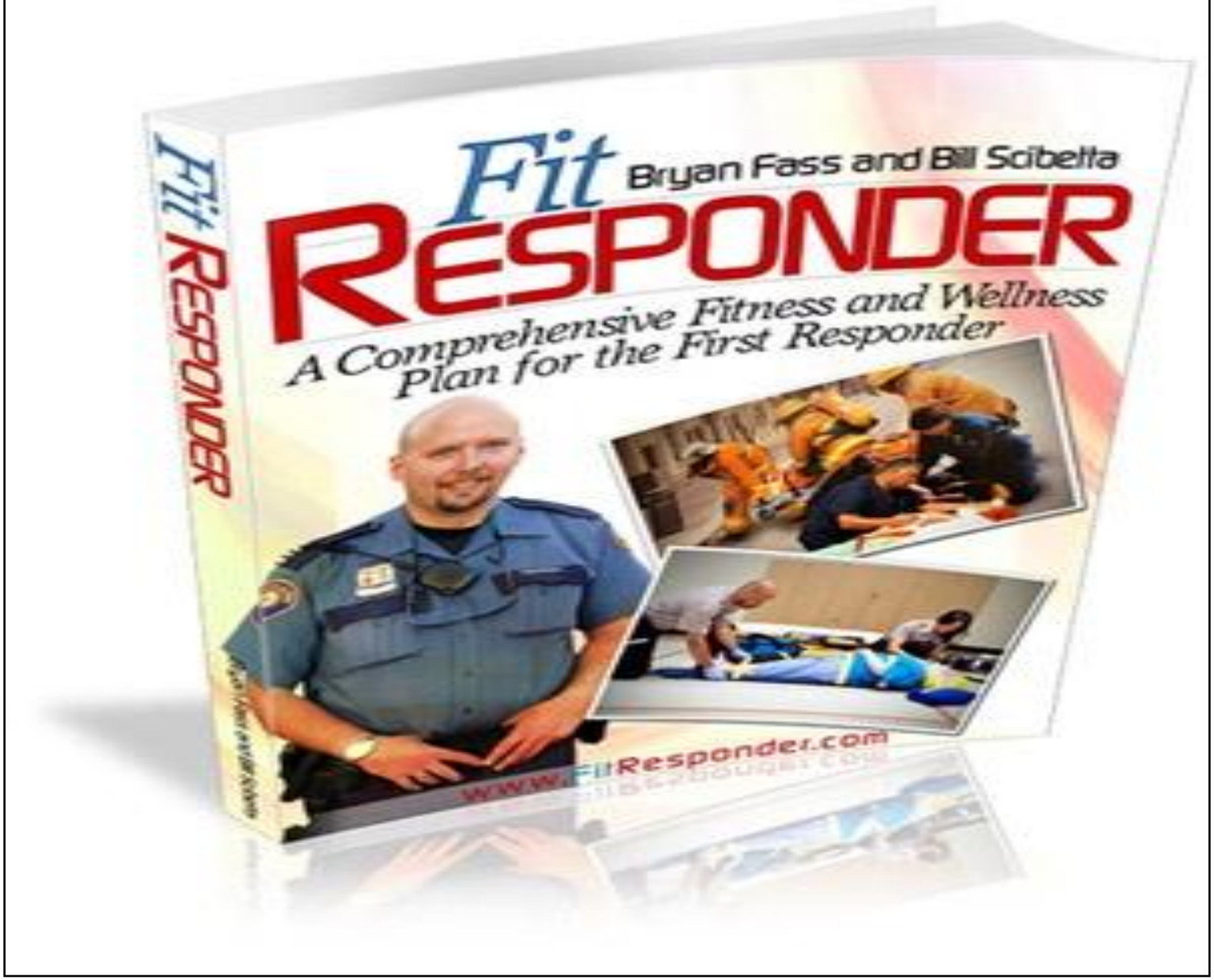

Fit Responder
Bryan Fass and Bill Scibetta
Fit RESPONDER
A Comprehensive Fitness and Wellness Plan for the First Responder
www.FitResponder.com

PROVIDER AGILITY TESTING VS. PROVIDER FITNESS PROGRAMS

Testing to Injury Prevention

“Injury prevention pertains more to retention than to recruitment of EMTs, paramedics, Firefighters and Police Officers. Once they've devoted time to the profession, we don't want them to leave because they became injured.”

