Training Masters Athletes for Increased Athletic Performance
THE GOAL TODAY

Learn to implement a comprehensive training program to minimize the physiological effects of aging and allow for an increase in overall health and athletic performance.
TODAY’S 50+ CYCLIST

ALL PART of the global aging BOOM

• More Active
• More Affluent
• Better educated
• More opportunities for competition
• 20-30 years in “retirement”
• Fastest growing # of licensed riders
Where Do They Come From?

Recreational Sports
- Cycling, Running, Team Sports

Former Competitive Athletes
- Good fitness, old habits
- Self-imposed limitations

Couch-potatoes
- Just get ‘em moving
AGING: COMPLEX PROCESS

Primary - physiological aging
- Genetics
- Progressive functional decline
- More susceptible to certain diseases

Secondary - lifestyle behaviors
- poor diet
- weight gain
- sedentary lifestyle
Does Older Equal Slower?

Some decline in athletic performance is inevitable with aging.
Father Time

- Increase in blood pressure
- Loss muscle mass
- Decrease muscle glycogen
- Increase body fat
- Decrease in growth hormone
- Decrease RMR
- Decrease maximal HR and SV
Cardiovascular Changes

- **Max HR** declines 0.7 beats per year
- **Stroke Volume** declines 10%–20%
  - 3-4% loss every decade
- **Total Blood Volume** decreases
- **Peripheral O2 extraction** declines 5–10%
- **VO2max** declines
  - Approx 1% per year from 25-65
  - Possible acceleration of decline in 7th decade

(McArdle, Katch & Katch 2001)
Factors and physiological mechanisms contributing to reductions in endurance exercise performance with advancing age.
Musculo-Skeletal Function

• Progressive decrease of strength
  • Strength peaks at 25 yrs then plateaus 35 - 40 yrs
• After 40 – accelerating decline
• 25% loss of peak force by 65 yrs

  ▪ Muscle fibers atrophy
  ▪ Less sensitive to CNS signals
Bone Structure

Progressive decline in calcium content of bones
• Deposit calcium until age 30
• After 30 “withdraw” calcium
• After 30 bone mass maintained or lost at slow rate
• Increased risk for stress fractures and osteoporosis as we age.

WEIGHT BEARING exercise for male and female cyclists.
Bone Structure In Women

Rate of bone loss increases after menopause
Estrogen drops
decreased efficiency of calcium
loss of bone /increase turnover

Estimated 1/3 of women get stress fractures
Effects of weight bearing exercise
and/or HRT
The GOOD News . . .

Much of the decline in performance with aging is the result of DISUSE –

NOT the aging process itself!
What Makes Us Fast?

Trained Cyclists

• Expanded BV
• High cardiac output
• High VO2max
• Increased economy
• Improved power output
Factors and physiological mechanisms contributing to reductions in endurance exercise performance with advancing age.
Maintaining VO2max

Older athletes must train at or near VO2max to prevent age-related decline.

HIGH INTENSITY training

- Minimizes age loss in fitness
- Improve aerobic & anaerobic
  - Recruit fast twitch fibers
Training Plan Design

The Goldilocks Approach
Not too high, not too low, just right.

- available training time
- resistance to injury
- ability to recover

The FAST Lab, LLC
High Intensity Training

- MEDICAL CLEARANCE!
- Requires close monitoring
- Start with micro intervals
- Very HIGH alternate w/very LOW
  - 30-60’s  30-30’s  60-60’s
- Limited recovery time ‘tricks’ CVS
- More Mitochondria
  - increases fat burning
  - Increase VO2
Example VO2 BLOCK

Starting Training Block well rested

Workout #1
1 set of 4-5 x 2min efforts with
2-3min recovery (10 min)

Day OFF
Workout #2
2 sets of 3 x 2 min efforts (12 min)

2-3 Days OFF of intervals
Workout #3
1 set of 5-6 x 2-3 min efforts (12-15min)

The FAST Lab, LLC
CTL may decrease due to more rest days, lower volume.

