



What's New from APFRI

Inside this edition: Brain Fitness, Exercise Tips, Recipes, Sudoku, LTC Georgette Diggs Retires, and more...



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April / May 2011

Welcome to Your 30's, 40's and Beyond

Changes

As we enter our 30s and 40s and beyond, we experience a number of physiological and functional changes associated with aging. In the skeletal system, the bones undergo demineralization and there is an increase in bone reabsorbing,¹ culminating in a loss of bone density and strength (see Osteoporosis this issue).

There are numerous changes in the muscles, both cellular and physiologically. At the microscopic level, there is a decrease in muscle fiber size and number, and fat and collagen begin to invade the muscles.¹ There is an overall loss in muscle mass, with declines in peak muscle mass starting as early as our 20s.² By the time we reach our 80s, we can expect to have lost as much as 30% of our muscle mass.³ Since muscle contributes to lean body mass, there is a loss of lean body mass with a corresponding gain in fat mass.⁴

As we age, there is a loss of fluid in the discs of the spine, the nucleus becomes less gelatinous, the cartilage begins to deform and crack, the discs become stiffer, and bone spurs may begin to form.⁵ Add these changes together and you now have an increased risk for disc breakdown.⁵ When the collagen in the outer disc covering fails, the fluid can ooze out where it can impinge on one of the many nerves exiting the spinal column, resulting in back pain. Most people will report they "blew a disc", "slipped a disc" or "threw out" their back.

In the blood vessels (or peripheral vascular system) there is a thickening of the arterial walls,¹ and a hardening of the arteries known as atherosclerosis. This stiffening of the arteries increases resistance in the vessels resulting in a higher systolic and/or diastolic blood pressure.¹ With increased blood pressure, the heart has to work even harder to push the blood into the resistant arteries, causing hypertrophy (enlargement) of the left ventricle.⁶

Aging Tips to Avoid Injury

Pay attention to injuries lasting more than 7-10 days!

Acute injuries such as knee strains and ankle sprains may take about 6-8 weeks to heal completely, but pain should subside within days. If you have chronic pain in joints, it may be much more than just an overstretched tendon or ligament. Follow up with your care provider.

Plan on extra recovery time

Adequate recovery time is essential for progression without injury and aging adds a greater need for this. For example, if you run 5 days per week, consider running only 3 days a week with a non-impact alternate aerobic activity, such as swimming or biking. Changes in strength training program variables may now require an extra day or two to recover as well.

Continued on next page

Army Physical Fitness Research Institute - April / May Newsletter 2011

Welcome to Your 30's, 40's and Beyond (cont.)

Body Restoration Through Exercise

How can you refurbish your aging body and combat the effects of aging? Exercise! There is a lot of research providing evidence of the effects of exercise on delaying the negative consequences of aging. Strength training can ameliorate the age-related changes in bones and muscles⁷ by increasing muscle mass, strength, and endurance. Improvements in muscle strength have been documented in people in their 90s.² Muscle puts stress on bones, which improves bone density and strength. Since tendons attach muscles to bones, building muscles also improves tendons, making them stronger and less prone to injury. Strong muscles help maintain functional mobility and joint integrity.

Lean body mass is a key determinant of resting metabolic rate (our metabolism and how many calories we burn).⁸ Metabolism decreases with age. Since muscle is a component of lean body mass, and increasing our muscles increases our resting metabolic rate, strength training can help you burn more calories.⁸

Aerobic exercise can also reverse some of the changes in the cardiovascular system.⁹ Benefits of aerobic exercise include a decreased resting heart rate, decreased blood pressure, increased VO₂ max, increased stroke volume, increased cardiac output, increased heart size with improvements in cardiac muscle, and increased cardiovascular efficiency.^{2,10} Exercise can also decrease heart and arterial stiffness.⁶

In the nervous system and brain, exercise can improve neuromuscular function, the interaction between the nerves and the muscles, helping us maintain muscle efficiency and mobility.⁴ Aerobic exercise increases blood flow and oxygen to the brain and has beneficial effects on both cognition and performance.¹¹ In a study on the effects of aerobic training on the brain, significant increases in brain volume occurred following an exercise training program.¹²

With a little effort, you can delay the natural aging process. Adding exercise to your daily routine will not only prolong your life, but improve your overall quality of life.

