2	1 2 3
@ergometer rowing			1 2	1 2 3	1 2 3
*@white water canoeing, kayaking					
prenatal aerobic/exercise class	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
low impact/low intensity aerobics	1 2	1 2 3	1 2 3	1 2 3	
@low impact/high intensity aerobics		1 2	1 2 3	1 2 3	
*@ high impact/high intensity aerobics					
@low step aerobics, beginning		1 2	1 2 3	1 2 3	1 2 3
*@low step aerobics, advanced			1 2	1 2 3	1 2 3
*@high step aerobics, advanced					1
modern dance, beginning	1 2	1 2	1 2 3	1 2 3	1 2 3
@modern dance, advanced			1 2	1 2 3	1 2 3
African/Caribbean dance, beg		1 2	1 2 3	1 2 3	1 2 3
African/Caribbean dance, adv			1	1 2	1 2
Mideastern (belly) dance	1 2	1 2 3	1 2 3	1 2 3	1 2 3
@ballet, beginning		1 2	1 2 3	1 2 3	1 2 3
@ballet, advanced			1 2	1 2	1 2 3
@jazz dance, beginning		1 2	1 2	1 2	
*@jazz dance, advanced			1	1 2	1 2
ballroom dance, beginning	1 2	1 2 3	1 2 3	1 2 3	1 2 3
*@ballroom dance, advanced			1 2	1 2	1 2 3
contra dance		1 2	1 2 3	1 2 3	1 2 3
*@gymnastics				1	1
prenatal yoga	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3
@yoga, beginning			1	1 2	1 2
@yoga, advanced			1	1	1
tai chi	1 2	1 2 3	1 2 3	1 2 3	1 2 3
@karate, beginning			1	1	1 2
@karate, advanced					
@judo, beginning		1	1	1 2	
@judo, advanced					
friendly games of:					
@badminton	1 2	1 2 3	1 2 3	1 2 3	1 2 3
*@basketball			1	1 2	1 2
*@frisbee	1	1 2	1 2	1 2	1 2
@golf		1	1 2	1 2	1 2
*@handball					
@pingpong		1	1 2	1 2	1 2
*@racketball			1	1	1
*@soccer			1	1	1

ACTIVITY	INACTIVE	A LITTLE ACTIVE	ACTIVE	VERY ACTIVE	COMPETITIVE/ PROFESSIONAL
*@softball			1	1	1
*@squash					
*@tennis			1 2	1 2	1 2 3
*@volleyball			1	1 2	1 2
<hr/>					
*@cross country skiing			1 2	1 2	1 2
*@ski machine			1	1	1
*@downhill skiing					
*@snow or skate boarding					
*@roller skating or blading		1	1 2	1 2	
*@ice skating			1 2	1 2	1 2 3
<hr/>					
*@rock climbing				1	1
*@skydiving					

Most cardiovascular exercises are appropriate for postpartum soldiers, as long as the soldier gradually returns to the activity.

(1) Intensity

The intensity should be high enough that you are breathing hard, but not so hard you cannot talk. The changes that occur during pregnancy also impact our physical training programs for pregnant soldiers. Here are some of the major alterations that occur because of the changes in pregnancy.

Heart rate is normally measured to determine the effect of vigorous exercise on the body. In pregnancy, because of the changes in the cardiovascular system mentioned previously, the heart rate is not always an accurate indicator of how hard someone is working. Therefore, the Rate of Perceived Exertion (RPE) is used in the second and third trimesters.



Figure 72. Intensity level will vary by individual.

However, it is useful to measure heart rate in the first trimester and postpartum to determine the target heart rate range for cardiovascular conditioning, or aerobic fitness at a moderate intensity, as recommended by ACOG.

Target Heart Rate (THR) Formula

The simplest formula is a percentage of the age-predicted maximum heart rate (MHR). In this formula, you subtract the soldier's age from 220 to get the MHR, and then multiply by 60 percent to find the bottom of the range and by 80 percent to find the top of the range. This will give you a range of heart rates (measured in beats per minute [BPM] for cardiovascular conditioning).

The following are some examples:

	220 BPM	220 BPM
minus age:	<u>-20</u> years old	<u>-30</u> years old
MHR	200	190
X 60%	= 120 BPM	= 114 BPM
X 80%	= 160 BPM	= 152 BPM

So, for a 20-year old, the range is 120 - 160 BPM. For a 30-year old the range is 114 - 152 BPM.

Rate of Perceived Exertion



Figure 73. Use RPE to determine intensity of the exercise.

RPE is a self-report tool that measures the effect of exercise on the soldier's body as perceived by the soldier. Selecting the number or descriptive word that best describes your effort indicates how you perceive your exercise. The scale is as follows:

Borg Scale of RPE

- 6
- 7 very, very light
- 8
- 9 very light
- 10
- 11 fairly light
- 12
- 13 somewhat hard
- 14
- 15 hard
- 16
- 17 very hard
- 18
- 19 very, very hard
- 20

6 = doing nothing
12-13 = moderate intensity
14-16 = vigorous intensity
20 = maximal effort

The range of “somewhat hard to hard” (13-15) is a safe, moderate range that is effective for cardiovascular conditioning. If you are working at a level of 12 - 16, you are in the cardiovascular conditioning range. You may prefer to use words, while others prefer numbers.

During the second and third trimesters, RPE is more accurate in determining how hard you are working than the heart rate range. Breathlessness, sensory input from muscles and joints, and overall fatigue should be taken into account when choosing the number that best describes perception of exercise effort. Reporting 12-16 on the RPE Scale is equivalent to exercising with the THR range of 60-80 percent.

Second and third trimester soldiers who are working at an effective intensity will be working at a “somewhat hard to hard” level and should not exercise above “hard”. First trimester and postpartum soldiers can exercise more vigorously but should not exercise above “very hard”.

(2) Frequency and Duration

Cardiovascular exercise should be done a minimum of 3 times a week for at least 20 minutes but no more than 45 minutes in each session.

(3) Aerobic Dancing

Your EL will demonstrate the following exercises during class. Practice them in class before trying them on your own.

In the Army, running is usually the main cardiovascular exercise. During pregnancy, running is not always practical. You will learn to do aerobic dance as an alternative for the cardiovascular portion of the workout.

Aerobic dancing consists of doing locomotor steps, combined with arm and leg gestures, to the beat of music.

Locomotor Steps are weight-bearing steps that move you forward or back, side to side, on a diagonal, or in place.

Arm and Leg Gestures are non-weight bearing movements of the limbs.

When doing gestures, avoid movements that are jerky, sudden or sloppy. Make your movements smooth and purposeful.

To help accommodate the different fitness levels of personnel in the class, the EL will lead aerobic steps that can be executed at several levels of intensity at the same time. First trimester, second trimester, and postpartum soldiers are generally able to work longer at higher rates than third trimester soldiers.

In early pregnancy and postpartum you may even use jogging steps to increase the intensity as long as you feel comfortable with the impact. Third trimester soldiers need to stick with lower intensity movements. There are two ways to change intensity - by changing the size of the movement or the speed of the music. Smaller movements lower intensity, and larger movements increase intensity. Larger movements sometimes lead to jogging steps.

Warm-up

The aerobic dance class will always start with a warm-up. A warm-up includes centering, and gradually adds movements of large muscle groups in the legs, trunk and shoulders. Begin slowly and increase the intensity as the warm-up progresses. It takes five to eight minutes to get warmed up and begin the aerobic workout.

The Workout

The main portion of the workout is at a moderate pace at first, about 110 to 124 BPM. The aerobic patterns are done in counts of 4 or 8, or multiples of 8.

Aerobic patterns can be combined for more interesting and fun routines. Some examples of patterns that you may learn are—

- Grapevine.
- Step with heel touch.
- Arm pull-downs.
- Diagonal march with leg lift and punch.
- V-step front and back.
- Mambo with arm sweep.
- Double side step with a leg curl and bicep curl.

The EL will ask you to check your heart rates or determine how hard you feel you are working by using perceived exertion. If you feel you are working fairly light, or your pulse is below the range of their THR, you can increase the size of your movements. If you feel you are working somewhat hard to hard, or your pulse is in the range of your target heart rate, then you can either stay at your present pace or gradually increase the speed or size of your movements for the next segment.

If you are gasping for air or your pulse is above your THR, you are working too hard, and should make your movements smaller.

Cool Down

A cool down always ends the aerobic section of the class, and slows down the music to about 110 to 124 BPM. You will work at that pace for three to five minutes. Pulses must be below 110 BPM by the end of the cardiovascular workout before stopping the exercise. If your heart rate is still elevated, continue to do small, slow movements until it is below 110 BPM.

If you are going to do activities on the floor after your cardiovascular workout, make sure you have cooled down until your heart rate is below 100 BPM to prevent blood pooling and dizziness.

(4) Alternative Aerobic Activities

Alternative exercises related to aerobic dance are water aerobics and step aerobics.

Water aerobics is aerobic dance done in the water. The following are a few tips for water aerobics:

- Because your heart rate changes when exercising in the water, use only perceived exertion to evaluate the intensity level of the workout.
- All movements must be slowed down to adjust for the resistance of the water.
- Be sure to cool down completely, and have soldiers get out of the water slowly to prevent dizziness.

Step aerobics is another popular variation. The following are some tips for step aerobics:

- Step should be done only in the first and second trimester.
- The height of the step should be lowered as the pregnancy progresses.
- Soldiers smaller than 5 feet 3 inches should work without a step after the first trimester.
- Because vertical movement increases intensity, keep pace less than 124 BPM.

f. Relaxation and Stress Management

Learning to relax is as important as working the body. Relaxation reduces stress and helps a soldier with labor by allowing the uterus to contract effectively. Relaxing also lowers blood pressure, heart rate and respiration, all of which make labor more efficient.

In the high-paced Army life, learning to relax is not always easy. It takes practice. Make relaxation training a part of your prenatal exercise program, and practice relaxing at home and work.

A few minutes of relaxation every now and then during the day will relieve stress and improve concentration for all activities at work and home.

