



A DIFFERENT KIND OF FITNESS

WITH JOSE REYES AT SECOND BASE AND KAZUO MATSUI AT SHORTSTOP, THE NEW York Mets thought they'd acquired baseball's most dynamic duo for the double play. But as spring training for the 2004 season drew to a close, the two young stars had yet to appear together on the same field.

Reyes was out with a pulled hamstring, and Matsui was sidelined with a strained wrist. Having gone 8 years in the Japanese major leagues without missing a game, Matsui, 28, had been considered something of an iron man. But Reyes, only 20, had already become an orthopaedics frequent flier.

During his rookie year, Reyes was benched three times with hamstring trouble, a problem that began for him at age 14. As a youngster back home in the Dominican Republic, Reyes had been running up the stadium steps to strengthen his legs when

he heard something snap. Trouble is, once you pull a hamstring, chances are you will do it again. That's because the muscle heals with scar tissue where healthy cells used to be. Early on in the rehab process, you can reduce the negative effects of that scarring, but it takes a lot of time and a lot of conscientious effort. Once the muscle heals, if you haven't taken full advantage of that window of opportunity, then you get far denser scar tissue with no elasticity. If you look at the muscle under a microscope, instead of the bands lining up parallel and behaving like a spring or bungee cord, the structure is more hap-

azard, which makes it a lot less flexible, and thus more vulnerable—a weak link.

For Reyes, quick, darting movements and sudden lunges are his stock in trade. These movements require sudden contraction of the quadriceps, the muscle in the front of the thigh. This, in turn, requires a quick relaxation and lengthening (eccentric contraction) of the hamstring, the muscle in the back of the thigh. Unless a strong quad is balanced with an equally strong and flexible hamstring, the imbalance is bound to cause trouble.

Whether you play second base or second fiddle, whether you crank miles on the track

or code on your computer, you need a frame you can count on. That's why the modern definition of fitness isn't just aerobic capacity, or muscle tone, or the absence of fat. True fitness needs to be from the foundation up, and that means fitness for all the cells and tissues that make up your musculoskeletal frame.

In the old days of baseball, Babe Ruth played until he was 40, but the photographs show an old man with spindly legs and a potbelly, to some extent coasting on his legend. The classic sports novel *North Dallas Forty*, written in the 1970s, portrayed thirty-something pro football players as broken-down old men, hobbling to the stadium, then numbing themselves with painkillers and injections to get through a game. Famous as a great running back before he became infamous as a criminal defendant, O. J. Simpson could be the poster child for this old-school approach to fitness. At his trial for the murder of his wife and her companion, the defense argued that this once great athlete had so many bone and joint injuries, especially to his knees and ankles, that he could barely walk, much less overpower two healthy people! No amount of conditioning is going to fully protect a knee in the National Football League, but today's superstars have redefined conditioning and, as a result, are redefining athletic staying power.

In 2003, *Sports Illustrated* described Oakland Raiders receiver Jerry Rice, then 39, as having “carved up the New York Jets’ secondary like a honey-baked ham.” In that one game, this “middle-aged man” had nine catches for 183 yards and a touchdown.

That same year, in the National Basketball

League, 4 days after turning 40, Michael Jordan scored 43 points in 43 minutes, helping his Washington Wizards defeat the New Jersey Nets, 89–86. He had 10 rebounds, four steals, burst past the opposition to make the game-winning layup, and dived to the floor to save the ball after making a first-quarter steal.

When iron man pitcher Nolan Ryan threw his seventh no-hitter at age 44, and Cal Ripken hung in for 2,632 consecutive games, they were pioneers in terms of durability. But as of 2003, major league baseball had 11 players over 40. As the 2004 baseball season began, Roger Clemens, 41, was still throwing a 96 mph fastball. And on May 17, 2004, Randy Johnson (age 41) warmed the hearts of aging jocks everywhere by pitching a perfect game against the Atlanta Braves, sending 27 youngsters back to the bench without a single hit. In his next outing, against the Florida Marlins, “the Big Unit,” as Johnson is called, continued his streak for three more innings before giving up a hit, making a total of 39 batters retired in a row—two short of the major league record. Not bad for an old guy.