Brain Fitness is Leadership: Pause to Build Capacity

Social neuroscience, recently made popular by the book *Blink*¹ is the study of specific, localized brain activity as it relates to human behavior, using such advanced brain imaging techniques as Functional MRI (fMRI). This field is a target rich environment not just for leader development, but also for understanding the link between leadership, health and wellness. Using advanced imaging, neuroscience researchers have confirmed that brain activity associated with a making a decision actually begins about a half second prior to the decision, yet we only gain awareness of having made that decision about three tenths of a second later. This means there is a period of awareness lasting about two tenths of a second before an action begins.²

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Brain Fitness (cont.)

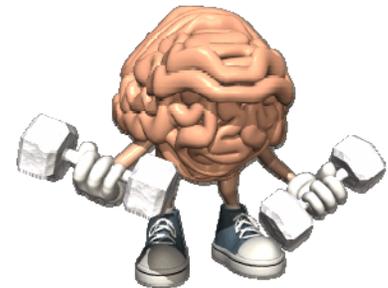
Military leadership in full spectrum operations demands the capacity for thoughtful, correct decisions not controlled by impulse.³ The rapid decisions a leader makes may seem automatic but they are not; rather the leader progresses through a complex decision algorithm, based in professional experience, professional military education, mission requirements, and conditions on the ground, sometimes in a mere fraction of a second. It is this fraction of a second between the awareness of a decision and actually taking the action that allows a leader to exercise the capacity for effective judgment. We can call this the “pause to build capacity.” The “pause to build capacity” skills a leader develops professionally can transfer to health and wellness decisions.

Consider frustration and anger. The expression of anger has been associated with negative health outcomes including heart disease, and many feel powerless to control their anger when confronted with threatening or frustrating circumstances. One could maintain, as many people do, that their anger was just a reaction, with no time period between the awareness of getting angry and the actual anger response.

But in reality there is a fraction of a second, as social neuroscience research findings indicate,² between the awareness of an emotional or cognitive state (the sensation “I’m getting angry”) and the action itself (the anger response, such as raising your voice or shouting). The pause between awareness and the action is a conscious decision point. This is very helpful, because once a person realizes there is a physical pause in time between decisional awareness and response, the person can leverage that pause to enhance decision making capacity.

With practice comes the realization that before most actions we experience a brief moment of “veto power,”² in which we can exercise executive control. Frequently, individuals discover that the two tenths of a second pause is more than enough time for reflective thought and considered judgment. Additionally, our eating habits can often be influenced by our emotional state, as many people alter eating habits in negative ways, such as overindulging or overeating, when emotionally upset. Our “pause to build capacity” can be extremely helpful in these times, as research indicates that when a person is upset he or she is less likely to indulge in overeating when reminded the comfort food is not going to make lasting mood change.⁴ If we use this brief opportunity for reflection, the impulse to overeat may pass or become more manageable when a person expects that it is not going to help long term.

Moreover, application of the “pause to build capacity” you’ve developed during your military career can be applied to improving interpersonal relationships. Building and maintaining relationships is an essential component of Psychological Resiliency. The authors of *The Brain Advantage* suggest that pausing can improve the capacity to listen, a critical skill for leadership that can also easily be applied to improving relationships at home. Pausing just for a fraction of a second can make the difference between saying the right thing and saying something you later regret. This pause for reflection may allow the person to build the capacity for effective emotional control which can be extremely beneficial in relationships. Clearly the “pause to build capacity” can be a great leadership multiplier, providing a strategic benefit in our professional and personal lives while promoting our health and wellness.



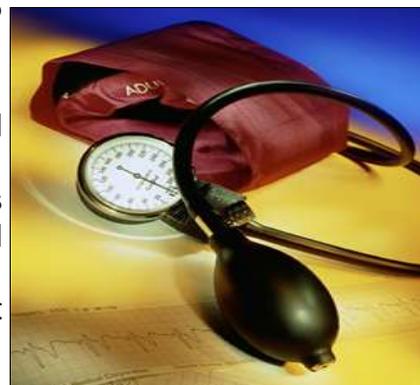
White Coat Hypertension

White Coat Hypertension (WCH) is a term used to describe persons who have elevated blood pressure in a medical environment, but normal levels during their daily activities.¹ This phenomenon occurs more frequently in women and when the BP is measured by a physician rather than a technician.² If the high BP reading is truly only found in the medical environment setting, then the risk of having a cardiovascular event such as a heart attack or stroke or kidney failure requiring dialysis is very low.^{3,4} True sustained hypertension is ultimately diagnosed in 21-39% of those thought to have WCH and therefore WCH is not a benign condition.^{5,6} So, how does one know if he has WCH or actual hypertension?