Big Loading Phase

Recovery Phase
Manage And Plan RECOVERY

Recovery within Intervals
- Start with 1:3 work rest
- Shorter efforts
- Graduate to 1:2 work rest

Recovery BETWEEN workouts
- 1 to 3 days

Recovery BETWEEN BLOCKS
Prescribing Intensity

Heart Rate

- What’s wrong with 220-age?
- Monitor recovery HR within intervals

Rating of Perceived Exertion (RPE)

Power Prescription

- Max Power / Threshold Power
- Functional Field Test
RECOVERY

• Gradual and cumulative
• Very individualized
• Overtraining vs. under-recovery
• Recovery time depends on
  • the activity
  • type of stress
  • duration of stress.
Focus On Function

The FAST Lab, LLC
Focus On Function

Goal of program – develop functional strength & stabilization

- Neural adaptations instead of absolute strength gains
- Increase proprioceptive demands
- **Quality** not quantity
  Poor technique results in poor motor patterns & stabilization
Train Movements Not Muscles

Challenge integration of muscles by causing them to work together

- Squats
- Lunges
- Split squats
- Single leg balance
- Hip-extension exercises and bridges

- Planks
- Lateral Lunges
Train Movements Not Muscles
NUTRITIONAL CONCERNS

Sleep 'til you're hungry,
Eat 'til you're sleepy.
~Author unknown
Considerations For 50+

Concerns
- weight gain
- slow weight loss
- slowed recovery time
- nagging injuries
- diminished performance
Nutritional Concerns

Focus on optimizing food intake
• Maintain ideal weight
• Moderate weight loss if necessary
• Lean Body Mass
• Provide Fuel for Training
• Enhance Recovery
• Reduce risk of ‘diseases of aging’
Cardiovascular Health

Increase intake of Fruits and Vegetables
• Antioxidant properties
• 9 servings a day
• Fiber needed for healthy heart and colon

Increase Omega-3 Fatty Acids
• Reduce chronic inflammation
• Salmon, sardines
• Flaxseed, walnut, almond (nuts or oils)
Protein Intake

Protein needs increase

- 0.8 g/kg general population
- 1.5–1.7 g/kg daily to meet demand

Low-fat, high quality sources

- Fish – target 2 to 3 servings / week
- Beans, nuts and soy
- Lean beef and chicken
What Bones Need

Vitamin D
Almost impossible to get what we need from food.
• D3 levels
• RDA too low
• Supplement 2,000 to 4,000 IU

Calcium requirement
• Men 800 mg to 1000 mg
• Women: 1000 mg and 1500 mg
Nutrition for Joint Health

Joints become less flexible and lose range of motion

• Vitamin C for collagen formation
• Omega-3 oils
  • nuts, seeds, oily fish and wheat germ
  • anti-inflammatory effects
• Bioflavinoids
  • anti-inflammatory effects and improved local circulation.
• Antioxidants (selenium and vitamin E)
  • protection against free radicals that proliferate with age.
Hydration As We Age

Kidneys become less efficient
  • lose more body water.

Blood vessels in skin do not dilate as well
25–40% less blood flow through the skin

Thirst mechanism becomes less sensitive

Sweat less & start sweating later
Medication Watch: Statins

Used to reduce serum cholesterol / LDL levels may cause fatigue, muscle pain and weakness to develop with moderately high serum CK levels!

- Lipitor worst offender
  - athletes should start with LOW dose
- Monitor if muscle pain after exercise
- Chronic muscle pain
  - Possible kidney problems
  - Consult doctor
On The Bike Skills

Cycling requires processing lots of sensory input

- Fear of riding in groups
- Riding in traffic, descending safely
- Racing skills
A multidisciplinary approach: Creating a performance team
Dara Torres

How is a middle-aged body faster and stronger now than it was 20 years ago?

The FAST Lab, LLC
With Lots of HELP!

Massage Therapist
Chiropractor
Nutritionist
Personal Strength Coach
Sports Medicine Doctor
Orthopedic / Physical Therapy
Supplements to speed muscle recovery

The FAST Lab, LLC
Performance TEAM

Depending on athletes needs:
- physical therapist
- personal / strength trainer
- dietitian
- physician (primary and specialist)
- chiropractor
- naturopath
- massage therapist
- podiatrist
THANK YOU!

Kathy Zawadzki
kathy@thefastlab.com
303-902-9605