Track and field has Regina Jacobs, who at age 40 broke the world indoor record for 1,500 meters. Golf has Jay Haas, who in the spring of 2004—at age 50—was playing so well that some had him pegged to win the Masters. Hockey has Mario Lemieux, who came out of retirement, overcoming cancer and chronic back problems, to captain the Pittsburgh Penguins at age 37. And tennis has Martina Navratilova, who in 2003, at age 46, became the oldest player to win a cham-

■ ■ ■ SIDELINED BY A FAULTY FRAME

Former basketball great Shea Ralph could be the poster girl for the epidemic of knee injuries among female athletes. She's also living proof that no matter how much talent and heart you bring to the game, it doesn't get the job done if your frame gives out on you.

This tall blonde from North Carolina was a dream player with a brilliant future in women's basketball. In 1995–96, she was *USA Today's* "High School Player of the Year." In 1996–97, she was "Freshman of the Year" in *Sporting News* and "Big East Conference Rookie of the Year." In 2000, she was captain of the University of Connecticut women's basketball team that won the NCAA Championship. In 2000, Shea Ralph was an All-American, as well as MVP of the Final Four.

But when it came time to turn pro, and Ralph was drafted by the WNBA's Utah Starzz, she

was never able to play. By the end of her college career, Shea had lost her anterior cruciate ligament (ACL) on both sides. In all, she has had to endure six different knee operations.

Her troubles began in the first round of the 1997 NCAA tournament when a fast break turned into an agonized tear in her right ACL. Three days later she had her first reconstructive surgery.

The following year she was redshirted after reinjuring that same knee during a workout. She had her second ACL surgery in September 1997.

It wasn't until 1998–99 that Ralph had her first collegiate start—she made up for lost time by scoring 36 points against Boston College. But then she missed four games with a sprained medial collateral ligament, again in the right knee.

In 2000, Connecticut won all the marbles, and things were looking good for Ralph's career.

Then, in March, 2001, during the first half of a game against Notre Dame for the Big East Championship, she went in for a layup along the baseline, and the crack could be heard throughout the gym—only this time it was her left knee! Another ACL tear.

Today, Shea Ralph contents herself with being assistant coach of the University of Pittsburgh women's basketball team.

In an interview with the *New York Times*, Ralph said that, for a while, she was so bitter about her injuries that she could not even watch basketball on television. Since that low, she's found ways to bounce back and throw herself into the challenges of coaching. But she admits, "I still miss it. I won't lie to you. I really, really would have loved to play pro." We now know that many ACL tears can be prevented by changing the way you condition your frame.

pionship (mixed doubles) at Wimbledon. In 2004, she became the oldest person to win a *singles* match at Wimbledon!

Part of the reason for this athletic longevity is that these players entered the world of serious athletics at a time when serious conditioning was coming into fashion.

Unfortunately, the benefit still hasn't reached everyone.

Too many great young athletes—University of Connecticut basketball's All-American Shea Ralph is a perfect example—see their dreams shattered for no other reason than a faulty frame.

AVOIDING WEAK LINKS

Torn cartilage in the knee or a stress fracture can harm you, whereas a bruise and a small

hematoma (swelling) from a kick will merely hurt. A certain degree of hurt is okay—it’s the harm you have to watch out for.

The danger of letting “hurt” continue until it causes harm is that, even when the injury can be “repaired,” it often leaves you with a structural flaw, a weak link—like Jose Reyes’s scarred hamstring—that makes you vulnerable to further injury.

We all have these vulnerabilities in our frames: structural flaws, some big, some small. Some are obvious and/or symptomatic—others quiet, asymptomatic, lurking beneath the skin, waiting for the right circumstance to rear their ugly heads. Many stay quiet for a lifetime but all have the potential to give you grief.

Weak links come in many varieties and can be from:

- An old injury or ailment that leaves a structural flaw
- Imbalances in musculature or flexibility that put stress on particular joints
- Incomplete rehabilitation of an old or new injury or ailment
- Alignment or anatomy problems
- Genetics
- Tissue changes resulting from aging or other causes
- Your mindset or attitude
- Your program design or exercise technique

Many injuries do not completely rehabilitate, something we call IRS, or incomplete rehabilitation syndrome. It takes a lot of work

to get back to 100 percent (or as close as possible) after an injury, and most of us stop around 80 to 85 percent when our bodies think they feel okay (i.e., when the swelling is down and the limp goes away). This is a big mistake. Playing at 80 percent often means reinjury.