Objectives

- What is fitness, wellness, agility.
- What are we testing for and for that matter are we testing at all?
- Are the tests valid?
- Are the tests accurate?
- Are the standard tests appropriate?
- Data review
- The body
- Posture
- Biomechanical patterns
- Functional testing
- Controversies…re-testing, failure, red flags

Trends In Public Safety

- Injury Rates

  -Are they decreasing?

- Injury Patterns

  -Is technology reducing where injury occurs?

- The Workers Comp. system

  -Is it effective for Public safety?

There are 2 Separate Job's

- The daily routine of day in day out job tasks.

-Employee can prepare.

- Extreme exertion and physical stress.

-"**The Big One**"

Trends In Public Safety-Stats.

- Yearly 300 fire/ems/police die in the line of duty.
- 1500 are forced into early retirement.
- 100,000 suffer lost work time from injury.
- at any given time, almost 10 % of the EMTs and paramedics in the United States miss work because of injuries and illnesses they suffered on the job.

Trends In Public Safety-Stats.

- An estimated 8.1 of every 100 emergency responders will suffer an injury or illness forcing them to miss work.

- The national average of 1.3 per 100 lost-work injury cases as reported in 2006. (general labor and municipal workers)

Ohio state, Crawford

Trends In Public Safety-Stats.

- The average of injured or ill EMTs at any one time among all participants examined = **9.4 %**
- Prevalence of lost-work injuries was highest among those with a very high call volume (22.3 %) and back problems (21.0 %). Very high call volume was defined as 40 or more calls per week.

Trends In Public Safety-Stats.

- In the execution of prehospital care duties, an EMS provider may be required to carry equipment and patients over long distances or over multiple flights of stairs at any time of the day. At a minimum, a prehospital provider must have sufficient lower back strength and hamstring flexibility to prevent musculoskeletal injury while lifting.
- They must also be fit enough to do their job when they get there!

Trends In Public Safety-Stats.

- Men were significantly taller and heavier than women and had significantly less hamstring flexibility.
- Body Mass Index was 30.7 +/- 7.2 in men and 28 +/- 5.7 in women.
- However, no significant differences were noted in an extension test of back strength.

Trends In Public Safety-Stats.

- BUT! When surveyed, 47.8% of subjects reported a back injury in the previous 6 months.

Trends In Public Safety-Stats.

- In spite of the physical nature of the profession, EMS providers in our sample were significantly overweight according to their Body Mass Index and may lack sufficient back strength and flexibility for safe execution of their duties. This group of professionals may be at risk for occupational injury and should be targeted for interventions to improve strength and flexibility.

  J Occup Rehabil. 2005 Jun;15(2):105-11.

Table S.1
Safety and Health Priorities Across Occupations, by Severity, Frequency, and Type of Duty

Occupation	Frequency: Number of Cases (% of cases)	Severity: Most Common Fatal Injuries (% of injuries)	Severity: Most Common Lost Work Time Injuries (% of lost time)	Type of duty (% of fatal/ nonfatal injuries)
Firefighters	Strains and sprains (59%)	Heart attacks (48%); Vehicle accidents (22%)	Not available	Fireground operations (32%/53%)
EMS	Strains and sprains (55%)[a]	Vehicle accidents (77%)	Strains and sprains (63%)[a]	Driving (77%/19%); Lifting (0%/42%)
Police	Strains and sprains (64%; 42% of which are back)	Vehicle crashes (37%); Assaults (37%)[b]	Strains and sprains (63%; 33% of which are back)	Driving (37%/16%); Traffic stops and directing traffic (18%/not available)

[a] Across all nonfatal injuries, the back is three times more likely to be injured than any other body part for EMS responders.

[b] 94 percent of fatal assaults on police are shootings.

