

Women's Health Report

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Helpful Article: Kravitz, L. (2009). Women's health research update. IDEA Fitness Journal, 6(5), 26-33.

Some Stats: 1) In 1900, life expectancy of women was 51 yrs, today it is ~80 yrs 2) In 1965, 33.9% of women smoked, today 18% 3) 35% of females ≥ 20 yrs are obese 4) 30% of women engage in regular physical activity

I. Turner, M.B., Vader, A.M., & Walters. S.T. (2008). An analysis of cardiovascular health information in popular young women's magazines: what messages are women receiving? Am. J. of Health Promotion, 22(3), 183-186.

A. Cardiovascular disease (CVD): #1 killer of women in U.S. (1 in 3 adults has CVD)

1. 50% chance of dying on first heart attack, 39% of all female deaths (450,000 in 2009); 46% of women disabled after heart attack; yet majority of women still unaware of this risk
2. Protective behaviors: stop smoking (if smoke; 2-3 fold increased risk of CVD if smoke); lose excess fat (especially abdominal fat); aerobic exercise minimally 30 min/day; improve HDL-C and lower LDL-C; control blood pressure; reduce stress via yoga, meditation, exercise relaxation; get regular sleep; if depressed, get support or treatment
3. Smoking risks: over 100 noxious chemicals in smoke; nicotine causes vessel constriction, other chemicals speed heart rate unnaturally; damage to lungs makes heart have to work harder; smoking impairs the oxygen carrying capacity of red blood cells (Be smart don't start; put it out before it puts you out) (Deadliest diseases=heart disease & stroke)
4. Health Connection with CAD, cholesterol, and HDL: aerobic exercise independently increases HDL-C (Kodama et al, 2007, Arch Intern: minimum threshold of 120 minutes of aerobics weekly; greater duration and volume results in better increases in HDL cholesterol)
5. Assessed content 4 popular magazines for 6 months to see if content was in alignment with American Heart Guidelines; Nutrition (78%), smoking (68%), physical activity (66%), wt. management (19%)
6. More information on markers associated with CVD (BMI, waist circumference, waist-to-hip ratio)
7. Special Focus on CHD: Orth-Govern et al. (2009). Stress reduction prolongs life in women with coronary disease. Circulation: Cardiovascular Quality and Outcomes, 2, 25-32
 - 1) Psychological stress may accelerate atherosclerosis in women, 2) 237 women (35-75 yr) who had an acute MI or similar heart event randomized into 2 groups, 3) Intervention group received 20 sessions over a year on heart health, lifestyle health, family stress management skills, and coping skills, with anxiety/depression plus fitness 4) After 7 years, mortality rate was 7% in stress/health education group as compared to 20% in group who had functional fitness and heart medications for heart disease

II. Coylewright, M., Reckelhoff, J.F., and Ouyang, P. (2008). Menopause and hypertension: An age-old debate.

Hypertension, 51, pp. 952-959. {CVD=cardiovascular disease} HBP=High blood pressure or hypertension

- A. HBP: systolic ≥ 140 mmHg and/or diastolic ≥ 90 mmHg (Optimal BP systolic < 120 mmHg; diastolic < 80 mmHg)
- B. Prehypertension: systolic 120-139mmHg and/or diastolic 80-89mmHg
- C. Increasing risks with HBP: stroke, congestive heart disease, kidney failure, peripheral vascular disease
- D. Women who develop HBP at an early age have a higher risk to adverse CVD events
- E. HBP may also coincide with the beginning of menopause
- F. Factors contributing to HBP in post-menopausal women: estrogen deficiency leads to dysfunction of the endothelium; increased artery stiffness; estrogen deficit impairs rennin-angiotensin system (which regulates blood pressure, blood fluids and electrolytes), however with menopause estradiol levels decrease; obesity during menopause has a strong correlation to hypertension
- G. To combat HBP: aerobic exercise at 40%-70% of heart rate reserve, 3-7 days/week, for 30-60 minutes; resistance training, when combined with aerobic exercise is fine; aerobic exercise may lower systolic BP (-7.4mmHg) and diastolic BP (-5.8mmHg); also add lifestyle approaches to reduce salt intake
- H. 33% of adult females have HBP; as a woman ages (> 65 yrs), her chance of having HBP becomes greater than a man's (at same age)

III. Updated (2007) Physical Activity Guidelines from ACSM and AHA

- A. Men and women under age 65
- B. Moderate cardio 30 min/day, 5 days/week OR
- C. Vigorous cardio 20 min/day, 3 days/week AND
- D. 8-10 strength-training exercises (8-12 reps of each) 2 times/week (momentary muscular fatigue)
- E. Moderate = brisk walk; physical activities that reasonable accelerate heart rate
- F. Vigorous = jogging; physical activities causing rapid increase in heart rate
- G. Men and women age 65 and over (or 50-64 with chronic conditions (ex. arthritis)
- H. Moderate cardio 30 min/day, 5 days/week OR
- I. Vigorous cardio 20 min/day, 3 days/week AND
- J. 8-10 strength-training exercises (10-16 reps of each) 2-3 times/week AND
- K. Balance exercises, if at risk of falling AND
- L. Have a physical activity plan
- M. "More is better" physical activity above recommended provides greater health benefits: cardioprotective

IV. Friedenreich, C.M. & Cust, A.E. (2008). Physical activity and breast cancer risk: impact of timing, type and dose of activity and population subgroup effects. *British Journal of Sports Medicine*, 42, pp 636-647.