Likewise, imbalances in strength, flexibility, or both can be a major setup for bone and joint problems. Most of us are at least a little out of balance, which is why your alignment, genetic makeup, or changes that occur from aging also create vulnerabilities in your frame. The weak links that upset me perhaps the most, and are probably the most preventable, are those we inflict upon ourselves with a negative mindset or poorly designed workouts. The importance of all this is that a chain, or should I say your frame, is only as strong as its weakest link. Find those weak links and toughen them, and you are ready to go the distance.

You have to construct your exercise program to work around, or through, your own, distinctive weak links. By my estimation, 80 percent of the adult population needs some degree of customization of their exercise programs to accommodate their weak links. In the self-test in Chapter 4, I’ll help you identify your weak links. Then in the exercise routines, I’ll show you how to work around them.

YOUR CHEATIN’ BOD

Once again, with any form of exercise, you’re sculpting your frame for good or ill. The more you do, the more it pays to do it right and make your exercise specific to your ob-

jective. But as we develop weak links, our bodies try to find the easy way out, which does not help the cause.

I once saw the legendary Rudolf Nureyev dance on a night when I could tell that his foot was really bothering him. This was at the Academy of Music in Philadelphia, and after the curtain I went backstage where he asked for my advice. He told me he was worried about a “student of his” who was having trouble with an arthritic great toe—a significant problem for someone who jumps for a living. As we talked further and established a bit of trust, eventually he confessed that the dancer with the toe problem was himself.

Of course, I knew that—I’d been watching him all evening trying to compensate for that painful foot.

A master like Nureyev has a thousand tricks to distract your eye from the problem area, but whenever someone has an injury or imbalance, the body tries to pull off the same magic act. It happens so subtly that usually we’re not even aware of it. The body starts cheating a little, and compensating a lot, until all the cheating and compensating create a huge problem.

Dancers who don’t have a natural hip turnout, who force their turnout, try to compensate. They rotate the shin around more so that the knee and foot is what is turning out, when the turnout should come at the hip. The knee twist that some use to compensate wreaks havoc. A dancer can rotate her foot around and can drop and destroy her arch and midfoot area, create a bunion, or even damage tendons around the ankle.

The body finds a way, even when you’re not conscious of it, and it can happen in almost any sport or fitness activity.

A painful or impinged bone in the foot can throw off your gait, which can throw out your lower back. Loss of range of motion in your shoulder can cause distortion, not just in your golf or tennis swing, but in the musculature all across your upper torso. Favoring your right knee can cause you to sprain your left ankle. It can also cause your right quadriceps to shrink in circumference by an inch or two.

This is why mindfulness in your exercise becomes so important, because all too often, you think you are doing the right thing, but your body is cheating and compensating all of your muscles. When people have had a knee injury or kneecap pain, and they do leg lifts to strengthen the quad muscles, they don’t get the benefit because their body cheats, using the hip to lift the leg rather than the important quadriceps muscle.

That’s why, in this book, I’ll show you modifications to prevent you from cheating your body. For example, if you have knee pain while doing simple leg lifts, I’ll teach you the modification called “lock and lifts.” For people coming off surgery or kneecap pain, it’s a smart, effective way to strengthen the thigh without irritating the kneecap.

Patients come in and say they have been working their legs, and I still find that their thighs have atrophied (gotten smaller and weaker). They’re just going through the motions of lifting their legs; they’re not being mindful about it. Basically, the hip flexor starts

lifting the leg and the thigh muscle can actually be totally relaxed. But when you lock your leg, you make sure that the knee is absolutely rigid before you lift it; once in a while you reach down and feel your leg to know that you are actually getting the muscular contraction and workout you think you're getting. The key is to put some mind behind the muscle.

Here's another example. With shoulder problems, if your rotator cuff is malfunctioning and there's stiffness, when you go to raise your arm, instead of using your shoulder muscles, your body adapts by using your upper trapezius and scapula. It is one of the reasons why people with shoulder pain sometimes will have neck pain, too. The wrong muscles start to overwork. The muscles you need to strengthen are getting weaker, and the neck muscles are getting strained. As a result, you develop two problems rather than solving one.

Similarly, when your back is in spasm or in trouble, your body finds even worse ways to cheat, like tilting or rotating your pelvis. When you try to do some exercises for it, you think you're working your back muscles, but you're actually using your buttocks or hamstring muscles rather than your back extensors.