- important priority among police officers and firefighters is reducing strains, sprains, and musculoskeletal disorders, which are by far the leading cause of nonfatal injuries. (rand)

- Reducing the number of strains and sprains could potentially reduce the number of disability retirements among safety employees. (rand)

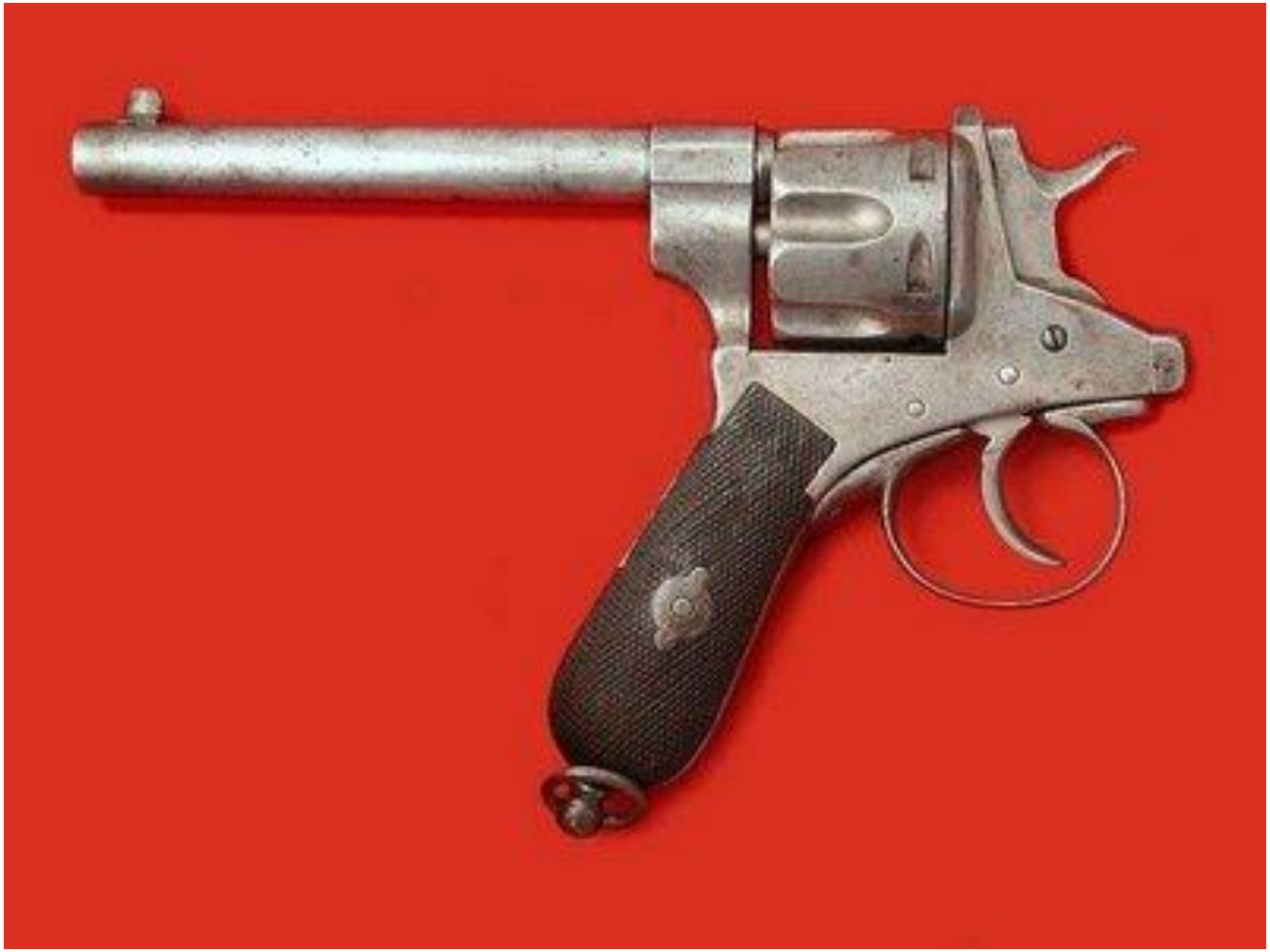
- The study also identified work-related and health conditions most likely to lead to injuries, which included responding to a high volume of emergency calls, working in bigger cities and having a history of back problems. (Ohio, Crawford)
  - One study that looked at 254 injuries to EMTs and paramedics over a 3½-year period in a major city discovered lower-back strain to be the most common injury, representing 36% of cases. Lifting caused more than 62% of such back injuries, and the injuries were recurrent in 31% of personnel.