- A. Breast cancer is the most common malignancy among women in the U.S.
- B. 26% of all cancer cases and a total of 182,460 new cases in 2008
- C. Lung and bronchus cancer (14%), colon and rectum cancer (10%)
- D. Lifestyle behaviors to adopt to lower breast cancer risk: physical activity, reduce alcohol intake, maintain healthy weight, balanced diet (5 servings of fruit and vegetables per day), and breast-feeding (when appl.)
- E. Exercise has a strong inverse relationship with breast cancer; cancer risk 25% lower for most physically active women; being physically active throughout life confers greater risk prevention
- F. Physical activity does not seem to meaningfully reduce the risk in obese women (BMI \geq 30 kg/m²)
- G. Physical activity has best risk prevention in lean females (BMI $<$ 22 kg/m²)
- H. Physical activity helps to positively regulate inflammation and immune function
- I. Physical activity favorably changes the balance of pro- and anti-inflammatory cytokines (cell proteins)

V. Zhang, C. et al. (2008). Abdominal obesity and risk of all-cause, cardiovascular, and cancer mortality, *Circulation*, Volume 117, pp. 1658-1667.

- A. Nurses' Health Study; 44,636 women in 16-year follow-up
- B. 751 cardiovascular disease deaths (CVD), 1748 cancer deaths
- C. Findings
- D. Even normal weight women face elevated CVD and cancer risk with abdominal obesity
- E. Women with largest waists are 63% more likely to develop cancer; overall, women with waistline \geq 88 cm (35 inches) saw a 79% greater risk of death from all causes
- F. Stress/Cortisol/Obesity Connection: Chronic stress activates the HPA Axis (hypothalamic-pituitary-adrenocortical) which activates the release of cortisol (from adrenal glands) which promotes weight gain
- G. Correct measurement: narrowest part of torso after client expires (Gulick tape device) risk is \geq 88 cm (35 in)

VI. Tarnopolsky, M.A. (2008). Sex differences in exercise metabolism and the role of 17-beta estradiol. *Medicine & Science in Sports & Exercise*, 40(4), 648-654.

- A. Generally assumed that men and women have similar muscle fiber types and thus metabolize fats, carbohydrates and proteins similarly
- B. Tarnopolsky reviewed studies in which fat, carbohydrate and protein were broken down during endurance exercise ($>$ 60 minutes); indirect calorimetry VCO₂/VO₂
- C. Major finding: During steady state endurance exercise, women burn more fat and less carbohydrate than men
- D. Contributing factors to metabolic differences: women have slightly more slow twitch (Type I) fibers and estrogen; estrogen enhances fat oxidation pathways in women