Persons with elevated BPs are monitored closely to determine when and how high their BPs rise. This can be done with a home monitoring devices or with an Ambulatory Blood Pressure Monitoring (ABPM) device. The difference in these two methods is the frequency of the measurements. An ABPM device is worn continuously and records the BP at preset intervals during activity and sleep. The home monitor device relies on the person to apply the cuff and activate the measurement. Obviously, the ambulatory device provides more and better data, but the home device can be very useful. In any case, it is imperative to regularly and accurately monitor the BP to note any trending elevations so the BP can be properly controlled.

How do you most accurately measure your BP? Before you measure your BP:

- Avoid caffeine, tobacco, or medicines known to raise BP (e.g., decongestants) for at least 30 minutes.
- Avoid exercising for at least 30 minutes.
- Sit quietly with both feet on the floor (uncrossed) and arm supported at heart level for at least 5 minutes.
- Check your equipment frequently for tiny holes or cracks in the tubing and bulb and for proper valve function and good Velcro on the cuff.
- Breathe in slowly and deeply through your nose and out through pursed lips is also helpful.⁷



Normal BP is less than 120 mmHg systolic (top number) AND less than 80 mmHg diastolic (bottom number). Pre-hypertension is a reading of 120-139 systolic OR 80-89 diastolic. Remember that your risk for cardiovascular disease (heart attack, stroke, kidney failure, etc.) starts to increase when your BP reaches 115/75 and doubles for every increment of 20/10 mmHg. Over 50 million individuals in the United States and approximately 1 billion worldwide have hypertension.⁸

If you are going to be a statistic, be one who survives! Incorporate healthy habits into your daily life by:

- Maintaining a stable and healthy weight.
- Engaging in a regular aerobic and strength training.
- Avoiding all tobacco products.
- Eating a variety of fruits and vegetables, low-fat dairy foods, whole grain products, fish, poultry, nuts, and seeds.
- Reducing sodium intake to less than 2300 mg a day (1500 mg if your BP is elevated).
- Limiting alcohol consumption to fewer than 2 beers or 10 ounces wine per day for men and 1 beer or 5 ounces wine for women.
- Sleeping at least 7 hours per night.
- Reducing stress.⁹

Osteoporosis: Are you at risk?

Osteoporosis is a disease of the bone that can affect both men and women as they age. This disease is characterized by low bone mass and deterioration of bone tissues which ultimately lead to an increased risk for fracture. There are no noticeable symptoms until the weakening of the bone leads to problems associated with posture, lower back pain and brittle or easily broken bones. Although, this degenerative disease mainly affects women, both men and women experience an increased rate of bone loss as they age. Once women approach menopause, bone loss occurs at a rate of 1 – 5% over the course of the first 5-7 years. Men over the age of 50 have one in four chance of having a bone fracture due to osteoporosis.¹

Bone is constantly broken down and built up again through a process called bone remodeling. From birth to adolescence, more bone is built than broken down. As people reach early to late twenties, peak bone mass is typically achieved. Once peak bone mass is reached, bone loss will naturally occur at a slow rate through early to middle adulthood.¹ Prevention is imperative when it comes to maintaining bone mineral density through adulthood.

Achieving peak bone mass is the first defense against the development of osteoporosis. The next step is to maintain bone mass through adulthood into middle-age by incorporating bone building exercises and getting plenty of dietary calcium and vitamin D.² Researchers have found that a minimum of 30 minutes a day of weight-bearing exercise such as walking, jogging, tennis and lifting weights plays a pivotal role in maintaining bone health.²

There are several risk factors associated with the progression of osteoporosis. Certain risk factors cannot be changed and include gender, race/ethnicity, body size, age and genetics.^{1,2} Women tend to be at higher risk than men for developing osteoporosis, specifically Asian and Caucasian women. People who are small-boned also tend to be a higher risk as a result of reduced load on the bones. Other risk factors such as nutrition, smoking, alcohol consumption and exercise are things that can be manipulated to help prevent the onset of bone loss.²

Two essential nutrients, calcium and vitamin D, play a key role in maintaining bone health. Ninety-nine percent of the body's calcium supply is stored in the bones. The other 1% is used to support metabolic processes. When blood calcium is low, calcium is removed from the bone into the blood to be used for other body processes. Vitamin D works synergistically with calcium by facilitating absorption in the intestine, bone and kidney. Simply spending 5 – 10 minutes a day in the sunlight can increase serum Vitamin D levels.^{3,5} The recommended daily intakes for calcium and vitamin D are outlined on page 6.