Section IV. Support and Camaraderie is Part of Being a Soldier

An important component of a pregnancy fitness program is developing positive feelings about yourselves and your pregnancy. Self-esteem may suffer, especially in the later stages of pregnancy. You may pride yourself on being in superb physical condition or in maintaining your appearance or weight, and you may question your self-esteem as you gain weight and activity levels decrease.



Figure 74. Encourage and support each other.

To help you maintain a positive environment, focus on the positive aspects of your pregnancy. Concentrate on how well you are doing as your pregnancy progresses.

Because teamwork and camaraderie are part of our Army experience, teamwork and camaraderie are incorporated as a part of the class. Teamwork is important as confidence and self-esteem builders. Take advantage of time allotted in the sessions to discuss your experiences.

A Buddy System is an excellent way to practice teamwork. Make the effort to develop a relationship with and support your buddy.

Your EL is also there to provide support and assistance with any problems you may be experiencing. Talk to him/her about ways to incorporate individual relief measures, strength work, or stretching into the part of class set aside for individual work. They are available to discuss questions and concerns.

Section V. Key Safety Issues in Pregnancy

Safety is the most important priority of an effective exercise program for pregnant and postpartum soldiers. Be familiar with these pregnancy safety issues and talk to your EL if you have any concerns or questions.

Most soldiers are able to exercise safely throughout their pregnancy within the guidelines of the ACOG. The exercises in this program are within these guidelines.

Be aware of the following key safety features for pregnant soldiers:

- Pregnant soldiers must have health care provider approval before beginning an exercise program.
- Soldiers should keep their health care providers informed about their exercise program throughout pregnancy.

- Keep your EL informed about any changes in your pregnancy that could affect your exercise program.
- Soldiers at risk for pregnancy complications may be advised not to exercise or to reduce their exercise frequency, duration, or intensity.
- Work at your own pace. Avoid fatigue and over-training. Do not continue with exercise activities when fatigued or demonstrating signs of overexertion that include: difficulty breathing, nausea, vomiting, dizziness, irregular heartbeat, faintness, excessive muscle soreness or pain, persistent lethargy or sudden sharp pain.
- Only **YOU** can assess the appropriate level of effort. Participate to the fullest level that you feel is appropriate for your energy level. If your exertion level is lower than usual for more than a few days, you should go see your health care provider.
- Drink plenty of water during exercise. Dehydration can lead to fatigue, dizziness and other complications, including premature labor.
- Bring nutritious snacks and take in enough calories at regular intervals to maintain a steady blood sugar. Soldiers who are eating 300 calories of nutritious food every 2-3 hours during the day will need to eat about 6-8 times a day.
- Use slow, deep breathing during all phases of exercise. There is a tendency to want to hyperventilate, so breathe slowly and deeply, and slow down for a moment, if needed. In later pregnancy, the uterus pushes up on the diaphragm, and can lead to feelings of breathlessness. Use deep breathing into the back lobes of the lungs by inhaling when you do a side bend and exhaling when you return to upright.
- Use low impact movements and modify exercises to prevent injury. You have more potential for injury from the effects of ligament laxity than a person who is not pregnant.

You may be able to tolerate running, step aerobics, etc., while others may not be able to do so. Kegels and squatting may help prevent pelvic floor trauma. Strong abdominal muscles and pelvic tilts help relieve low back pain and maintain more normal alignment.

Due to the adaptations during pregnancy, muscles must use increased energy to maintain balance against gravity and produce movement and to counter the decreased mechanical advantage.

To counteract this, strengthening exercises for the gluteal muscles, hamstrings, quadriceps, abdominal, pelvic floor, and upper back muscles are emphasized. In addition, the low back, hip flexor, and chest muscles are emphasized during the stretching parts of the program.

- After the first trimester, do not lie on your back. Exercises normally done on the back should be done on the side, seated or on hands and knees in the second and third trimester.
- Avoid standing still for long periods. Aerobic sessions from 20 to 45 minutes are recommended. After 15 - 20 minutes of aerobics, blood can begin to pool in the lower legs and fingers. If this happens, raise your arms over your head until you feel relief.
- Do not make sudden changes of position. This can affect blood flow and cause lightheadedness and loss of balance. If working in water, cool down completely and then leave the water slowly to avoid lightheadedness.
- Center at the start and finish of exercise routines to help reduce the risk of biomechanical discomfort or injury.
- After 20 weeks, use splinting techniques during curl-ups, curl-downs or head lifts to minimize diastasis. Postpartum soldiers with a diastasis of 2 fingers or greater also need to splint and not do Army sit-ups.
- Be aware of safety equipment and clothing. Dress for the weather. In cold weather, wear layers so you can remove clothing as you warm up. Avoid hot, humid locations. Overheating is risky. Fabrics such as cotton that move easily and let heat escape are good. At dusk or dawn, reflective clothing is essential. Proper athletic shoes are a must. Refer to AR 670-1, *Wear and Appearance of Army Uniforms and Insignia*, for uniform requirements.
- Use techniques and make exercise modifications that help combat the effects of gravity, including—
 - Use pelvic tilts to help relieve low back discomfort.
 - Alter the stance - some soldiers prefer feet further apart in later pregnancy.
 - Shorten the jog stride.
 - Lower the step, if doing step aerobics, and eliminate it in the third trimester.
 - Avoid rapid leg movement outward if the pubic area is sensitive.
 - Avoid breaststroke kick when swimming if pubic area or groin is sensitive.
- Work on strengthening a weak area of your body or stretching a tight area during individual focus time.



Figure 75. Splint after 20 weeks.

- If you should fall during the exercise session, follow these guidelines—
 - If less than 20 weeks pregnant, rest for at least 10 minutes on your left side. Tell your health care provider at the next visit about the fall.
 - If experiencing lower abdominal cramps or vaginal bleeding, make an appointment to see your health care provider.
 - If 20 weeks pregnant or more, go immediately to the medical treatment facility (MTF)/clinic or designated health treatment facility.
- If you have increased uterine contractions or severe cramping during vigorous exercise, you may have dilation of the cervix. Go to the health care provider for evaluation.
- Other symptoms for referral to the health care provider—
 - Swelling of face and hands.
 - Severe headaches.
 - Persistent dizziness or lightheadedness.
 - Palpitations or chest pain.
 - Difficulty walking because of pain.
 - Vaginal bleeding or excessive discharge.
 - Fever.
- If during the exercise session your "water breaks," this means that the membranes broke and the amniotic fluid came out. If this happens before you are in active labor, it is called a premature rupture of the membranes (PROM). **If PROM occurs, you must immediately stop all exercise**, contact your health care provider immediately, and prepare for the delivery of the baby.

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Chapter 5 Changes During Postpartum

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Basic anatomical changes during postpartum.
- Physiological changes during postpartum to the cardiovascular, thermoregulation, metabolic, respiratory, and biomechanical systems.
- Strategies to help relieve postpartum blues.

Section I. Background

Following birth, you will undergo many physical and mental changes. Some of these occur immediately and others take time to develop. A consistent and appropriate exercise program is as important for a new mother as for a pregnant soldier to complete a positive transition back to the non-pregnant state. Exercise assists this transition.

Section II. Basic Anatomy of Postpartum

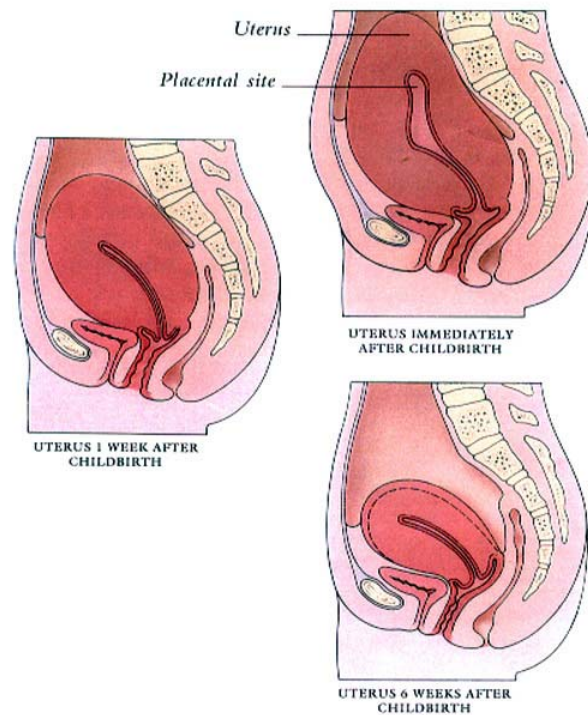
The following changes in your body occur after birth:

a. Uterus

The uterus is the size of a watermelon when the baby is delivered, but shrinks back to the size of a pear. As the uterus shrinks, it contracts and relaxes.

The contractions can cause discomfort or pain, especially if you are breast-feeding. Breast-feeding stimulates the contraction of the uterus contributing to the shrinking process. The pain is referred to as after-birth pain.

To relieve after-birth pains, empty your bladder and lie face down with a pillow under the stomach. You may feel cramps at first, but the cramps should disappear in a few minutes.



**Figure 76. Uterus shrinks in size over time.
DK Images. @ Dorling Kindersley.**

As the uterus shrinks, it sheds its lining where the placenta was attached. This discharge is called lochia. Lochia changes from red (bloody) to pink to white over a three to four, and up to six-week period. If you are uncertain about a vaginal discharge, check with your health care provider. There should be no lochia by the six-week check-up.

b. The Pelvic Floor

During pregnancy and delivery, the vagina and perineum were stretched and may be bruised and swollen. It takes about four weeks for these areas to heal and to return to normal size.

Doing Kegel exercises will help this area heal. A cold pack applied to the area helps to reduce discomfort in the first days after delivery.

c. The Bladder

The bladder is swollen and may take about four weeks to change back to the non-pregnant state. As a result, you may experience loss of bladder control, excessive perspiration, and an increase in urination as the body works to rid itself of fluid.

You can help reduce loss of bladder control (also known as urinary incontinence) by urinating frequently - even when you do not feel like you have to go to the bathroom. Kegel exercises also help resolve incontinence.

d. Constipation

Constipation is the passing of hard stool or difficulty in passing stool. It may occur after birth due to the swelling of the perineum, discomfort experienced when sitting to pass stool, or the fear of tearing perineal sutures when bearing down to pass solid waste.