Also, most of us have a very dominant upper and lower extremity and often, during strength training, without realizing it, one side does more of the work and thus reaps more of the benefit, resulting in an even more dominant side. To avoid letting the stronger arm or leg take the other for a ride, concentration is essential during the lift. Also, occasionally try unilateral workouts and compare results. This is especially important when rehabilitating or strengthening an injured or

weaker part where multiple unilateral sets are often required.

You need to learn how to feel the muscle you're working, how to know that it is contracted and staying contracted. Otherwise, you're just going through the motions.

THERE'S NO WAY TO CHEAT THE STRENGTH CURVE

A few years ago, a National Hockey League All-Star and MVP goalie came to me because of a groin pull that had caused him to miss most of three seasons in a row. When I tested him, I discovered that his overall flexibility was good to great. However, his strength curve was not balanced at all. He was very strong when his legs were in close together (adducted), but a large part of being a goalie is being able to jump into a split with your legs out to the side (abducted) to block the puck. Whenever this particular hockey star made that kind of split, he had no strength at all, which made him vulnerable to the groin pulls that were threatening his career.

If you stood in close, the goalie could crush you with his legs, but when I had him spread his legs far apart and asked him to pull them in from this more extreme position, which happens to be essential for goalies, I was able to restrain him with one finger. He simply couldn't generate power when his legs were widely extended. He had done a lot of adductor work (a limited portion of the strength curve), and he was strong in his hips, glutes and upper thighs. But once the legs were out at the extreme, he was vulnerable.

The culprit was his exercise regimen.

I created a program to help the goalie de-

velop more strength across the full range of movement, to give him musculature that was more evenly balanced.

Every muscle has two types of strength. There is concentric strength—the pulling in or “flexing”—and there is eccentric strength—the letting back out or “extending.” You need both, and yet they are trained and developed differently.

Every muscle also has a unique strength curve. What this means is that different areas in the range of every muscle are weaker or stronger. When you’re trying to do a curl, and your arm is fully extended, trying to initiate the lift, that’s a weak area. Once you’ve engaged the weight, overcome inertia, and are moving past the midrange of the muscle, you tend to do okay. With many muscles the midrange might be a sticking point, the spot where you just can’t get through it, and that’s where your cheatin’ bod takes over.

You lean back on the curl. You use the momentum to throw the weight. Depending on how you train, if you work a muscle isometrically, within a limited range, that muscle gets stronger there and maybe within 10 degrees in either direction. The same happens when you cheat, and suboptimally work a muscle, favoring a certain portion of the strength curve.

When you cheat, you’re not working your muscle in a balanced way through its entire strength curve. You get stronger in parts of the range but not in the rest, which can lead to trouble. You’re tempted to lift an air conditioner, and you seem strong enough at first, but not all of your muscles are up to the task, which leads to a muscle pull, a ligament or

tendon injury, tendinitis, or a rotator cuff injury. Functional strength, used in everyday life and sports, requires a balanced strength curve in all major muscle groups.

With the goalie, we worked them all, focusing on his deficits or “weak links” by strengthening his groin muscles (hip adductors), especially in the weaker, fully abducted portion of his strength curve, while also focusing on rebuilding eccentric strength. And we made sure he went all the way out slowly, and back in slowly, resisting all the way, and not just letting the weights take him in or out. That’s how you gain balanced strength.

The goalie had such long legs and good flexibility that we had to do exercises with hand resistance—rubber tubing could have accomplished the same thing—to work his muscles beyond the range of the Nautilus machine. We also did proprioceptive neuromuscular facilitation (PNF) techniques, which use muscle “contract-relax” techniques as well as movement patterns to re-educate muscles by moving them in unusual patterns.

I even had the goalie work with a dancer to show him how to maintain muscular control in these exaggerated positions. Of all athletes, dancers have the most control through the full range of movement, and they are accustomed to working on the extreme edge of their flexibility.

The goalie never missed another game because of a groin pull.

Dancers and goalies differ in the kinds of physical demands they place on their bodies, as do shortstops, equestrians, divers, running backs, pitchers, power forwards, and putters. The same is true for computer jocks, short-

order cooks, students, surgeons, stock brokers, and college professors. What they all have in common is the need for a frame they can count on and the desire for a frame that won't give out before they do.