Proper nutrition is crucial to help maintain bone mineral density throughout the lifetime. Maintaining a well-balanced diet that includes whole and unprocessed foods may help to preserve bone health. For instance, consuming high sodium foods in excess can reduce the absorption of calcium. Research suggests that for every gram of sodium, 20 mg of calcium is not absorbed. By maintaining the recommended daily intakes (1500 mg sodium and 1000 – 1200 mg calcium) calcium loss will be minimal (approximately 30 mg/day).¹ Caffeine may also negatively impact the absorption of calcium. Adding 1 – 2 tablespoons of milk to one cup of coffee may compensate for lost urinary calcium.

Calcium must come from food sources because the body does not make it. Ideal sources of calcium include low-fat dairy products such as milk, yogurt and cheese, and calcium-fortified foods such as orange juice, soy milk or cereals. Other sources include: sardines, broccoli, spinach, tofu, Chinese cabbage and kale. Vitamin D is produced through the skin from the sun and can also be found in certain food items. Some sources include flesh of fatty fish such as mackerel, salmon or tuna, milk and eggs.^{2,3}

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Osteoporosis: Are you at risk? (cont.)

It is recommended that daily nutrient needs be met through diet alone, however some instances may occur where calcium supplementation could be necessary. In particular, women who are small-framed, have an inadequate dairy consumption and do little weight-bearing activity may benefit from supplementation. There are two main forms of elemental calcium: carbonate and citrate. Calcium carbonate is absorbed more efficiently when consumed with food. Common brand names would include Mylanta, Tums, Caltrate and Os Cal 500. Conversely, the absorption of calcium citrate is most effective when taken without food. Keep in mind, as the amount of elemental calcium consumption increases, the absorption rate decreases. Calcium absorption is highest when taken in 500 mg doses.⁴

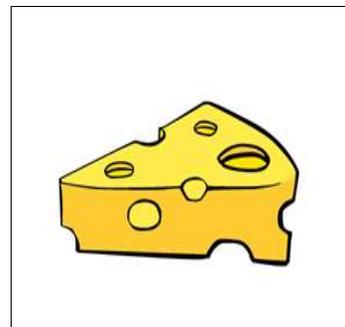
Be mindful that all nutrients have a Recommended Dietary Allowance in addition to Tolerable Upper Level intakes. It is important to take into consideration the amount of calcium you receive from food prior to considering supplementation. Too much calcium intake could lead to the formation of kidney stones. The following table shows the amount of calcium that is found in common food sources.⁵

Food Source	Amount of Calcium (mg)
1 cup plain yogurt	435
1 cup milk	300
½ cup tofu	250
1 oz cheese	200
1 cup kale	93
2 sardines	92
1 oz almonds	80
1 cup cooked beans	70
1 cup spinach	54
1 cup broccoli	75

2010 Dietary Reference Intakes for Calcium		
Age Group	Recommended Dietary Allowance (mg/day)	Upper Level intake (mg/day)
19-50 yrs	1,000	2,500
51-70 yrs (males)	1,000	2,000
51-70 yrs (female)	1,200	2,000
>70 yrs	1,200	2,000
19 – 50 yrs (Pregnant/lactating)	1,000	2,500

A calcium-rich diet with adequate amounts of Vitamin D, coupled with weight-bearing physical activity, can help prevent or delay the onset of osteoporosis. Good bone health is essential for maintaining excellent posture and reducing the risk for bone fractures. Prevention starts now; what can you do?