Drinking lots of fluids, eating nutritious, high fiber foods, and using relaxation techniques can help to relieve constipation. Drinking prune or apple juice will soften stools and make the passing of waste easier.

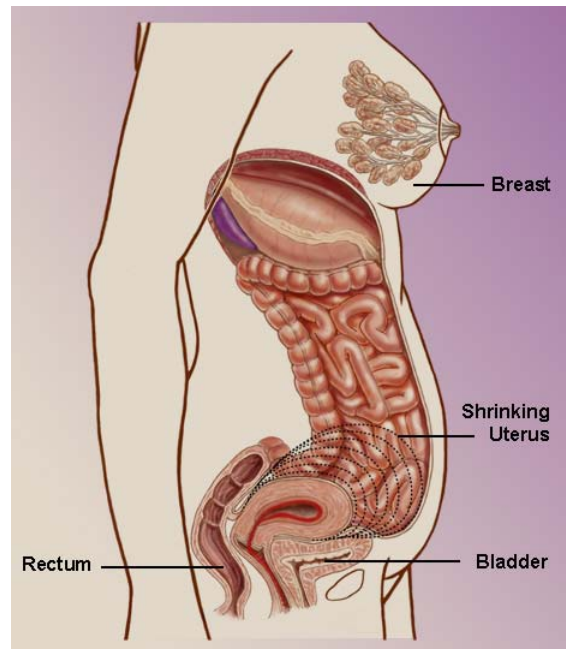


Figure 77. Postpartum body.
Rabin-Spivey, Eisenhower Army Medical Center, Medical Illustration Dept.

e. Breasts

One of the most amazing changes in the body is the creation of breast milk. Whether or not you are breast-feeding, breasts become engorged and sore. You should discuss ways to relieve this discomfort with a nurse or lactation counselor. A lactation or well-fitting bra should be worn to support the breasts and relieve discomfort.

Whether breast or bottle-feeding, you should hold the baby in a feeding position using pillows or blankets for support. The added support will reduce or relieve the pull on neck, shoulder, and upper back muscles. It also frees your hands to handle the baby. Sore neck, shoulder, and upper back muscles intensify breast discomfort.

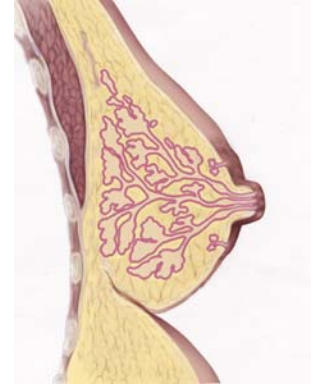


Figure 78.
Postpartum breast.

Section III. Physiological Changes in Postpartum

The five major systems affected during pregnancy transition to a non-pregnant state during the postpartum period.

a. Cardiovascular

Stroke volume and end-diastolic volume remain elevated over preconception levels for 6-12 weeks postpartum. Blood pressure stays low for at least a year postpartum. These beneficial changes continue to increase with succeeding pregnancies and are beneficial when you exercise. During exercise, the heart and blood vessels deliver more blood to the muscles, and, therefore, more oxygen with each heart beat.

Immediately following birth, some soldiers experience a very slow resting heart rate, with a pulse of 40 to 50 BPM. This is not considered indicative of disease but rather a sign of being in good physical condition.

b. Respiration

Respiration returns to normal within a couple of months after delivery. Your ribs may remain expanded, however, for a year or more.

c. Thermoregulation

The amount of time it takes for your body to return to a non-pregnant state varies among soldiers, but is about six weeks. It takes longer when you are breast-feeding.

d. Metabolism

Metabolism will slow during the non-pregnant state reducing your need to eat often. Breast-feeding, however, maintains the higher metabolic rate developed during pregnancy and the need to eat often.

e. Biomechanical

Balance and stability are altered during pregnancy. The non-pregnant state requires an adjustment in the center of gravity. Though this is a rapid change in the postpartum period, you must give your body time to readjust to the new center of gravity.

When carrying or holding the baby, this can cause muscle tension in your upper back, neck, shoulders, and arms. Use your forearms, not your hands to carry the infant. This lets your upper arm muscles support the baby's weight. Supporting the baby's weight with your hands can place unneeded stress on the spine, as well as lead to tendonitis in the wrist.

Section IV. Psychological Impact of Postpartum

The weeks after delivery can be emotional. You are transitioning from a high state of readiness and excitement culminating in delivery. You have undergone rapid hormonal changes, the loss of the pregnancy with its unique sense of intimacy, and the shifting of friends and family's attention from you to your infant. All of these factors may contribute to a mild depressive state called postpartum blues; the term applies to a common down feeling, often occurring around the third to fifth day following birth.



Figure 79. Support from friends can help relieve postpartum blues.

Support from friends and family can help relieve these blues. Talk with family and friends about your feelings and concerns no matter how trivial you may think they are.

Reassurance, positive reinforcement, physical activity and caring friends can help mothers work through postpartum blues. Spending time with other postpartum mothers is especially helpful during the six-week at-home period. Avoid isolation.

A mental health professional should be seen if depression does not improve and subside, or if you do not have friends and/or family in your immediate environment.

Chapter 6

Six-Week At-Home Postpartum Program

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- General goals of the at-home postpartum program.
- Exercises to be performed in the at-home program.
- Procedures used to check for diastasis postpartum.
- Specific progression of abdominal exercises postpartum.
- Detailed weekly schedule of the at-home program.
- Fitness and physiological goals at the end of the 6-week convalescent leave.

Section I. Background

A consistent and appropriate exercise program is as important for postpartum soldiers as it is for pregnant soldiers.

During the six weeks following birth, your body goes through significant changes as it adjusts to its non-pregnant state. You must also prepare yourself to be fit enough to attend postpartum PT when you return to duty at six weeks.

The at-home postpartum program can help ease your recovery and movement toward required fitness levels. This chapter will cover goals and components of the At-Home Program, as well as safety issues, and the at-home program schedule.

The at-home postpartum program is for the first six weeks of the postpartum period. It takes six weeks for the reproductive tract to return to a non-pregnant state (not a pre-pregnant) state or condition. Returning to a true non-pregnant state may take longer than just six weeks. However, by six weeks, most soldiers are able to do vigorous activity if they were active during pregnancy, and they begin their recovery exercises within a few days of delivery.

Section II. Goals of the At-Home Postpartum PT Program

As the body adjusts to the non-pregnant state, exercise is critical to both a speedy and healthy recovery and returning to required fitness levels.

Kegels can help bring nutrients to the pelvis to promote healing, prevent urinary incontinence and support of internal organs. Abdominal exercises help strengthen the trunk. This protects the low back, flattens the abdomen, and provides support to the diaphragm and internal organs so they work more efficiently.

Walking helps the body adjust to the change in the center of gravity in the non-pregnant state. And, overall, exercise helps reduce and relieve stress and promote relaxation.

Exercising with a buddy or in a group provides camaraderie, and allows you to share your experience, giving a sense of well being for the new mother.

You can begin exercising at home shortly after giving birth. The at-home postpartum program consists of the following six exercises:

- Pelvic floor or Kegels.
- Constructive rest and relaxation.
- Abdominal.
- Strengthening.
- Flexibility.
- Cardiovascular.

The exercise chart for the at-home postpartum program is described below. Be sure to review the program at about 34 weeks of pregnancy with your EL in preparation for the postpartum period, including watching the Fundamental Concepts of Postpartum Exercise (video 3).

Section III. At-Home Program Schedule

a. Week One

If there has been a vaginal birth with no complications, you may try to do Kegel exercises within a few hours after delivery. You should be able to stop the flow of urine by your six-week postpartum check-up. If unable to control urine flow, tell your health care provider at that time.

If you have had a cesarean section, start doing Kegel exercise as soon as possible. If you have difficulty getting to the floor in the first few days after delivery, do pelvic floor exercises in bed.

If you are able to do exercises on the floor, be sure to rise from the position slowly and carefully, rolling onto your side first, then hands and knees, and then slowly to a standing position.

(1) Review of Kegel Exercise

- Lie on the floor or bed on your back with your knees bent.
- Try to draw the sits bones together.
- Then squeeze the anus, vagina and urethra.

- Then lift the pelvic floor.
- Hold for a count of 10 and relax.
- Breathe in and out.
- Do these 5 times to start and increase the number of repetitions daily until you reach a goal of 10. Progress to 3 sets of 10.

(2) Constructive Rest and Relaxation

In the first few days after delivery, it is important to lie in the constructive rest position. This position helps the body correct any posture changes that occurred during pregnancy. It also allows muscles to relax before you begin abdominal or other strengthening exercises, so that you do not use muscles improperly.

Lie on your back with knees bent and feet flat, a comfortable distance from the buttocks. Rest the hands on the abdomen, breathing deeply and slowly.

To help the body make postural changes, lie in this position for 20 minutes and rest. While resting, visualize the abdomen flattening and the spine lengthening. To relax muscles before exercising, stay in this position for two to three minutes.



Figure 80. Constructive rest position.

(3) Abdominal Exercises

Do the hiss/compress abdominal exercise.

- Inhale and expand the lungs.
- Then exhale, letting the air out with a hiss.
- Compress the abdomen by pulling the belly button toward the back of your waist as you exhale.
- Repeat four times, then rest. This is one set.
- Then repeat the hiss/compress cycle for a total of 15 reps (3 sets).
- Work up to 7 reps per set by the end of the week for a total of 21 reps. Progress to 3 sets of 10.

As the muscles get stronger, you can exhale without hissing to help prevent hyperventilation. Resting between sets also helps prevent hyperventilation.

If you had a cesarean section, wait a few days to try this exercise. When you do try it, you should feel only a gentle pulling where the stitches are as you exhale and

tighten the muscle. If you feel pain or discomfort, stop the exercise and try again in a few days. You should be able to do this exercise two weeks from delivery. If you can't, see your health care provider.

(4) Strengthening

In week one, the only strengthening exercises you should do are Kegels and the abdominal hiss/compress exercise.

