The Art of Aging Gracefully

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Pushing the Boundaries

- According to USA Cycling's website, **53%** members are 35-54
- Few longitudinal studies measure physiological systems with a focus on performance of athletes *as they age*
- But there are ways for masters cyclists to get older **and** faster at the same time.

Becoming a Master's athlete 1

- Maximum Heart Rate – declines
- Muscle mass – declines
  - fast-twitch fibers hit hardest
- Recovery – takes longer
  - lose muscle mass
  - ability to store glycogen is reduced
- Greater rate of injury

Becoming a Master's Athlete 2

- Hardening of the arteries
- Blood flow to tissues – reduced
- Mitochondria – accumulate oxidative damage

Result: **Performance suffers !**

After age 35 – endurance performance declines by 5 to 15% per decade

Becoming a Master's Athlete 3

- 3 primary determinants of maximal aerobic capacity contribute to age-related reductions in endurance performance:

1. **VO_2max**
2. **Lactate threshold**
3. **Exercise economy**
4. (oxygen cost to exercise at given velocity)

VO_2max

- O_2 consumption determined by central and peripheral factors.
- Fick equation:

  VO_2max = maximal cardiac output (CO) / maximal arteriovenous O_2 difference (a-v O_2)
- HRmax declines about 0.7 beats/yr
- SVmax declines by 10%–20%
- Peripheral oxygen extraction declines by 5%–10%, thus reducing VO_2max in masters athletes

Training Stimulus

- Intensity (% max HR), frequency & distance.
- Neither exercise training intensity nor volume can be maintained for long periods at older ages (Tanaka & Seals 2008).
- Why?

  > in family/job responsibilities reduce time & energy for intense training.

  > incidence of orthopedic injuries among masters athletes

  > biobehavioral: intrinsic drive to exercise declines with age

Now the Good News !

- Significant age-related decline in endurance doesn't occur before age 50.
- How do you maintain fitness?
  - Train smarter – do more with less.
  - Focus on intensity/maximize recovery

Coaches Toolbox #1

- **Incorporate Interval Work.** Start by incorporating 30-second to 2-minute high-intensity intervals into clients' workouts once or twice a week.
- If a client is new to interval training, start with a 1:3 exercise to rest/recovery ratio.

  E.g: have client perform high-intensity, near-maximal effort for 30 seconds followed by 90 seconds of low-intensity exercise.

Coaches Toolbox #2

- **Add Resistance Training.** Even die-hard endurance athletes need to include this
- Benefits:

  - offset age-related declines

  - reduce incidence of injury

  - enhance performance and increasing daily functional abilities.

Resistance training will not slow them down, bulk them up or impair their performance.

Coaches Toolbox #3

- **Build in Adequate Recovery Time.**
- **Rationale:**
- **-** aging muscles and energy systems take longer to recover from training
- **-** performance and susceptibility to illness and injury adversely affected without adequate recovery time.
- Problem: some athletes maintain training habits of their more youthful days.

Coaches Toolbox #4

Take the Multidisciplinary Approach

- work with physical therapists, dietitians, physicians, naturopaths, & massage therapists

- proactively communicate with athlete's healthcare team

- refer athlete for appropriate diagnosis, treatment and/or follow-up when warranted

- become more familiar with medical conditions and their treatment

e.g: beta-blockers

Coaches Toolbox #5

Injury Prevention

- Know the health status of clients and stay up-to-date with any changes that occur.
- Identify warning signs and symptoms suggestive of an acute or chronic problem.
- Communicate regularly with the client's medical team. .
- Use a Periodized Routine.
- Cross-Train.

References

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