2010 Dietary Reference Intakes for Vitamin D		
Age Group	Recommended Dietary Allowance (mg/day)	Upper Level intake (mg/day)
19-70 yrs	600	4,000
>70 yrs	800	4,000



USAWC Staff Highlight
Ms. Glenna Sorrell
Office Automation Tech



Glenna Sorrell began her military career with the US Army in 1982 and during her 20 years of military service in the signal and adjutant general fields she served multiple overseas tours in Korea and Germany. In the Continental US, Glenna was stationed at Ft. Rucker, Ft. Riley, Ft. Carson, Ft. Bliss, and White Sands, NM before coming to Carlisle Barracks in 2000. She retired from the military in 2002 and settled in Carlisle. Since retiring from the military Glenna has worked on post at the Human Resource Department and the Carlisle Barracks Veterinary Office. She joined APFRI in 2005 as an office automation technician. Her primary duty is providing all administrative support for the 360 Leadership Feedback Program. Glenna also serves as the APFRI Action Officer for US Army War College Resident Student in-processing. Glenna will celebrate 30 years of combined federal service in 2012. In her free time Glenna enjoys fishing, golfing, bowling, cooking and spending time with her family.

USAWC Fitness Classes - Thorpe Hall

April

APFRI Peak Performance	April 5, 7, 19, 26, 28
Flexibility	April 12
Teen/Parent Strength Training	April 27

May

APFRI Peak Performance	May 3, 5, 17, 19, 24, 26, 31
Lumbar Stabilization	May 12
Teen/Parent Strength Training	May 25

Lumbar Stabilization, Flexibility and APFRI Peak Performance classes are held on the 3rd floor, 1145-1245.

Teen / Parent Strength Training is held on the 2nd Floor, 1600-1700

**Please
Join
Us!**

Jim Thorpe Sports Days
Heath and Fitness Symposium

Thursday, April 14 0800—1030 Bliss Hall

Robert Stanley, MS, CSCS, HFS *“Durable Athletic Performance & Military Physical Training”*

Nancy Clark, MS, RD, CSSD *“Fueling for Performance & Health”*

APFRI CGSC Annex Deputy Director Retires from the Military



LTC Georgette Diggs was commissioned in the Army Nurse Corps in 1990. Her initial assignment was with the 130th Station Hospital, Heidelberg, Germany. During her tour, she worked in the 26-bed medical/surgical and psychiatric units, and Level III Emergency Room as a Staff Nurse. Sixteen months within her tour she was assigned to the 212th Mobile Army Support Hospital, Wiesbaden, Germany. This assignment included a Joint Medical Task Force MEDFLAG mission to Ghana where she was assigned as the head nurse of the immunization team.

LTC Diggs attended the AMEDD Officer Advanced Course at Fort Sam Houston, Texas In 1994. She was then assigned to Walter Reed Army Medical Center (WRAMC) as a Cardiothoracic Nurse. In 1996 LTC Diggs completed the Combined Arms Service and Staff School, and attended the Intensive Care Course. She was then assigned to the Medical and Pediatric Intensive Care Unit. After 16 months she was selected as a 91C ICU instructor. After instructing for 1 year she was selected as the Head Nurse, Cardiothoracic Head Nurse for WRAMC. LTC Diggs was selected for Long-Term Health Education and Training in 2000 and completed her Master in Nursing as a Family Nurse Practitioner in 2002. She was then assigned to McDonald Army Community Hospital, Fort Eustis, Virginia in a dual role as a Family Nurse Practitioner and Head Nurse for the Family Health Center.

LTC Diggs completed Command and General Staff College in 2005 and was assigned to the Heidelberg Medical Department Activity as a Head Nurse. She was selected as the Chief of Family Practice Clinic in 2006. Following her duties in Heidelberg, LTC Diggs was selected as the Deputy Director, USAWC, Army Physical Fitness Research Institute, CGSC Annex. LTC Diggs is married to LTC (Ret) James Diggs, US Army Transportation Corps, and they have 3 lovely children, one of whom is attending Furman University on a 4-year ROTC scholarship.

CGSC Annex Noon-Time Interactive Lectures 1245

April

Running Shoe Clinic	April 6
Flexibility	April 13
Teen/Parent Strength Training	April 27

**Please call 913-758-3421
for NTL locations.
NTL start time: 1245 to
accommodate CGSC Students.**

May

APFRI Peak Performance	May 3, 5, 17, 19, 24, 26, 31
Lumbar Stabilization	May 12
Teen/Parent Strength Training	May 25



**For More Information:
<https://apfri.carlisle.army.mil>
then click on CGSC**

APFRI USASMA Annex SFC Dennis Allen Assistant NCOIC



SFC Dennis Allen joined the APFRI USASMA Team in FEB 2011. He was previously assigned as the Senior Western Region Medical Advisor for the Office of the Program Manager for the Saudi Arabian National Guard (OPM-SANG). SFC Allen has been actively serving in the Army for 22 years, spending 16 years as a Health Care Specialist (68W) and 6 years as a Laboratory Technician (68K).