(5) Flexibility

Lower back

- Bring both knees to the chest, one knee at a time.
- Be sure to use your hands to hold your legs up.
- Hold the position for 15 to 30 seconds.
- Repeat 2 to 3 times.



Figure 81. Postpartum lower back stretch.

If you had a cesarean section and this stretch causes pain or discomfort at the incision, discontinue for three to four days, then try again.

Abdomen

- Start from the constructive rest position.
- Extend one leg at a time until both are flat.
- Slowly raise your hands over your head, keeping your elbows straight, until you feel a gentle pull at the abdomen.
- Your hands may or may not reach the floor depending on your discomfort.
- Also, keep your lower back flat on the ground as you raise your hands.
- Stop raising your hands if your back starts to arch or your abdomen starts to pull.
- Hold the position for 15 to 30 seconds.
- Repeat 2 to 3 times.
- Remember to breathe as you hold the stretch.



Figure 82. Postpartum abdominal stretch.

(6) Cardiovascular Exercise

The first week begin walking. You can start by walking at your own pace for ten minutes. Try to walk every day, increasing the pace as the week progresses.

b. Week Two

In week two, add a few new exercises to the ones already being done. Continue to progress to 30 repetitions of Kegels. Then, lie in the constructive rest position for two to three minutes before beginning abdominal strengthening exercises. Continue with the hiss/compress exercise for 3 sets of 10 reps.



Figure 83. Make time to walk.

To progress in abdominal work, you will need to check the strength of your deep abdominal muscles before beginning strengthening of the rectus abdominal muscles. To see if you are ready, do a head lift test.

- **Head lift test *for postpartum soldiers***
Follow directions for head lift exercise as described previously.
As head is lifted, the entire abdomen should stay flat.
If abdomen pushes out instead of staying flat, deep muscles are weak.
Soldier should continue with hiss/compress and C-curve exercises.

Every few days, do the head lift test to see if you are ready to progress to the head lift exercise. If the head lift test can be done correctly, then begin doing head lift exercises. Start with 3 sets of 5; progress to 3 sets of 10. You should generally be able to do head lifts before returning to Postpartum PT from convalescent leave.

Once you can do 3 sets of 10 correctly, you can start curl-ups. To see if you are ready, do the curl-up test.

- **Curl-up Test - *postpartum***
Follow directions for curl-up exercise as learned during pregnancy PT.
The entire abdomen should stay flat as the head and shoulders lift off the floor.
If you cannot keep the abdomen flat, continue with head lift exercises, increasing repetitions and sets.
You should be able to do curl-ups without difficulty when you return to Postpartum PT from convalescent leave.



Figure 84. Postpartum curl-ups.

- Curl-up exercise (first trimester and postpartum only)
Start lying on the back, knees bent and feet on the floor.
Hands across chest.
Exhale, compress abdomen, and lift head and shoulders off floor.
Keep abdomen pulled in while doing this.
Slowly lower shoulders and head to floor.

To increase difficulty, place your hands behind your head. For the curl-up exercise, the soldier should start with 3 sets of 5; progress to 3 sets of 10. Soldiers should be able to do 3 sets of 10 correct curl-ups and have less than a two-finger diastasis or health care provider approval, before beginning Army sit-ups.

Important Check at the End of Week Two

Checking for Diastasis Recti, or Abdominal Separation

It is also important for you to check for a diastasis at the end of week two postpartum while home on convalescent leave. A separation can occur as the abdomen enlarges during pregnancy. The separation should decrease in size over time. This is important because it affects how you will do abdominal exercises while at home. If you have a diastasis of 2 fingers or more, you must splint your abdomen during head lift and curl-up exercises. If the separation is less than two fingers and you can do 3 sets of 10 curl-ups by holding your abdomen flat, progress to Army sit-ups.

- *Diastasis check - postpartum*
Lie on your back.
Using fingertips, locate belly button.
Then, while doing a curl-up, move fingers an inch or two above the belly button and feel for an indentation between the rectus muscles on either side of the midline.
Determine the width of the indentation by feeling how many fingers fit into the space.
Repeat the process an inch or two below the belly button.



Figure 86. Check for diastasis when postpartum soldiers return to PPPT.

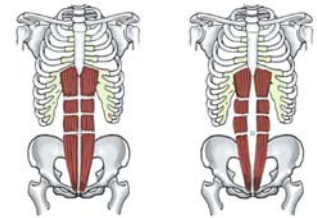


Figure 85. Abdominal muscles – normal and with diastasis.

If the space is two fingers side by side or more in either or both locations, there is a separation or diastasis; you must continue to splint your abdomen during head lift and/or curl-up exercises. Check the separation once a week. You will continue to do this until the indentation improves to less than two fingers. This improvement should occur by six-weeks postpartum. If it does not, then do only head-lifts and curl-ups until your health care provider authorizes you to progress to Army sit-ups.

(1) Strengthening

Do pelvic tilt exercises *on the back*: for early postpartum soldiers only—

- Lie on back in the constructive rest position, knees bent, feet on the floor.
- Exhale and squeeze the buttocks and lift 2 to 3 inches off the floor.
- Relax and lower to the floor.
- Begin with 3 sets of 5 and progress to 3 sets of 10 reps.

Postpartum upper back extension *on stomach*—

- Lie on the stomach with arms under your shoulders as if getting ready to do push-ups.
- Lift your head from the floor toward the ceiling.
- Return to start.
- If this seems too easy, extend your arms over your head.
- Lift your head and arms off the floor, toward the ceiling.
- Keep feet on the ground.
- Hold, then slowly return to start.
- Add weights with this exercise to make it more difficult.



Figure 87. Postpartum upper back extension.

Postpartum upper back extension *on hands and knees*—

- Start on hands and knees, back flat.
- Exhale and reach one arm up and out at shoulder height.
- Lift opposite leg.
- Keep entire length of body flat and parallel to floor.
- Return arm and leg to start position.
- Hold for 5 seconds and return to the starting position.
- Do 3 sets of 5 reps for each arm. Progress to 3 sets of 10.

(2) Flexibility

Continue lower back and abdominal stretches.

Add an upper backstretch. Hold the stretch for 15 to 30 seconds. Do this 2 to 3 times.
Add buttock stretches—

- Start from the constructive rest position.
- Bring one knee toward your chest and hold it with the hand on the same side of your body.
- Grab the ankle with the opposite hand and pull it toward the opposite shoulder. There should be a feeling of a pulling in the buttock.
- Hold for 15 to 30 seconds.
- Do 2 to 3 reps for each side.



Figure 88. Postpartum buttocks stretch.

(3) Cardiovascular Exercise

For your cardiovascular exercise, try to walk four to five days this week.

If possible, increase time to 20 minutes per day. The goal for week two should be to walk for 20 minutes without stopping. If able to do this before the end of the week and you feel ready to progress, begin alternating walking and jogging. You may also exercise on the treadmill or the stair stepper.

Warm up with two to three minutes of walking, then jog for a minute and walk for two to three minutes. Repeat this walk/jog routine for 20 minutes, trying to lengthen the jogging time and decrease the walking time.

Before the six-week postpartum check, the goal is to be able to jog continuously for 20 to 30 minutes.

c. Weeks Three to Five

(1) Kegels

Continue Kegels. Do 3 sets of 10 repetitions to maintain muscle strength. Then lie in the constructive rest position for two to three minutes before doing abdominal strengthening exercises.

(2) Abdominal Exercises

Continue the hiss/compress exercise. Do 3 sets of 10 repetitions daily to maintain deep abdominal strength.

Do 3 sets of 10 head lifts while keeping the abdomen flat. If you are able to do this, and pass the curl-up test correctly, begin doing curl-up exercises. The curl-up test and exercise is described earlier in this chapter. Remember to splint your abdomen if a diastasis is present.

Begin curl-ups with arms crossed over the chest, doing 3 sets of 5 reps. Progress to 3 sets of 10. When you can do this, do curl-ups with your hands behind your head. Start at 3 sets of 5 repetitions, remembering to keep the abdomen flat.

In **weeks three to five**, you can begin adding oblique curl-ups, only if you are able to do the hiss/compress, head lift and regular curl-up exercises with the abdomen staying flat. This generally occurs between postpartum weeks three and five.

- Oblique curl-ups, *both feet on floor or one leg crossed over the other.*
Follow directions for the regular curl-up at the beginning of this chapter.
Touch your elbow to the opposite knee as you curl up.

With *both feet* on the floor, you are preparing more for the *Army sit-up*. However, with *one leg crossed over*, you are focusing on your *waist*. Do both types. Start with 3 sets of 5 reps and progress to 3 sets of 10 reps.

In **four to five weeks**, if you are able to do 3 sets of 10 repetitions of curl-ups with hands behind the head, progress to the Army sit-up. Start with 3 sets of 5 Army sit-ups with a progression goal of 3 sets of 10 reps before the six-week postpartum check-up.

(3) Strengthening Exercises

In **weeks three to five**, add these strengthening exercises—

When you are able to do 3 sets of 10 pelvic tilts, progress to buttock exercises on hands and knees. Begin with three sets of five reps and progress to 3 sets of 10 reps.

When you are able to complete 3 sets of 10 upper back exercises on hands and knees, progress to upper back exercises on the stomach. Begin with three sets of five reps and progress to 3 sets of 10 reps.



Figure 89. Oblique curl-up.



Figure 90. Army sit-ups.

Add knee benders. Begin with three sets of five reps and progress to 3 sets of 10 reps.

- Only squat so the hands reach the side of the knees.
- If this seems too easy, squat so hands reach mid calf.



Figure 91. Knee benders.

Between **weeks 4 and 5**, it's time to start push-ups. You may start sooner if you are able to hold the abdomen flat while doing the push-up. If you cannot hold the abdomen flat or are having difficulty doing regulation push-ups, start from the knees.

- Begin with three sets of five repetitions.
- If you can't complete the set from the regulation position, finish the set on the knees.
- Try to progress to 3 sets of 10 reps either in the regulation position or as a combination of regulation push-ups and push-ups from the knees. Try to reach this goal before the six-week postpartum check.