Dancers have a very unusual problem in that so many of them are hypermobile, very flexible people who like to stretch a lot because they're so good at it. I tell them that it's great that you have all this flexibility, but if you don't have strength in that new range that you've opened up, then you are vulnerable. When you're that far out, perhaps beyond the range of your well-balanced strength, all it takes is a bump or jostle, and you can pull a muscle or injure a joint. Dancers do need to be flexible for their craft, but, to prevent injury and for control, they really should have strength throughout their whole range.

EXERCISE INEQUALITY

Not all exercise is created equal (and “I'm on my feet all day” does not count as exercise), which is why a construction laborer or a roughneck on an oil rig is at great risk. They're doing heavy labor every day, fully exposed to the elements, with no time for repair and rejuvenation.

Unlike bone-crushing physical labor that tears you down, exercise programs that build you up are based on the principles of overload, specificity, repetition, rest, and reversibility.

Overload means that a certain level of stimulus is necessary for adaptation to occur.

Specificity of training means that a specific stimulus for adaptation results in very specific structural, metabolic, hormonal, and functional changes in targeted elements of

your body. Different regimens have varying results on your skeletal, muscular, or cardiovascular systems.

Repetition means just that—you have to go through the same motions again and again (but not to the point of doing damage).

Rest is an essential step in the building process and without it, gains can turn to losses.

Finally, reversibility means that, if you discontinue training, you may lose the benefits you've gained.

Sorry, folks, but once again we come back to that unpleasant truth: Use it or lose it, which we will expand to “use it right or lose it.” Doing any old exercise any old way is likely to do as much harm as good. To get the benefit and to avoid the harm, you have to do it correctly.

EXERCISE ERRORS

It's amazing to me how many misconceptions people have about exercise—even people who spend a great deal of time at the gym.

Here are the seven biggest exercise errors I encounter.

1) *Always stretch before exercising.*

The bit of truth hidden in this bad idea is that stretching is essential. But the classic (erroneous) idea that became popular in the 1970s is that you have to stretch before your workout to prevent injury. The Centers for Disease Control and Prevention did a study not long ago that demonstrated that stretching before activity really provides no protective benefit; in fact, stretching cold is more likely to cause an injury.

The right idea is to slowly work up to a sweat *before* you stretch or do anything else particularly strenuous. If you're a runner, for instance, start out with a walk, then a slow jog until you warm up. If you're a basketball player, do a light shoot-around first.

The reason is that collagen, the tissue that is the main building block of muscles, tendons, ligaments, and joints, is temperature specific. It's more elastic when warm, stiffer when cold. A cold muscle or tendon is more brittle, so stretching is *not* the way to "warm up." (Besides, stretching is far too important to be thought of as just an opening act. It is one of the headliners in the Main Event.)

Warmup increases the temperature within muscles and tendons as a result of enhanced blood flow and greater metabolic activity. Increased intramuscular temperature before stretching enhances the ability of collagen and the myotendinous junction to deform safely. This makes your musculature more flexible and may protect against strains. The warmed muscle contracts more forcefully and relaxes more quickly so that speed and strength are both increased during exercise. As we'll discuss in greater detail later, fatigue predisposes muscle to injury by diminishing its ability to generate force and absorb energy in equal amounts.

Also, many of the areas you'll be working—especially the disks in your back—have limited blood supply. Light aerobic movement prepares the tissues for exercise by generating warmth and increasing the blood flow that brings nourishment. Accelerated breathing properly causes relaxation—a natural stress buster—but it also ensures ade-

quate oxygenation for nourishment and repair.

One of the many virtues of cross-training is the way it encourages blood flow everywhere as it overcomes imbalances. Joint surfaces have no blood supply, which is one reason they have very limited ability to repair themselves. Joint surfaces require synovial fluid for nourishment. Tendons, like those in the rotator cuff of the shoulder, have a very limited blood supply, which makes healing there slow and difficult. Gentle, rhythmic movements such as those in Tai Chi promote blood flow to tendons and synovial fluid into joint surfaces. As we age, our circulation is less efficient, so the need for gentle movement to get the blood flowing is even greater. That's why Tai Chi is so great for the aging frame (as well as young ones).

2) No guts, no glory—so just tough it out.

Allen Iverson recently was voted the second toughest athlete in the world in *USA Today* (Brett Favre of the Green Bay Packers was voted the toughest.) Iverson, a former quarterback, will try to tough it out anytime, no matter what. I worry that he pushes himself too hard, and eventually it will catch up with him. Toughness can look ugly 10 years later—just like in *North Dallas Forty*. You don't want to be so tough that you put yourself on bottles of painkillers or an aluminum walker someday. Or, at least, you've put yourself out of the game before your time. Will Iverson be playing in his forties? We'll see. Kareem Abdul-Jabbar was tough, too, but he knew how to take care of himself, doing his yoga long before it was the popular thing to do.

