

Baby Boomers and Beyond - the New Sports Medicine

Dr. Joseph J. Ruane

Medical Director

McConnell Spine, Sport and Joint Center

GM was a 41 year old legal professional who was out for his morning jog when he experienced a sudden, searing pain in his left hip. Limping home he figured he would do the usual; shake it off. However, ten days and many ibuprofen later, the limp persisted. After symptoms continued for an entire month, he finally gave in and visited his physician. The verdict? Osteoarthritis of his left hip, possibly a result of several injuries experienced during his football glory days. The sentence? Give up a running or accelerate the degeneration - facing continuous pain and perhaps even hip replacement surgery at an undesirably young age. As America ages, this is the new face of the sports medicine patient.

Demographics

The baby boomer generation includes those born between 1946 and 1964. They are first cohort of Americans, more than 76 million in all, who grew up under exercise edict. Indeed it is this group who is credited with shepherding in the aerobics and fitness movement that began in the 1970s, and they do not want to stop now despite their aging bodies. They are joining health clubs in droves, up 135 percent between 1987 and 2001 according to America Sports Data, Inc. They account for nearly one-third of all Americans who participated in bicycling, basketball, baseball, running and other sports. The boomers are also joining adult sports leagues to again experience the excitement of team competition, and attempt to recapture past glories. And as they continue to push themselves, injuries are on the rise.

In 1998, boomers suffered more than one million such injuries, which amounted to nearly \$19 billion in medical costs. It is currently estimated that more than \$18 billion a year is spent on medical costs stemming from sports-related injuries to baby boomers. Sports injuries have become the No. 2 reason for visits to a doctor's office nationwide, behind the common cold, according to a 2003 survey by National Ambulatory Medical Care.

The most common types of injuries that occur in aging athletes are often the result of years of use and sometimes abuse of the musculoskeletal system. Old injuries that either caused joint damage, or muscle and tendon injuries that never healed properly, make the mature athlete more vulnerable to recurrence. In addition to the physiologic effects of time, this poses a new challenge to those in health care committed to keeping them in the game.

Why the emphasis on exercise?

It is easy understand why this generation is so driven to exercise. Again, they are the first to be influenced by the onslaught of medical reprimands indicating the benefits of regular physical activity (Table 1). Studies show people who exercise regularly have increased energy and think, sleep, and cope with stress better, obviously desirable outcomes for those busy in their careers or for parents constantly on the go. Physically active older athletes tend to have fewer age-related functional changes than sedentary counterparts, and recent studies even indicate physical

activity offers one of the greatest opportunities to extend years of active independent life, reduce disability, improve quality of life, and even live longer. To summarize, it is often said that exercise can add life to years, and years to life.

TABLE 1. Selected Health Benefits of Physical Activity

- Delays onset of or prevents some chronic diseases (e.g., type 2 diabetes mellitus, coronary artery disease)
- Improves heart function
- Improves psychological well-being
- Lowers blood pressure
- Maintains everyday functional abilities (e.g., walking up stairs, lifting objects)
- Preserves lean muscle mass
- Promotes weight maintenance

Needed: A New Attitude

There is a serious infection that afflicts the aging athlete, and it is known as ‘Iyusta Disease’ (pronounced “I-used-to”). The condition primarily affects logical areas of the cerebral cortex, and can mentally turn a 53 year old out-of-shape executive who pitched in high school back into Nolan Ryan. “I used to have a 90 mile-per-hour fast ball,” he proclaims. At the family picnic, one throw may be all it takes to tear a rotator cuff.

But the ‘can do’ generation who grew up surrounded by an explosion of technology and– who saw man land on the moon when in their same lifetime it was deemed impossible – demand the latest medical advances be efficiently applied so they can return to their desired recreations.

For many, the spirit of competition is hard to resist, and the temptation to compete has been fueled by a burgeoning of adult sports leagues that has put many bodies in harms way. Once the thrill of competition is back in their blood, perhaps one of the more difficult obstacles to overcome in the aging athlete is addressing the attitude shift that must take place to get them to play within their body’s limits and abilities. And at times there is out-right denial in the mind-versus-body disconnect.