(4) Flexibility Exercises

Continue with previous stretches. Add the chest stretch and the quadriceps stretch. Hold for 15-30 seconds. Do two to three reps for each side.

(5) Cardiovascular (Aerobic) Conditioning

Continue to walk/jog for 20 to 30 minutes four to five times a week but no less than three times a week. Don't forget the goal is to jog continuously for 30 minutes before the six-week postpartum check.

d. Week Six

In addition to working towards the running goal, in week six you should continue to work towards: 3 sets of 10 push-ups, curl-ups and sit-ups.

Do the other strengthening and stretching exercises as well.

By the six-week postpartum check, you should have met your exercise goals, have no urinary incontinence, and have no lochia discharge.



Figure 92. Get ready to jog.

If you have difficulty with any exercise or continue to have incontinence or lochia discharge, let your health care provider know at your six-week postpartum check-up.

It is a good idea to partner or buddy up with each other while on convalescent leave. Your EL may contact you to encourage at-home program participation. It is much easier to gradually exercise while on convalescent leave than to return to postpartum PT having done no exercise on convalescent leave. Table 5 gives you a schedule of your At-Home Postpartum Exercise program.

Table 5. At-Home Postpartum Exercise Schedule

	<u>Relax</u>	<u>Kegels</u>	<u>Abdominal</u>	<u>Strength</u>	<u>Stretch</u>	<u>Cardio</u>
Week One	Lie in CRP 20 minutes to relax; 2-3 minutes before other exercises.	Begin 5, Progress to 10.	Hiss/compress, Begin 3 sets of 5, Progress to 3 sets of 7.	None.	Low back and Abdominal: Begin 2 times each, hold 15 – 30 sec. Progress to 3 times each.	Walk 5-10 minutes daily.
Week Two	Lie in CRP 2-3 minutes then proceed with exercises. Relax 20 minutes 2 times a week.	Progress to 2 sets of 10.	Hiss/compress: Progress to 3 sets of 10 with flat abdomen. Progress to Head lifts, Begin 3 sets of 5, Progress to 3 sets of 10. Check and splint for diastases.	Pelvic tilt: Begin 3 sets of 5 Progress to 3 sets of 10, Upper Back on hands and knees: Begin 3 sets of 5 arm lifts. Progress to 3 sets of 10,	Low back, Abdominal: Progress to 3 times. Add buttock and Upper back: Begin 2 times each, hold 15 – 30 sec, Progress to 3 times.	Walk daily 20 minutes without stopping, Progress to alternating 2 minutes walking and 1 minute jogging, for 20 minutes.
Week Three	Lie in CRP 2-3 minutes then proceed with exercises.	Progress to 3 sets of 10.	Hiss/compress: 3 sets of 10. Head lifts: 3 sets of 10 with compressed abdomen . Curl-ups with arms crossed: Begin 3 sets of 5, Progress to 3 sets of 10. Continue splinting as needed for diastases.	Pelvic tilt: Begin 3 sets of 5, Progress to 3 sets of 10. Progress on to buttock exercises on hands and knees: Begin 3 sets of 5, Progress to 3 sets of 10. Upper Back: Begin 3 sets of 5, Progress to 3 sets of 10. Add Knee Benders: Begin 3 sets of 5 , Progress to 3 sets of 10, touching to knees.	Low back, Abdominal, buttocks, upper back: 2-3 times each, hold 15 – 30 sec. Add chest and quad stretches: 2-3 times each, hold for 15 – 30 sec.	Walk or alternate walk/jog, increasing the amount of jogging time – 20 to 30 minutes 3 to 5 times a week.

	<u>Relax</u>	<u>Kegels</u>	<u>Abdominal</u>	<u>Strength</u>	<u>Stretch</u>	<u>Cardio</u>
Week Four	Lie in CRP 2-3 minutes then proceed with exercises.	3 sets of 10.	Hiss/compress: 3 sets of 10. Curl ups with hands over chest: 3 sets of 10. Progress to curl-ups with hands behind head: Begin 3 sets of 5, Progress to 3 sets of 10. Once you can do curl ups with hands behind head no splinting needed. Add obliques.	Buttock exercises on hands and knees: 3 sets of 10 Upper Back on stomach: Begin 3 sets of 5, Progress to 3 sets of 10. If back or breast discomfort, do on hands and knees but add legs. Knee Bender: 3 sets of 10. Add pushups: Begin 3 sets of 5, Progress to 3 sets of 10, Do as many regulation as you can with remainder on knees. If unable to do regulation push-ups, begin from your knees. Keep abdomen compressed.	Low back, Abdominal, buttocks, upper back, chest and quad stretches: 2-3 times each, hold 15 – 30 sec.	Alternate walk/jog, increasing the jogging time to 30 minutes, 3 to 5 times a week.
Week Five	Lie in CRP 2-3 minutes then proceed with exercises.	3 sets of 10.	Hiss/compress: 3 sets of 10. Curl-ups with hands behind head: 3 sets of 10, Progress to Army sit-up: Begin 3 sets of 5, Progress to APFT goals.	Buttock exercises on hands and knees. Upper back: 3 sets of 10. Pushups: Begin 3 sets of 5, Progress to 3 sets of 10. Attempt regulation push-ups: do	Low Back, Abdominal, buttocks, upper back, chest and quad stretches: 2-3 times each, hold 15 – 30 sec.	Walk/Jog without stopping for 30 minutes 3 to 5 times a week, increasing jogging.

	<u>Relax</u>	<u>Kegels</u>	<u>Abdominal</u>	<u>Strength</u>	<u>Stretch</u>	<u>Cardio</u>
				as many as you can regulation with remainder on knees. Knee Bender: Begin 3 sets of 5, Progress to 3 sets of 10, touching at mid-calf.		
Week Six	Lie in CRP 2-3 minutes then proceed with exercises.	3 sets of 10.	Hiss/compress: 3 sets of 10. Curl-ups with hands behind head: 3 sets of 10. Continue to progress on Army sit-ups.	Buttock exercises on hands and knees, Upper back: 3 sets of 10, Progress on regulation push-ups working towards APFT goals (minimum 3 sets 10). Knee Benders: 3 sets of 10 touching at mid-calf.	Abdominal, buttocks, upper back, chest and quad stretches: 2-3 times each, hold 15 – 30 sec.	Jog without stopping for 30 minutes 3 to 5 times a week.

Chapter 7

Postpartum PT Program

Learning Objectives

The soldier will acquire knowledge and skills on the following topics:

- Goals of the postpartum PT program after convalescent leave
- Types of exercise to be performed during the postpartum PT program.
 - Centering.
 - Muscular strength and endurance.
 - Flexibility.
 - Special core stabilization and calisthenic exercises.
 - Cardiovascular conditioning.
 - Relaxation and stress management.
- Timetable for the diagnostic APFT.
- Safety issues during postpartum.
 - Procedures used to check for diastasis postpartum.
 - Common postpartum problems.

Section I. Background

A consistent and appropriate exercise program is as important for the postpartum soldier as it is for a pregnant soldier.

Following birth, your body goes through significant changes as it adjusts to its non-pregnant state. The At-Home program helps prepare you to be fit enough to attend Postpartum PT when you return to duty at six weeks.

The Postpartum PT program can help ease your recovery and movement toward required fitness levels. This chapter will cover goals and components of the Postpartum PT program, as well as safety issues.

The Postpartum program includes the time from six weeks postpartum until you are able to meet APFT requirements, up to a maximum of six months from the date of delivery.

It generally takes six weeks for the reproductive tract to return to a non-pregnant state (not a pre-pregnant) state or condition. Returning to a true non-pregnant state may take longer than just six weeks. However, by six weeks, you will be able to do vigorous activity if you were active during pregnancy and begin recovery exercises within a few

days of delivery. Appendix F contains a Six-Week Postpartum Screening Assessment for you to complete and give to your EL when you return to Postpartum PT.

Section II. Postpartum PT Program Goals

The goals of the Postpartum PT program are—

- Improve physical fitness.
- Improve postpartum morale.
- Assist in recovery from delivery.
- Provide a supportive community to new mothers.
- Promote a smooth transition to regular unit PT.
- Help soldiers pass the APFT.
- Help soldiers meet AR 600-9 height/weight standards.

As with the Pregnancy PT program, safety and effectiveness are priorities. The element that distinguishes Postpartum from Pregnancy exercise is the emphasis on preparing for the APFT and returning to unit PT.

By six-weeks postpartum, you should be ready to begin the Postpartum PT program. Your health care provider will give approval for you to join the program.

When you return to duty and join Postpartum PT at six weeks, you should be strong enough to—

- Do push-ups (at least from the knees) if you do not have diastasis of more than 2 fingers in width – goal of 3 sets of 10.
- Do curl-ups and sit-ups – goal of 3 sets of 10.
- Jog without stopping – goal of 30 minutes.

If you have any problems doing these exercises, have a lochia or discharge beyond three to four weeks or urinary incontinence, you should follow up with your health care provider before participating in the Postpartum PT program.

Section III. Types of Exercise in Postpartum PT Exercise

a. Fitness Components

The same general physical fitness components that are important to pregnancy fitness are also important in postpartum fitness: Cardiorespiratory endurance, muscle strength and endurance, flexibility, body composition, balance and coordination.

b. Types of Exercises

To achieve a level of physical fitness that will ensure you meet your six-month requirement to take the APFT and successfully return to unit PT, the five types of exercise included in the Postpartum program are—

- Centering.
- Muscular Strength and Endurance.
- Flexibility (Stretching).
- Individual Focus.
- Cardiovascular (aerobic) Conditioning.
- Relaxation and Stress Management.

The types of exercise in your Postpartum PT program are the same exercises that are described for the Pregnancy program, with the following exceptions:

- Special Exercises for pregnancy are no longer included.
- Soldiers may now lie on their backs to do abdominal work and relaxation.
- Special core stabilization exercises and calisthenic exercises to improve the strength of the trunk muscles.