I think the real mark of a tough competitor is not just a willingness to take punishment but a willingness to put in the hours of training, year round. It's doing those MedX lumbar exercises in the off-season if you have had low back problems that limit you during the season. A lot of the younger guys think they don't have to do this. They're used to running out on the court and playing.

The older players with staying power all realized they needed to train year round and embraced this discipline early in their careers. I tell the young athletes I see in my practice, most of whom want to skip the training and jump right to the hall of fame, that for every minute Michael Jordan was on the court, he spent at least an hour in the gym or training room conditioning and working out. If you want to "be like Mike," you better do as Mike does—on and off the court.

3) When it comes to weight lifting, it's what you see in the mirror that counts.

Focusing too narrowly on limited objectives can create anatomical imbalances. Millions of guys spend billions of hours doing endless bench presses and curls to build up the "mirror muscles," the ones they see as they work out in front of those mirrored walls in the weight room. This creates an imbalanced tightness in the front of the shoulders, which is just asking for rotator cuff problems.

Too often our exercise routines are like a movie producer who spends all of his budget on the lead actor but forgets to hire a good supporting cast. Everyone seems concerned about their abdominal muscles, for another

example, but not enough people pay attention to the back extensors that work in opposition to those abs. That's how you get the guys with six-pack abs and lower back problems.

4) You gotta load on the weight to get results.

The fixation on mirror muscles, along with being too tough for your own good, combine into what I call the "Harley effect." (At the gym where I work out, these guys all have their Harleys parked outside.) A lot of these guys have been pumping iron since they were teenagers; maybe they were jocks in school. It seems to me they spend more of their time demonstrating their strength, throwing the weights around, rather than building strength through slow, steady, and controlled movement. And they're certainly not looking for advice. They think, "Coach showed me how to do this back in 8th grade. I know how to do it. I don't need any help." Trouble is, Coach may not have known what he was talking about. And we've learned a lot about exercise physiology since 1982.

You should never sacrifice proper form for added weight. When you use too much weight, you compensate by "throwing" the bar, relying on momentum, which might impress your friends, but it doesn't do you any good, and it's likely to do you quite a bit of harm.

All movements in weight training, as in stretching, need to be slow, controlled, and steady. Some advanced athletes do drills with sudden, ballistic movement, and there are times when these advanced techniques can be

effective. But most of us need to use our gym time for basic strengthening. You build your athletic skills as part of a separate process, usually on the court or playing field.

Good form—and a slow pace—ensures that you achieve the full range of movement, which includes slowly and methodically returning the weight to the resting position. This is vital to exercising the whole muscle to achieve the balanced strength curve. Again, the point of weight training is to work the entire muscle—not just the belly of the muscle—through its full range of motion, both in the concentric (lifting or “positive”) phase and in the eccentric (lowering or “negative”) phase, to exhaustion, which is when you can no longer do a repetition in good form. Dropping the weight or letting gravity, not your muscles, lower the weight prevents strengthening the important eccentric component of the muscle.

Using less weight, but going twice as slow as most people do, will enable you to sustain load throughout the entire arc of the movement, and it will exhaust your muscle much, much faster. This, after all, is the point of the exercise. That, along with proper rest and recovery between workouts (and nutrition), allows optimal muscle growth.

5) *If a little is good, more is better.*

Another aspect of the “Harley effect” is that the same Harleys are parked outside the gym almost every day, with the same guys working the same muscles. Unfortunately, when it comes to muscle growth, more is not better. Muscles respond to optimal overload,

then rest. Too much training can cause muscle breakdown and loss. In general, you should never do the same or similar workout two days in a row. This is particularly true of weight lifting and running. However, walking, stretching, yoga, core work, and other lower intensity activities can be done safely every day. In fact, I heartily recommend stretching every day, especially if you are tight jointed or prone to muscle pulls. Also, certain strength-building rehabilitation exercises after injury or surgery should be done daily or even multiple times a day, because here you’re not working the muscles to exhaustion, and you actually need more sets and repetitions to stimulate growth and repair in a safe manner.