Paul C. thoroughly enjoyed playing full-court basketball, three-to-four times per week. Once a high school star, he had rediscovered his passion, as well as an efficient outlet for stress and a convenient primary mode of aerobic exercise. He presented to the office complaining of “just a little knee pain and stiffness”. His examination demonstrated a varus knee, an extension deficit of -10°, significant crepitus with motion and a moderate, cool effusion. Although the diagnosis was quite evident, the radiographs were even more compelling. Paul had advanced tricompartmental osteoarthritis, and full-court basketball was simply no longer a reasonable option for exercise. His fortitude in denying his reality was impressive, to the point where he required a skilled psychologist to help him to accept the unwelcome alteration in his lifestyle. Paul is not alone. Getting the mature athlete into the right mind-set to match their physical limitations can be difficult.

Realities of the Aging Athlete

It is quoted loosely in sports medicine that what takes one week to heal when you are in your teens, takes two weeks in your twenties, three weeks in your thirties, four weeks in your forties and so on. Although perhaps not scientifically accurate, the premise is correct. So what happens physiologically as our bodies mature that lead to the delay in the healing response, as well as the decline expected physical performance? The following describes the changes that occur that can challenge the body when the mind is willing:

Muscle Strength:

- Sarcopenia; a generalized loss of muscle fibers, leads to less ability for the muscles to absorb shock and disperse energy
- Decrease in spinal motor neurons and motor endplates means less muscle is available to meet the demands of a given task

Cardiovascular Function:

- Resting stroke volume falls 30% so there is less perfusion to energy hungry tissue
- Return to baseline heart rate is slower and recovery between short bouts of exercise is slowed; fatigue is a significant risk factor for injury
- The VO₂ max drops 9% per decade after age 25, and there is a 40–50% loss of young age vital capacity

Connective Tissue:

- Collagen becomes stiffer, less compliant and more prone to stretching and tearing
- Degenerative changes appear in hyalin cartilage and the meniscus
- Intervertebral discs dehydrate and the spine loses some of its natural protective function

Nervous System:

- Nerve conduction time decreases and there is a loss of the protective proprioception that protects the joints from excessive stretch
- Reaction time and reflexes decrease, meaning it is more difficult to get out of harms way.

It would be remiss not to mention that regular exercise can delay the decline of many of these age-related physiologic functions. The problem is the weekend-warrior who expects maximum performance from a poorly trained machine, as it can take up to three months to properly prepare the body for even moderate exercise demands.

A common question the clinician may encounter when explaining over-use injuries is “Well why does it hurt now, it never hurt me before?” Most non-acute activity related injuries are preceded by a period of sub-clinical tissue damage. The prodrome can be hours or it can be years, but eventually the pain threshold is crossed and the injury reveals itself (Figure 1)

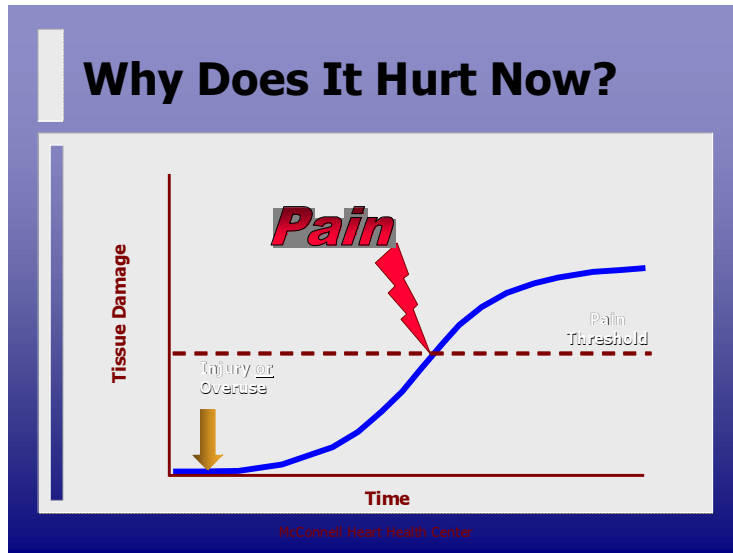


Figure 1 – The relationship between cumulative tissue injury, time and pain.

Thus, it is the undetected weeks or years of tissue breakdown that ultimately leads to symptoms. Early detection and proper conditioning are vital in disrupting the cycle. This leads to another mental-shift necessary for those who wish to continue their activities uninterrupted: the focus of exercise needs to be on good body function, not maximum performance. Weight training is essential for both men and perhaps especially women in this age group, but the intent is to maintain pliable tissues that will withstand the demands of exercise, not bulging biceps or buns of steel. Core exercises, those that focus on the muscles of the trunk, produce a stable foundation that allow the limbs to perform more reliably and can therefore reduce the chance of injury.