In addition to the exercises we've already discussed, at eight weeks postpartum you will begin doing special core stabilization exercises and calisthenic exercises that have been designed to assist your return to unit PT. These exercises lay the groundwork for the essential skills required to return to unit physical training. They are designed to improve the strength of the trunk muscles. **Your EL will teach you the following exercises during class. Practice them in class before trying them on your own.**

The **4-for-the-core stabilization exercises** and the modified versions of these exercises for postpartum soldiers who are unable to execute them in proper form, or for those soldiers who are unable to keep their abdomen compressed during the exercise are shown below. Pay close attention to the difference in the movements. You will progress from one level of exercise to the next performing the modified version first and moving to the standard exercises. If you are unable to perform the modified version correctly, continue to work on the previously learned postpartum strengthening exercises.

- The Leg Extender



Figure 93. Standard leg extender.



Figure 94. Modified leg extender.

- The Side Bridge (left and right sides)



Figure 95. Standard side bridge.



Figure 96. Modified side bridge.

- The Shoulder Bridge



Figure 97. Standard shoulder bridge.



Figure 98. Modified shoulder bridge.

The **Army Calisthenic exercises** are designed to improve general strength, endurance, and mobility. Soldiers should begin the modified versions at eight to ten weeks postpartum. The modified version should be mastered first with progression to the standard Army Calisthenics. The use of precise form is essential to gain the most benefit from the exercise and to help prevent injury. These exercises should be performed at a slow cadence of 40 counts per minute, unless otherwise mentioned. Begin with five repetitions of each exercise and gradually increase the number of repetitions until ten can be executed in precise form, with no rest between exercises. Your ultimate goal is to achieve ten repetitions of each exercise with precise form before returning to unit physical training.

- The Bend and Reach

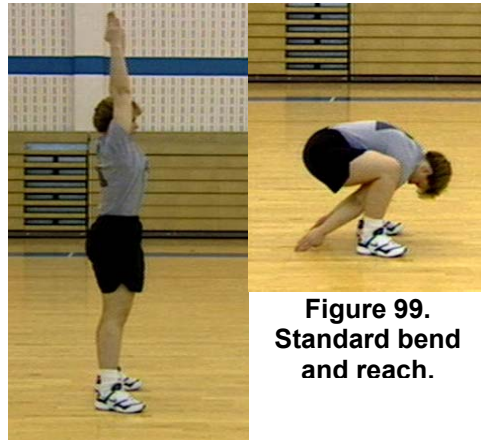


Figure 99. Standard bend and reach.

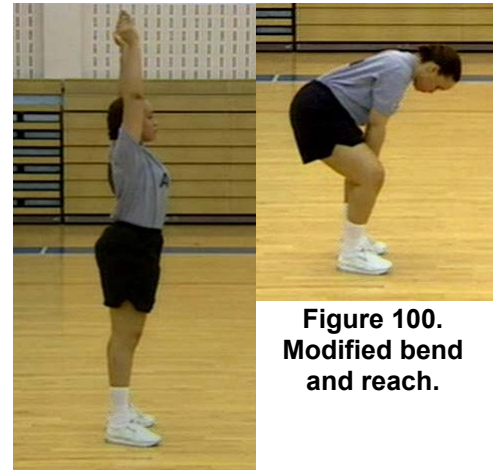


Figure 100. Modified bend and reach.

- Rear Lunge and Reach



Figure 101. Standard rear lunge and reach.



Figure 102. Modified rear lunge and reach.

- The High Jumper



Figure 103. Standard high jumper.



Figure 104. Modified high jumper.

- The Rower



Figure 105. Standard rower.



Figure 106. Modified rower.



Figure 107. Progressed modified rower.

- The Power Squat



Figure 108. Standard power squat.

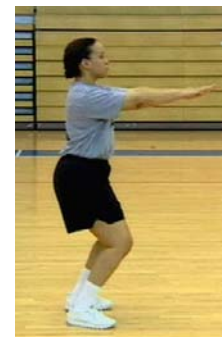


Figure 109. Modified power squat.

- The Windmill



Figure 110.
Standard windmill.



Figure 111.
Modified windmill.

- Forward Lunge and Reach



Figure 112.
Standard forward lunge and reach.



Figure 113.
Modified forward lunge and reach.

- Turn and Reach



Figure 114.
Standard turn and reach.



Figure 115.
Modified turn and reach.

- Squat Thrust



Figure 116. Standard squat thrust.



Figure 117. Modified squat thrust.



Figure 118. Easiest modified squat thrust.

- Squat Stepper



Figure 119. Standard squat stepper.

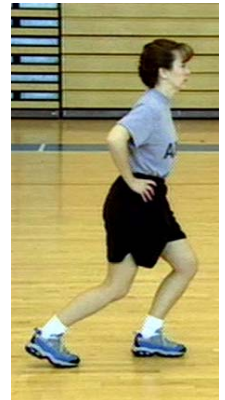


Figure 120. Modified squat stepper.

- Bent-leg Body Twist



Figure 121. Standard bent-leg body twist.



Figure 122. Modified bent-leg body twist.



Figure 123. Bent-leg raise.

- Push-up



Figure 124. Standard pushup.



Figure 125. Knee Pushup.



Figure 126. Wall pushup.

c. Diagnostic APFT and Weight Check

Although the types of exercises and formats for exercise sessions are basically the same as for the Pregnancy PT Program, the Postpartum PT Program has the goal of returning you to your required level of fitness by six months postpartum, so the emphasis of the sessions is different. The focus of postpartum classes is to improve your APFT performance and bring height/weight measurements into the correct range. After attending postpartum PT for a complete four weeks, you are eligible to take a diagnostic APFT and check weight. The testing can help relieve any anxiety you may have about meeting these standards.

d. Relaxation and Stress Management

New mothers are under a lot of stress. Rapid changes in hormones and emotions, along with the new demands of mothering, can cause postpartum blues in the days following delivery.

The camaraderie that builds in the Postpartum PT program can be extremely helpful in preventing or reducing postpartum blues and the feelings of isolation that you may experience. Take time in class to talk with each other about your experiences, problems and questions. It will improve your morale and emotional well being, help you to adjust to motherhood, and return in a fit condition to perform duty.

If you meet your APFT and height/weight requirements before the six-month postpartum deadline, the IT may recommend that you return to regular unit PT, with the approval of the commander and the health care provider. However, you may also stay in the postpartum group a while longer, providing you continue to show improvement. You may be helpful as peer leaders serving as role models for new mothers joining the group.

All soldiers must meet their APFT requirements and AR 600-9 height/weight standards before returning to regular unit PT at six months.

Section IV. Key Safety Issues in Postpartum

Be aware of all key safety issues in postpartum—

- Check for diastasis. Your first area of concern is to check for separation of the abdominal muscles. The EL will check for this on your return to the postpartum PT program. If you have a separation that is 2 fingers in width or more, you must continue splinting your abdomen during curl-ups and head lifts. **Do not do Army sit-ups** nor progress beyond that activity until your health status permits you to do so.
- Another area of concern is the level of aerobic activity. Since your joints are still loose, you can be injured if you move or change direction too quickly. You should do exercises at a slow pace for the first eight to ten weeks after delivery

and avoid quick changes of direction, as well as jumping. Be careful to not stretch your muscles beyond the initial tugging or pulling sensation. After this time, you can add more vigorous types of movements. Use common sense to determine if you are ready for each exercise.

- Take a minute or two at the start of each session to center and pay attention to your body while you work out. This kind of self-monitoring is very important to the prevention of injury.
- If you have pain in the pelvic area or difficulty walking, check with your health care provider for any restrictions for exercise. Some soldiers may have injury to their pelvis or to nerves or soft tissue in the pelvic region during delivery.
- Sometimes, during delivery, the tailbone is broken. In this case, you may have to wait several weeks to begin exercising (usually six or eight weeks). Some soldiers will be able to do some activity but not others. Pain should be avoided. If you have pain in your tailbone, consult your health care provider.
- Low back pain or SI pain can be a common complaint. Use pain as the guide to participation in all exercises. See your health care provider for exercise restrictions and more specific guidance.
- Drink lots of water. In addition to causing fatigue, dehydration can affect a nursing mother's lactation by decreasing milk production. A nursing mother should drink an extra glass of water before beginning her workout. All mothers should drink at least eight glasses of water a day, especially during exercise.

Appendix F contains a Six-Weeks Postpartum Screening Assessment. Appendix G contains a Postpartum Composite Exercise List for the areas of exercise mentioned in this guide and Appendix H contains a Postpartum Soldier's Checklist from the beginning of postpartum to 6 months postpartum. These forms will assist you in making the most of your recovery time after delivery as you prepare to return to unit PT.

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Appendix A Program Resources

The items listed do not in anyway constitute Department of Defense endorsement of the private entity, its website or its products.

Music and Equipment

Dynamix Music Service
tapes and CDs, pre-mixed music
9411 Philadelphia Rd.
Baltimore, MD 21237
1-800-843-6499
www.dynamixmusic.com

Childbirth Graphics
charts, pamphlets, etc.,
re: pregnancy and birth
PO Box 21207
Waco, TX 76702
1-254-776-1428 (military)
www.childbirthgraphics.com

Power Music
PO Box 3088
Salt Lake City, UT 84110-3088
1-800-777-2328

Educational Materials

March of Dimes
www.modimes.org

American College of Obstetrics
and Gynecologists
Distribution Center, PO Box 4500
Kearneysville, WV 25430
www.acog.com

Books

Women's Fitness Program
Development by Ann Cowlin,
Human Kinetics 2002

Health Fitness Instructor's
Handbook by Howley and
Franks, Human Kinetics 1997

Exercising Through Your Pregnancy
by J.F. Clapp, Addicus Books 2002

ACSM Resource Manual for
Guidelines for Exercise Testing
and Prescription: American College of
Sports Medicine

Essentials of Strength Training and
Conditioning, National Strength Training
and Conditioning Association

Prenatal Fitness: Exercising During
Pregnancy
Comprehensive Fitness Consulting, Inc.
compfc@aol.com

Books (continued)

Exercise during pregnancy and postpartum period
Committee Opinion 267. American College of Obstetrics and Gynecology. 2002

Stronger Abs and Back by Brittenham, D and Brittenham, G., Human Kinetics. 1997

Mother-infant Bonding by Eyer, DE. Yale Univ. Press. 1992

Shape Up With Baby
by Fienup-Riordan, A.
Pennypress. 1980

The Postnatal Exercise Book by
Whiteford, B and Polden, M.,
Pantheon. 1984

What to Expect When You're Expecting,
3rd ed. by Murkoff, Hathaway, Eisenberg.
Workman Pub. 2002

Varney's Midwifery, 4th ed.
Jones and Bartlett, Boston 2002

The Nature of Birth and Breast Feeding,
by Odent, M., Bergin and Garvey. 1992

Positive Parenting Fitness by
Olkin, SK. Avery.1992

Strength Training for Women.
by Peterson, JA, Bryant, CX
Peterson, SL. Human Kinetics.