- E. Training Application: Incorporate low-to-moderate intensity long duration (metabolic base) workouts; incorporate FAST continuous training (increase total fat metabolism); incorporate interval training (more work=higher total fat metabolism); multi-mode exercise for injury prevention and better fat metabolism (more work accomplished); discussion of metabolic base training (Kravitz, L. (2009) IFJ, 6(4), 32-38) Mitochondria increase in size (35%) and number (15%)
- VII. Cotter, K.A. & Sherman, A.M. (2008). Love Hurts: The Influence of Social Relations on Exercise Self-Efficacy for Older Adults With Osteoarthritis. *Journal of Aging and Physical Activity*, 16, 465-483.
 - A. One of the limiting factors of older women exercising is societal ‘social strain’ (it is negative feedback from others dissuading the person from exercising); “you are always exercising; you never have time for me”
 - B. With older women, social support is highly associated with positive exercise self-efficacy and adherence
 - C. Exercise professional may need to make the older female aware of this and discuss ways to adapt
- VIII. Vrazel, J., Saunders, R.P., & Wilcox, S. (2008). An overview and proposed framework of social-environmental influences on physical-activity behavior of women. *Am. J. of Health Prom.*, 23(1), 2-12. (50% ex. dropout rate of women with first year of exercise)
 - A. Women who receive emotional support from their friends and family are much more likely to be consistently physically active; women who are strongly assured by others of the worthiness of exercise are also more likely to sustain an exercise program; fitness professionals are incredibly important providers of emotional support for the female exerciser
 - B. Information support very valuable: information about the health benefits of exercise is very good
 - C. Instrumental support: help with everyday duties so as to make time for exercise
 - D. Appraisal support: involves developing affirmations that help develop beliefs about exercise
 - E. Cultural standards challenge: balancing family time and exercise time
 - F. Important role of personal trainers and fitness professionals
- IX. Bravata, D.M. et al. (2007). Using pedometers to increase physical activity and improve health. *Journal of the American Medical Association*, 298 (10), 2296-2304.
 - A. 26 studies, 2767 participants, age = 49, 85% female, ave length of each study = 18 wks
 - B. Results: increased physical activity 2,491 steps/day, which is a 27% increase
 - C. Systolic blood pressure (BP) decreased 3.8 mmHg (decrease in BP by 2% cuts stroke risk 10%)
 - D. On average, pedometer users walk an additional ‘one mile’ per day
- X. Borodulin, K.M., Evenson, K.R., Wen, F., Herring, A.H., and Benson, A.M. (2008). Physical activity patterns during pregnancy. *Medicine & Science in Sports & Exercise*, 40(11), 1901-1908.
 - A. Health benefits of being physically active during and immediately after pregnancy include potential deterrence of gestational diabetes, preeclampsia (abnormal state of pregnancy characterized by hypertension and fluid retention) and chronic musculoskeletal complications (e.g., low back pain)
 - B. ACOG guidelines: pregnant women engage in 30 minutes of moderate intensity exercise on most, if not all days of the week
 - C. Benefits of breastfeeding: 1) decrease in food allergies, 2) High levels of vit. C and lactose increase absorption of iron for growth, breast milk more easily digested, breast milk better meets nutrition needs of infant, breastfed infants are better protected from bacteria-related illnesses, breast milk babies require less medical care through life. Wilson, D.R. (2010). Breastfeeding. *AHNA Beginnings*, 30(1), 6-9.
- XI. Irving, B.A., et al. (2008). Effect of exercise training intensity on abdominal visceral fat and body composition. *Medicine & Science in Sports & Exercise*, 40(11), 1863-1872.
 - A. Metabolic syndrome is a cluster of cardiovascular disease risk factors that are associated with elevated blood triglycerides, hypertension, and insulin resistance

Risk Factors for Metabolic Syndrome: Defined as Having 3 or more Risk Factors

Risk Factor	Risk Criteria
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HDL-C	<50 mg/dL for women <40 mg/dL for men
Blood pressure	≥130 mmHG (systolic) and/or ≥85 mmHG (diastolic)
Waist circumference	>35 inches (88 cm) for women >40 inches (102 cm) for men
Fasting blood glucose	≥100 mg/dL
Triglycerides	≥150 mg/dL

- B. The big question: what dose of exercise will achieve the most healthful effect
- C. 16-week study with modestly obese (BMI=34 ± 6 kg/m²); 7 subjects maintained current level of activity (< 2 days per week) served as the control
- D. 11 subjects did 5 days/wk at an intensity ≤lactate threshold (RPE=10-12); 400 kcals each workout
- E. 9 subjects did 3 days/wk at lactate threshold (RPE=15-17) and 2 days ≤lactate threshold (RPE=10-12); 400 kcals each workout
- F. Subjects did walk/run programs totally 2,000 kcals/week; diet was not changed
- G. Results: only the high-intensity exercise group significantly decreased body weight, BMI, percent body fat, fat mass and waist circumference
- H. High intensity group showed an increase in high-density lipoprotein cholesterol and a decrease in blood triglycerides (Remember, the Kcal expenditure was matched for both exercise groups)
- I. Author comment: Post-exercise energy expenditure was proposed to be higher and changes occurring earlier
- J. Ramifications of the ‘more is better’ message from ACSM, better ‘cardioprotection’

XII. Vondracek, S.F. and Linnebur, S.A. (2009). Diagnosis and management of osteoporosis in the older senior.

Clinical Interventions in Aging, 4, 121-136.

- A. Prevalence of osteoporosis: 4% in women 50-59; 44% in women ≥80 yrs
- B. Hip fracture risk rises dramatically with age; 50% of people return to their ‘pre-fracture’ movement ability level; 20%-40% die within the first year of a hip fracture
- C. Risk of falling increases with age; 50% of seniors 85 years of age or older will fall at least once per year; causes include impaired balance, limited gait and mobility, poor vision, reduce muscle strength, declining cognition and multiple medications
- D. Seniors tend to fall backwards or sideways and are thus unable to catch themselves or break the fall
- E. Vitamin D deficiency is highly associated to bone strength and falls; data suggest that most older women in the US are low in vitamin D (vitamin D is important to maintain muscle function and strength, particularly in the weight-bearing muscles of lower body); older females may tire easily with weight bearing movement and feel heaviness in the legs (authors recommend 800-1000 IU of vitamin D3 daily or 50,000 IU vitamin D2 every 2-4 weeks)
- F. Smoking CESSATION has been shown to be significantly increase bone mineral density
- G. Exercise, fall prevention, smoking cessation, adequate intake of calcium and vitamin D