Tips for Health Care Providers When Dealing with Mature Athletes

For those who have been relatively sedentary and will be engaging in moderate to vigorous exercise, the first consideration is that of cardiovascular safety. The American College of Sports Medicine and American Heart Association have published guidelines to help determine who should undergo cardiac stress testing prior to participation:

Source, y	Type of Exercise	Circumstances When Exercise Stress Testing Is Recommended
American College of Sports Medicine, ²⁹ 1995*	Moderate	Known cardiac, pulmonary, or metabolic disease; 1 or more of the following signs or symptoms are present: chest discomfort or pain, shortness of breath at rest or with mild exertion, dizziness or syncope, orthopnea or paroxysmal nocturnal dyspnea, ankle edema, palpitations or tachycardia, intermittent claudication, known heart murmur, unusual fatigue or shortness of breath with usual activities
	Vigorous	One or more of the following risk factors are present: family history of myocardial infarction or sudden death; current cigarette smoking, hypertension (even if treated), hypercholesterolemia, diabetes mellitus, sedentary lifestyle or physical inactivity
American Heart Association, ³⁰ 1995†	Moderate	Known or suspected cardiovascular disease
	Vigorous	Age of 40 years or older

*Moderate defined by an intensity of 40%-60% of maximal oxygen consumption ($\dot{V}O_{2max}$) or as an intensity well with- in the person's current capacity (ie, one which can be comfortably sustained for a prolonged period of time [ie, 60 min], has a gradual initiation and progression, and is generally noncompetitive); and vigorous defined by an intensity greater than 60% $\dot{V}O_{2max}$ or as exercise intense enough to represent a substantial cardiorespiratory challenge or if it results in fatigue within 20 min.

†Moderate defined by an intensity of 50% or more of maximal capacity, but not vigorous; and vigorous, not defined explicitly, but includes running and jogging.

Table 1. Guidelines for Exercise Stress Testing

For those already active, the American Academy of Orthopedic Surgeons has published useful tips to help baby boomers prevent sports injuries:

- Be sure to warm up and stretch before physical activity. Warm up aerobically for three to five minutes and then gently stretch, especially focus on the muscles about to be used.
- Don't be a "weekend warrior." Rather than thinking you can get all your exercise on the weekend, try and get 30 minutes of moderate exercise every day.
- Get the right equipment and take lessons. Both are a worthwhile investment in preventing injury.
- Listen to your body. If it hurts too much, don't do it. Adjust your physical activity to your age and fitness level.
- Use the 10 percent rule. When changing your activity level, increase it in increments of no more than 10 percent a week.
- Develop a balanced fitness program that incorporates cardiovascular exercise, strength training and flexibility.
- Add activities and new exercises cautiously. It's best to add no more than one or two new activities a workout.

No Pain – No Pain!

The old adage of ‘no pain – no gain’ can be discarded if one wants to remain active well into their later years. When just beginning an exercise program, or if patients perform a familiar exercise at a higher intensity than usual, they may experience minor aches and pains known as delayed onset muscle soreness. This ‘good’ kind of soreness that happens as a result of a healthy stimulus typically begins within a few hours of the exercise session, peaks around two days, then begins to steadily decline. It is generally not experienced in the joints. Pain is a warning signal, and it is not normal when it:

- is sharp, sudden or intense with movement
- begins to negatively affect exercise performance
- begins to affect normal function outside of sports, such as walking or sleeping
- is constant or increasing over time and does not go away with rest
- requires increasing amounts of pain medication
- creates weakness, loss of motion or swelling in a joint or extremity
- causes fatigue or worse pain the next day.
- accompanies tingling, pins and needles or numbness

Educate patients that if any of the above symptoms are present, they should immediately curtail their activity and seek medical attention.

In Conclusion:

There are many mental and physical benefits of maintaining an active lifestyle well into the later decades of life. The changes that naturally occur as we age can threaten , but proper conditioning, seeking care at the right time, and a healthy recognition of the bodies current limitations can allow for years of injury free enjoyment.

About the Author:

Dr. Ruane is a fellowship trained primary care sports physician, and the Medical Director of the McConnell Spine, Sport and Joint Center in Columbus, Ohio. He is a team physician for the NHL Columbus Blue Jackets.

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