Exercise Can Be Child's Play
by Young, K., Thomas Nelson Pub. 1984

Fit for Two, The Official YMCA Prenatal
Exercise Guide, by YMCA. Human
Kinetics Pub. 1995

Appendix B Pregnant Soldier's Checklist

Week	Item
2-6	<ul style="list-style-type: none"> • Confirm pregnancy • Set up prenatal visits • Get medical profile screening form signed • Complete occupational health assessment • Obtain commander's approval to move to Pregnancy PT
Through week 40	<ul style="list-style-type: none"> • Eat often, in small amounts, and get adequate protein intake and nutrition • Drink at least 8 glasses of water a day • Avoid alcohol, smoking and drugs • Report unusual symptoms to Exercise Leader (EL)
13	<ul style="list-style-type: none"> • Begin Pregnancy PT, if not already done so • Start serious work on Special Prenatal Exercises (Kegels, Birth Squat, etc.) • Don't stand on your feet or lie on your back for long periods of time
20	<ul style="list-style-type: none"> • Check abdomen for prenatal diastasis • Adjust exercises due to change in center of gravity, if needed
24	<ul style="list-style-type: none"> • Be sure to drink plenty of fluids • Monitor contractions if they occur during exercise • Rest on your side 10-20 minutes a day
30	<ul style="list-style-type: none"> • Arrange for buddies, if not already done so • Continue to adjust exercises and use a belly support, if helpful • Check abdomen again for prenatal diastasis • Arrange for suitable civilian clothing, if not already done so
34	<ul style="list-style-type: none"> • Arrange with EL to watch postpartum At-Home Exercise video • Make notes when watching video • Discuss video with EL and buddies
36-40	<ul style="list-style-type: none"> • This is an important time to stay fit; keep working

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Appendix C PPPT Program Health Care Enrollment Form

Soldier's Name and Rank: _____

SSN: _____

Unit and Unit Phone #: _____

Gestational Age: _____

Estimated Due Date: _____

Pre-pregnancy Weight: _____

Emergency Contact: _____

Medical Clearance

This soldier has been cleared to fully participate in PPPT. _____

This soldier may only participate in the following activities:

- | | | |
|-------------------------------|-------------------------|------------------|
| _____ Walking | _____ Swimming | _____ Stretching |
| _____ Low impact aerobics | _____ Cycling | _____ Relaxation |
| _____ Cardio exercise machine | _____ Running | |
| _____ Education | _____ Strength training | |
| _____ Jogging | | |

This soldier may participate in the education portion only. _____

Health Care Provider's Signature/Stamp

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Appendix D Sample Program Participation Agreement Memorandum

OFFICE SYMBOL

DATE

MEMORANDUM FOR Pregnancy/Postpartum Physical Training Instructor Trainer

SUBJECT: Pregnancy/Postpartum Physical Training Program (PPPT)

Request the following soldier be enrolled in the PPPT Program.
The following information is provided:

- a. _____
Soldier's rank/full name/SSN.
- b. _____
Soldier's unit
- c. _____
Name; telephone number, and e-mail address of soldier's unit (training NCO).

- d. _____
Unit point of contact and telephone number.
- e. _____
Emergency contact name and phone number.

Soldier will participate in the PPPT until 180 days after termination of pregnancy. During unit physical training this will be considered her place of duty. Copies of the soldier's pregnancy profile with gestational age and estimated due date, pre-pregnancy Army Physical Fitness Test scorecard, and Body Fat Content Worksheet (if applicable) are attached.

Encls
DA Form 3349, Physical Fitness Profile
DA Form 705, Army Physical Fitness Test
Scorecard
DA Form 5501-R, Body Fat Content Worksheet

UNIT COMMANDER'S SIGNATURE
and SIGNATURE BLOCK
(or designated representative)

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Appendix E PPPT Program Evaluation Final Questionnaire

1. Name: _____

2. Any complications during pregnancy: yes no

Headaches		
Nausea/vomiting		
Vaginal discharge		
Frequent urination		
Swelling		
Sleep disturbance		
Leg cramps		
Fatigue		
Shortness of breath		
Heartburn		
Constipation		
Hemorrhoids		
Clumsiness		
Lightheadedness		

3. APFT Results: 1st Diagnostic APFT Final Diagnostic APFT

Date taken

of Pushups

of Sit ups

Run Time

Weight

Height

4. Did you participate in the Pregnancy PT Program? _____

If yes, how many weeks pregnant were you when you started the program? _____

How often did you attend? (check one)

_____ 3 times a week

_____ twice a week

_____ once a week

_____ I wasn't able to continue because _____.

5. Did you participate in Postpartum Program? _____ When did you start?
 _____ Immediately after my 6 weeks con-leave was over.
 _____ A later time.
 How often did you attend? (check one)
 _____ 4 times a week
 _____ 3 times a week
 _____ twice a week
 _____ once a week
 _____ I wasn't able to continue because _____.
6. Do you feel the program helped you return to your former fitness level? Yes No
7. How did your labor start?
 _____ Water broke _____ Weak contractions _____ Strong contractions _____ Induced
8. How long were you in first stage of labor? (time of first contraction until the time to push the baby out)
 _____ 1-5 hours _____ 5-10 hours _____ 10-15 hours
 _____ 16-20 hours _____ 20-25 hours
9. Did you use any kind of pain medications during labor? Yes No
 If yes, what _____ Spinal _____ Nubian/Phenergan IV _____ Epidural
 _____ Pudental _____ Other
10. What type of delivery did you have? _____ Vaginal _____ Cesarean
 If cesarean, why?
 _____ Breech _____ Arrest of descent _____ Arrest of dilation
 _____ Bleeding _____ Non-reassuring fetal heart tracing _____ Repeat C-section
11. Did you have an episiotomy? Yes No
12. Where did you have your baby?
 _____ Army hospital _____ Civilian hospital _____ Home
13. How many weeks gestation were you when you delivered?
 _____ 40+ _____ 40 _____ 39 _____ 38 _____ 37 _____ 36
 _____ 35 _____ 34 _____ 33 _____ 32 _____ 31 _____ 30
 _____ 29 _____ 28 _____ 27 _____ 26 _____ Less than 26
14. Baby's weight _____ Baby's length _____

15. What education classes did you find most helpful?

Infant Care – Getting Started	
Infant Immunizations	
Development of the Fetus	
Back Health	
Car Seat Safety	
Nutrition during Pregnancy	
Common Discomforts of Pregnancy	
Breast Health	
Infant Massage	
Three Styles of Parenting	
Labor and Delivery - What Happens	
Family and Military Expectations	
Breastfeeding	
Contraception	
Chapter Eight	
Strengths as a Single Parent	
True vs. False Labor	
Women, Infants, and Children	
Adapting to Change	
Relationships	
Budgeting	

16. What exercises did you find most beneficial?

- Relaxation Stretching Strengthening
 Cardiovascular Special exercises Abdominal
 Kegels

17. What aerobic exercises did you find most beneficial?

- Aerobic dance Walking Jogging
 Cycling Cross-trainer Water aerobics

18. What strengthening exercises did you gain the most from?

- Hand weights Bands Other

19. Can you give any advice or input on ways to make this program more effective?

- Change time
 Smaller classes
 Stay in PP program full 6 months
 More classes
 Other (explain)

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Appendix F Six-Week Postpartum Screening Assessment

Fill this out and bring it to your EL when you return to Postpartum PT.

Name: _____ Today's Date: _____ Weeks postpartum: _____

Lochia: Has ceased Has not ceased

What is the most Vigorous activity you have done?
Any problems?

Episiotomy: Yes No Discomfort?

Cesarean closure: Yes No Discomfort?

Numbness? Yes No

Do you feel that your pelvic bones are stable? Yes No
If not, describe.

Can you stop the flow of urine during a Kegel? Yes No Don't Know

Do Curl-up test: Inhale, relax abdomen. Exhale, hiss and compress abdomen.
Curl-up. Observations:

Conditions resulting from birth:

Diastasis	Symphysis separation	SI joint pain
Broken coccyx	Back pain	Lower body pain
Other		

Milk production, if nursing: Any problems?