6) *Just do what you love to do.*

If all you do is run, you are going to have classic, predictable imbalances. Swimming, biking, yoga—you can pick any activity, and I can tell you what’s great about it, but also the risks it poses and the work it leaves undone. That’s why there’s no perfect, single activity. Each transforms your body differently, and any activity can create imbalances if left unchecked.

Runners who only run will have great hearts, but they will also have extremely tight and overdeveloped calves, relative weakness of the front muscles in the shin area, extremely tight hamstrings, tight lower backs, weak abdominal muscles, wasted upper bodies, and weak quads. Cyclists who only bike have the massive quads, but often an underdeveloped upper body, with tight

shoulders, quads, hamstrings, iliotibial band, and hip flexors. Swimmers who only swim have big shoulders and strong backs and generally well-developed legs (especially the upper half, closer to the pelvis), but they will pay a price in their overworked shoulder joints.

Martial arts and ballet come the closest to being the perfect activities, but even dancers and martial artists will have some pretty classic imbalances. Female dancers, for example, tend to work with the knees turned out. We all have a certain rotation in our hips, and people who are born to be dancers have a natural turn out. You can spot a dancer walking a block away. If their feet were the hands on a clock, the time is always 10:10. Their calves are incredibly strong. They have extremely strong hip abductors, but if they don't train to compensate, most have relatively weak hip adductors. And all the work they do *en pointe* or tiptoe (demi-pointe for males), make the overdeveloped calves overly tight.

The trouble with being in too tight a groove with a certain exercise regimen is that, even if you stick with yoga because you love yoga, or weight lifting because you love weight lifting, you're neglecting other areas of weakness, while possibly overinvesting in areas where you're already doing fine.

We'll talk more about this later, but my general advice to all those highly flexible yoginis is to work in some running and some weight training. And, once again, to all you muscle-bound guys pumping iron or crashing the boards in the gym—get down on the mat and start stretching.

7) Women need to avoid heavier weights to avoid becoming “bulky.”

The average woman, with her very different hormonal makeup than males, almost never has to worry about becoming the Incredible Hulk no matter how much she exercises. The same is true for men whose body type is genetically designed to carry less muscle mass, which is why it's a mistake to ask for training advice from the most heavily muscled guy in the room. It's a little like asking for advice on starting a business from someone who was born rich. Yeah, they might have to work hard, too, but it's different. The guys with huge, rippling muscles, aside from having spent a lot of time pumping iron, are genetically predisposed to have big, bulky muscles. (They also may be less genetically predisposed to injury—so if they do certain lifts improperly and seem to get away with it, don't assume that you can!)

As we discuss in the next chapter, the response of the body to increased load is to lay down extra bone density, along with extra muscle and even build stronger tendons and ligaments and healthier joints. So women especially, even those who do power yoga, need weight training—with adequate loads to stress the muscles—for its bone-strengthening benefits. Bone responds to load. You don't get that response in a pool, or on the stretching mat, or even a stationary bike. It's also very specific. If you walk or run, you build the bones in the hips and legs but not your wrists and elbows. Weight training is the most effective and efficient way to assure that you are strengthening all your bones.

LESSONS FROM THE TRENCHES

What I've learned from bodybuilders—the really great ones—is that there's a lot more to be desired from a workout than just strength or bulk. You need balance.

Aerobic conditioning needs to be a part of any strength program, too. It's the aerobic workout that makes bodybuilders lean, to help create that “ripped” look on stage.

Flexibility is essential; “muscle bound” is not. The guys who walk like robots and seem to have trouble turning their heads are not doing it right.

Progression is a must. The body adapts to load by getting stronger, whether it's in your biceps or in your heart. This means that your program must be adjusted accordingly to continue to reap and sustain maximum results. Gradually increasing the amount of weight you lift or the distance and/or pace of your running, swimming, or cycling is essential. It can also be tricky and the source of major breakdown if not done right, something we'll talk more about, especially in the Active Rest and Recovery section of Chapter 4.

Exercise and rehabilitation need to overlap. When I prescribe exercise for healthy individuals, I draw upon what I know about rehab—in order to *avoid* rehab.

An injured area that is not functioning optimally deserves special treatment—extra warmup and stretching and extra sets with slow pace and moderate load to help rehabilitate the injury. True fitness requires constant attention not just to how your muscles are doing, but also your bones and joints. And perhaps the most overlooked and under-

valued aspect of exercise is, in fact, rest and recovery. As we'll discuss in Chapter 4, downtime is an essential part of the body's sculpting process. Rest is when the cells repair and restore themselves from the stress imposed on them by a good workout.