SFC Allen's previous assignments were: Coordinator and Senior Instructor for the Western Region NREMT program, William Beaumont Army Medical Center, FT Bliss, Texas; Senior Medical Advisor for the Military Transition Team, Baqubah, Iraq, 3rd Battalion, 2nd Brigade, 5th Iraqi Infantry Division; Platoon Sergeant, HHC, 1st Battalion, 72nd Armor Regiment, 2-1 Infantry, Camp Casey, Korea. SFC Allen enjoys spending time with his wife and three kids. His hobbies are photography and woodworking.

Interactive Lectures & Fitness Classes West Auditorium

22 April	Is Diabetes in your Future?	0800—0850
28 April	Eat Right to Fight	0800—0850
4 May	Hypertension: "The Silent Killer"	0800—0850
6 May	Metabolic Syndrome	0800—0850
18 May	Cholesterol and You: "Gearing Up for a Change"	0800—0850

Sudoku Puzzle Brain Fitness

	7				8		
			2	4			
		6				3	
			5				6
9		8		2		4	
	5			3		9	
		2		8			6
	6		9			7	1
4					3		

Directions:

The rules of Sudoku are simple. Place a digit from 1 to 9 in each empty cell so every row, every column & every 3 x 3 box contains the digits 1 to 9.

Answer Key—Page 10



Crusted Halibut

- 4 each (4-6 ounce) Halibut steak or filet
- ½ cup Parmesan cheese finely shredded
- ½ cup Panko (bread crumbs)
- 3 Whole eggs beaten well
- 2 T fresh parsley (chopped fine)
- Salt and pepper as needed
- ½ cup Olive Oil



1. Preheat oven to 350 degrees.
2. Heat olive oil in a sauté pan.
3. Pat halibut dry with a paper towel Mix together bread crumbs, parsley and cheese in a bowl or deep plate, season to taste Dredge one side of the fish in the beaten eggs and press into the bread and cheese mixture.
4. Ensure a generous and even layer of mixture remains on fish. Sear the breaded side of the fish in the hot oil for several minutes undisturbed. Finish in the oven for 8-10 min or until internal temp reaches 145 degrees.

Serves 4

Brought to you by the Chefs at [Cancer Treatment Centers of America](http://www.cancer.gov)

Strawberry-Spinach Salad

- ¼ red onion, thinly sliced
- 2 (6-oz.) bags baby spinach
- 1 (16-oz.) container strawberries, quartered
- 1 (4-oz.) package crumbled blue cheese
- ½ cup sliced toasted almonds
- Bottled red wine vinaigrette
- Salt and freshly ground pepper to taste



Preparation

Toss together red onion and next 4 ingredients in a large bowl. Drizzle with red wine vinaigrette; sprinkle with salt and pepper to taste.

Courtesy:

http://find.myrecipes.com/recipes/recipefinder.dyn?action=displayRecipe&recipe_id=10000001176240&rcp=1

Sudoku Puzzle Answers

2	7	9	3	1	6	8	5	4
3	8	5	2	7	4	6	1	9
1	4	6	8	5	9	2	3	7
7	2	4	5	9	1	3	8	6
9	3	8	7	6	2	1	4	5
6	5	1	4	3	8	9	7	2
5	9	2	1	8	7	4	6	3
8	6	3	9	4	5	7	2	1
4	1	7	6	2	3	5	9	8

Authors & Contributors

Brain Fitness is Leadership

Dr. Gregory T. Ellermann, Ph.D, APFRI CGSC Annex

Brain Fitness Puzzle

Mrs. Tracy S. McClung, MS, ACE, APFRI CGSC Annex

Osteoporosis, Are you at risk?

Kay Lehman, MS, RD, APFRI CGSC Annex

White Coat Hypertension

LTC Cathy Hostettler, MSN, FNP-BC, APFRI CGSC Annex

Welcome to Your 30's and 40's and Beyond (and Aging Tips)

Michelle Cwiklinski, MSPT, Med, CCRT, APFRI CGSC Annex

E. Susanne Koch. M.S., ACSM-HFS, NASM-PES, APFRI CGSC Annex

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White Coat Hypertension

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Osteoporosis: Are you at risk?

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