What do you do weekly in each of the following components:

1. Centering:
2. Cardiovascular conditioning:
3. Core Strength: Curl-ups: Sit-ups:
4. Upper Body Strength: Upper Back: Push-ups:
5. Flexibility:
6. Relaxation:
7. Mother and baby activities:
8. Support:

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Appendix G

Composite Exercise List

Muscular Strength and Endurance Exercises

- Shoulder retraction
- Seated Row
- Horizontal Arm Extension
- Upper Back Extension
- Push-ups
- Flies
- Isometric Chest Exercise
- Inward and Outward Rotator Cuff Exercises
- Curl-downs
- Hip extension
- Pelvic tilt
- Abduction
- Adductions
- Leg curls
- Knee bender modified
- Hiss/compress
- C-curve
- Oblique curl-ups
- Obliques – on hands and knees side lying
- Kegels

Flexibility Exercises

- Upper back stretch
- Chest and biceps stretch
- Triceps stretch
- Deeply folded position
- Hip and back stretch
- Hands and knees buttock stretch

- Hamstring stretch
- Calf stretch
- Quad stretch
- Hip flexor stretch
- Groin stretch
- Stretch for abdominal muscles

Special Exercises

- Birth squat
- Carpal tunnel release at wrist
- Carpal tunnel release at shoulder/neck
- Piriformis release
- Piriformis stretch

Aerobic Dance Steps

- March
- Diagonal
- Double side step
- Grapevine
- Mambo
- V-step (front and back)

Arm motions

- Circle around
- Bicep curls
- Punches
- Reach across
- Sweeps
- Pull downs
- Arm lifts

Appendix H

Postpartum Soldier's Checklist

Postpartum Week	Item
1	<ul style="list-style-type: none"> • Do Kegel exercises • Hiss/compress abdomen • Walk 5-10 minutes every day • Lie on your back, bend knees, relax spine, focus on spinal realignment (20 minutes) • Cesarean: work very gently or postpone for a week or two
1-2	<ul style="list-style-type: none"> • Add a head lift (review proper technique) • Walk with your buddies (10-20 minutes) • Check abdomen for diastasis • If you have diastasis, splint abdomen and begin curl-ups • Cesarean: no curl-ups till week 3 or 4 • Monitor the lochia (should no longer be red)
2-5	<ul style="list-style-type: none"> • Start floor work • Start sit-ups by week 4 or 5 • Walk one or two miles 3 or 4 times a week • Try jogging around week 5 • Add oblique abdominal curl-ups • Start push-ups and upper back strengthening around week 5 • Continue relaxation and realignment work • Cesarean: work very gently, delay new exercises by one or two weeks • Monitor the lochia (should be light or stop)
6	<ul style="list-style-type: none"> • 6-week medical check-up • Get postpartum medical profile form signed • Have occupational health assessment (only needed if soldier is breastfeeding and workplace hazards related to breastfeeding not evaluated earlier) • Join Postpartum PT • Abdominal crunches, sit ups, and push-ups (if no diastasis over 2 fingers in width) • No pelvic floor incontinence • No lochia (or almost none) • Jog continuously for 30 minutes • Fill out six-week screening form

- Cesarean: may delay fitness skills, but must be ready by week 8
- Get support and help from soldiers with older babies

Postpartum Week**Item**

10

- Diagnostic APFT
- Remember to help new mothers after you've been there a while
- Add core strengthening and calisthenic exercises

6 months

- Meet APFT and AR 600-9 requirements
- Return to unit PT

Glossary

Abdominal aorta: A major blood vessel that supplies the stomach and other parts of the gastrointestinal tract, the kidneys, and all parts of the reproductive system.

Amniotic fluid: The serous (thin, watery) fluid in which the fetus is suspended. Amniotic fluid helps the fetus grow uniformly, helps bones and muscles develop, and allows the baby to move within the uterus. It also keeps the amniotic membrane from sticking to the fetus.

Amniotic sac: This sac surrounds the fetus and is filled with a colorless liquid called amniotic fluid. This fluid-filled sac cushions the fetus and provides a clean environment for growth.

Anemia: A condition in which the blood is deficient in red blood cells.

Artery, arteries: Tube(s) that carry blood from the heart through the body in order to deliver oxygen and nutrients to the cells.

Bladder: Muscular sac in the human body that holds urine, and is part of the urinary system.

Blood plasma: The fluid part of blood that carries suspended materials such as red and white blood cells.

Blood volume: The amount of blood in the body to include the plasma and blood cells.

Braxton-Hicks contractions: Prelabor contractions that work toward shortening and widening the tube-shaped cervix and stretching the bottom of the uterus. The contractions also soften the cervix.

Broad ligaments: These ligaments connect the uterus to the sacrum and are often involved in backaches during pregnancy.

Cardiac output: The volume of blood pumped from the heart in one minute.

Cardiac reserve: The difference between the rate at which the heart pumps blood at a particular time and its maximum capacity for pumping blood.

Cardiovascular: Related to the heart and blood vessels.

Carpal tunnel syndrome: Increased pressure on the nerves at the wrist.

Coccyx: The last section of the spine; the “tail bone”.

Core temperature: Temperature at the central part of the body.

Cortisol: Hormone produced by the placenta to preserve the pregnancy.

Diaphragm: A wall of muscle that separates the chest and abdomen that aids breathing.

Diastasis: Separation of the rectus abdominal muscles that often occurs as pregnancy progresses.

Episiotomy: Incision of the perineum to help with delivery and avoid tearing of the perineum.

Estrogen: Female sex hormone.

Fallopian tube: Either of the pair of tubes transporting the egg from the ovary to the uterus. There is one on the right side and one on the left side of the uterus.

Fetal: Related to a fetus.

Fetus: An unborn baby.

Folic acid: This B vitamin helps prevent neural tube defects during the very early development of the fetus. It is also used to make extra blood that the soldier's body needs during pregnancy.

Gestational diabetes: During pregnancy, insulin levels increase as the body seeks to store energy more often. As the placenta produces hormones to preserve the pregnancy, these hormones block the effect of insulin causing the pancreas to increase insulin production. In some soldiers, the pancreas cannot make enough insulin to counter the effect of placental hormones resulting in too little insulin production to metabolize food properly. This is called gestational diabetes.

Gluteal muscles: Muscles of the buttocks.

Hamstring muscles: Muscles on the back of the upper leg.

Hematocrit: Percent volume of red blood cells in whole blood.

Iliofemoral joint: Hip joint.

Inferior vena cava: The principal vein draining the lower portion of the body to the heart.

Insulin: A hormone produced by the body that helps glucose (sugar that provides energy) access the body's cells.

Joint laxity: Looseness of the joints; can make joints more prone to injury.

Kegel exercises: Squeezing the opening of the vagina, urethra, and anus, closing and lifting the pelvic floor, and then releasing these muscles are known as the "Kegel exercises". They are vital to pelvic floor fitness.

Kyphosis: Increased thoracic (upper back) spine curve.

Lactic acidosis: Muscle fatigue and soreness caused by a build-up of lactic acid in the muscles.

Lactose intolerance: Bloating, diarrhea, gas and indigestion after consuming milk or dairy products due to an inability or difficulty in digesting lactose.

Lochia: After delivery, the uterus shrinks and sheds its lining. The lining is called lochia and changes from red (bloody) to pink to white over a three to six-week period.

Lordosis: When the back of waist curves in.

Metabolism: Chemical processes of the human body.

Neural tube defects: Birth defects of the spine and skull.

Oblique muscles: Middle layer of abdominal muscles that run diagonally across the sides of the abdomen that enables twisting of the trunk and side-bending.

Orthostatic hypotensive syndrome: Very low blood pressure due to body position.

Ovary: The part of the female reproductive system that produces eggs. Women usually have a left and right ovary.

Oxygen consumption: Amount of oxygen consumed by the body during activity.

Pelvic floor muscles: Muscles located between the pubic bone in the front, the tailbone in the back, and the sits bones on the sides. These muscles surround the urethra, vagina, and anus, and support the internal pelvic organs.

Pelvis: The bony, bowl-shaped structure surrounding the pelvic organs, to include the uterus and bladder.

Perineum: The area made up of pelvic floor muscles, the pubic bone in the front, the tailbone in the back, and the sits bones on the sides.

Piriformis muscle: Muscle that runs across the lower back and back of the hip and covers the sciatic nerve.

Placenta: A vascular (containing many blood vessels) organ that connects the fetus to the mother's uterus through which metabolic exchanges occur, providing energy for vital processes and activities. Nutrients and oxygen go from the mother to the fetus and waste products go from the fetus to the mother's blood stream through the placenta. Other chemicals, including infections, alcohol and drugs, can pass through the placenta from the mother to the fetus.

Postpartum blues: A common "down" feeling that new mothers often experience around the third to fifth day following birth.

Pregnancy-induced hypertension: Elevated blood pressure, which occurs during pregnancy.

Progesterone: A hormone that helps the uterus nurture the placenta.

Prolapse of the uterus: A dropping down of the uterus out of its correct position in the pelvic cavity.

Premature Rupture Of the Membranes (PROM): When the membranes of the amniotic sac break and the amniotic fluid comes out. If this happens before active labor begins, it is called PROM and is an emergency situation.

Rate of Perceived Exertion (RPE): RPE is a self-report tool that measures the effect of exercise on the soldier's body as perceived by the soldier. Due to the cardiovascular changes that occur during the second and third trimesters of pregnancy, exercise intensity should be measured by the Rate of Perceived Exertion rather than of by a soldier's Target Heart Rate.

Rectus abdominal muscles: The top layer of stomach muscles. They run vertically from the rib cage to the pelvic bone.

Relaxin: This protein hormone works with estrogen to soften connective tissue and causes joint laxity (looseness).

Round ligaments: These ligaments attach the uterus to the pubic bone in the front and help maintain the uterus in the center of the pelvis.

Sacroiliac (SI) joint: The joint between the hipbone and the sacrum. The area created at the back of the pelvis between the left and right bones.

Sacrum: The next to last section of the spine.

Sciatic nerve: The largest nerve in the body. It passes through the pelvis and down the back of the thigh and can become pinched and inflamed during pregnancy.

Sits bones: At the bottom of the pelvis, the bones curve under to form surfaces you can sit on. There is one on the left and one on the right.

Stroke volume: The volume of blood pumped from a ventricle of the heart in one beat.

Supine: Lying on the back, or with the face upward.

Target Heart Rate (THR): Number of heartbeats per minute to be maintained for maximum benefit during aerobic exercise.

Tidal volume: The volume of air that passes in and out of the lungs in an ordinary breath.

Umbilical cord: This tube has two arteries and one vein and connects the fetus to the placenta.

Urethra: A tube for the discharge of urine from the bladder to the outside of the body.

Urinary incontinence: Loss of bladder control.

Uterine wall: Wall of the uterus. About 10 days after conception, the fertilized egg implants itself in the uterine wall.

Uterus: The uterus is a hollow bag of involuntary muscle that houses the fetus as it grows. It stretches from the size of a pear to the size of a watermelon during pregnancy.

Vagina: A tube of muscle and membrane that serves as the passageway from the cervix to the outside of the body.

Vein, veins: Tube(s) that carry blood from the body's cells to the heart.

VO₂ max: Maximal rate at which the body transports and consumes oxygen.

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