WHAT ABOUT HANDS-ON HELP?

A great personal trainer can be an incredible asset, and there are many dedicated and well-trained people in the field. They've done a great job in activating a segment of the population who otherwise might still be sitting on the sidelines. Beginners can feel uncomfortable and insecure in a gym, and the trainers get them going and keep them motivated.

But estimates say there may be as many as a million individuals offering their services as trainers. A lot of these people are products of weekend courses, and they may not know much more than you do. So when you're picking a trainer, make sure you're working with someone certified through one of the main groups such as the American Council on Exercise, the American College of Sports Medicine, the National Strength and Conditioning Association, and the National Academy of Sports Medicine.

I've seen personal trainers who come in and say, “Here's my program,” but that one way means that the work is more about them than it is about you. The routines that have benefited a trainer personally, or those designed for other clients, may not be appropriate for you. You want a trainer who listens as much as he or she talks.

And don't be too impressed just because

someone is an incredible specimen of health and fitness. It's part of their business to look good. They may exercise all day long, every day, and you don't have the time for that. And some trainers may have had a little extra help, either through favorable genes or questionable supplements. So focus on the quality of their programs, their teaching skills, and their ability to motivate you.

A good trainer will test you to measure your current level of fitness and record your body-fat percentages, levels you can lift, and so on. Then the trainer will set reasonable goals for improvement. He or she will be able to modify your program when needed should problems arise—hopefully sooner rather than later.

You want a trainer who is going to take the time to ask about injuries or ailments and who is willing to elicit feedback from you. How do you feel? Does something hurt? Is it just a little muscle soreness or is it joint soreness? And what are your fitness goals, anyway? Again, exercise is not one size fits all. You want somebody who is not only well qualified and certified, but someone willing to individualize the program for you.

FRAME FOCUS

If you lead from your frame, using this FrameWork Program, you can get the whole package: You can lose the fat, condition your cardiovascular system, and achieve the structural integrity that will make you built to last.

The frame is not only fundamental to everything else we do, it's subject to molding forces we may not even be aware of. We can

let those forces do their work outside of our control—until we're limping or shaped like a pretzel—or we can take control and shape our frames to serve our own purposes.

Normal wear and tear is a relative thing. A well-conditioned 60 year old can outperform a poorly conditioned 20 year old—but this is subject entirely to the cooperation (and proper conditioning) of the bones and joints.

Treating your body well retards aging. Not properly conditioning your body, or beating it up through a faulty exercise program, accelerates the aging process. The pace of the aging process is partly determined by genetics, but excessive alcohol consumption, smoking, lack of sleep, and poor nutrition can make you old before your time. The same is true for allowing muscles to weaken or grow imbalanced, for joints to stiffen, and for connective tissues to become brittle.

Running does not cause arthritis in healthy joints. But if you're one of the more than 10 million individuals in this country with some degree of osteoarthritis in your knees, running will indeed accelerate the wear. Ditto for hips and ankles that have early wear.

I see hundreds of patients annually who are in this very predicament. They still feel great when they run, so it's hard for them to understand that they're doing damage to these compromised surfaces. But as I tell them, "You have 10,000 miles left on your knee. Do you want to use them all up this year? Or do you want them to last a lifetime?"

Just as time takes a toll on your skin, it ups

the ante for your frame. Each decade after 25, you lose 4 percent of your muscle mass. After age 40, you lose 1 percent a year. Some people lose more. Unconditioned, you can expect to lose, at roughly the same rate, endurance, flexibility, and the ability to process oxygen. Metabolism also begins to slow in your late twenties, making it much easier to put on weight, which adds to the stress on your bones and joints.

On the happier flip side, vigorous exercise not only retards the loss of muscle, but the muscle you build helps to maintain your more youthful metabolism and appearance.

And it is never too early or too late. William J. Evans, a physiologist at the University of Arkansas for Medical Sciences in Little Rock, did a study proving that even 100 year olds could increase their strength fourfold within a few months through light weight training.

The key is knowing how hard to push yourself and knowing when and how to customize your program. Today we no longer play through the pain, but we pay close attention to the distinction between hurt and harm. That's because, if you want to stay healthy, sitting it out is not an option.