- *-Evaluation of the injury profile of personnel in a busy urban EMS system. Am J Emerg Med 8(4): 308-11, Jul 1990.*

TABLE 3. Emergency Medical Services Injury Cases by Department of Labor Classification: Type, Total Cases, Lost Workday (LWD) Cases, LWD Rate per 100 Full-Time Workers per Year, and 95% Confidence Interval (CI), for Select Categories by Nature of Injury, Body Part, Source, and Event or Exposure,* 1999 to 2002 (n = 489)

Type	Total Cases	LWD Cases	LWD Rate (95% CI)
Nature of injury			
Fractures	15	13	0.9 (0.5–1.6)
Sprains, strains, and tears	271	176	12.4 (10.6–14.3)
Cuts, lacerations	22	10	0.7 (0.3–1.3)
Wounds	48	24	1.7 (1.1–2.5)
Multiple trauma	65	38	2.7 (1.8–3.5)
Body part			
Shoulder	22	14	1.0 (0.5–1.7)
Back	135	88	6.2 (4.9–7.5)
Multiple trunk locations	32	21	1.5 (0.9–2.3)
Fingers	39	10	0.7 (0.3–1.3)
Knees	42	30	2.1 (1.4–2.9)
Ankles	32	19	1.3 (0.8–2.1)
Multiple body parts	62	37	2.6 (1.8–3.5)
Source			
Health care patients	156	106	7.5 (6.1–8.9)
Medical surgical instruments	33	13	0.9 (0.5–1.6)
Stretchers	33	16	1.1 (0.6–1.8)
Vehicles	91	54	3.8 (2.8–4.8)
Event			
Falls	49	36	2.5 (1.7–3.4)
Overexertion—except lifting	54	37	2.6 (1.8–3.5)
Overexertion—lifting only	129	82	5.8 (4.5–7.0)
Transportation	58	34	2.4 (1.6–3.2)
Assault	14	8	0.6 (0.2–1.1)
Total	489	277	19.6 (17.3–21.9)

*Only leading types are shown within each category.



Trends In Public Safety

- Re-Injury Rates
- Return to work too soon
- Age effects injury rates (rand)

- Overexertion injury vs. accidents/falls etc. (pr)

Trends In Public Safety

- Overexertion

- Public safety is classified as “very heavy workloads”
- “exerting in excess of 100 lbs of force frequently and/or in excess of 50lbs of force frequently and/or in excess of 20 lbs of force constantly to move objects. (dot)

Trends In Public Safety-$$$$

- Overexertion injury!
- Pre-Claim average WC cost of injury = $5,168
- Average cost of an injury caused by overexertion = $9,715

Effective Risk Management

- One of the most effective ways to manage a hazard is to hire and maintain physically capable employees.
- If a person can not lift the required lbs. set by DOL and the employer = time bomb.
- This person WILL injure themselves.
- Liability that this person carries over to the public and other employees is staggering.

Fitness and Job Specific Testing

- Are the current tests accurate and valid?
- POPAT
- JARPAT
- Strength
- Cardiovascular Fitness

What are we currently testing?

- Medical history.
- Vitals, body fat, biometrics.
- Active range of motion.
- Agility.
- Job specific lifting.
- Job specific tasks.

Fitness and Job Specific Testing

- Training to pass a test

- Training to stay healthy and injury free

Fitness and Job Specific Testing

- Can a bench press save your life?
- Do you fight a fire laying on your back?
- What are we actually testing for?
  - Looking good!
- When did a dangerous exercise become a test?
  - Crunches, back extensions, leg raises, bench press to name a few.

Fitness and Job Specific Testing

- Isolated movement vs. functional movement

-Bicep curl or a pull up

- Strength vs. power

-force and speed (better definition)

- Balance vs. stability

-stability and agility……the key to fitness/wellness!

Fitness and Job Specific Testing

- 1 = Test the body

  *Functional Movement Screening!

- 2 = Test the test (standard job specific testing)

When to Test?

- After extending a job offer or before???
- Employee is demonstrating difficulty or inability to perform essential functions of the job.
- Employee complains of difficulty performing essential job functions.
- Employee is returning to work after an injury.

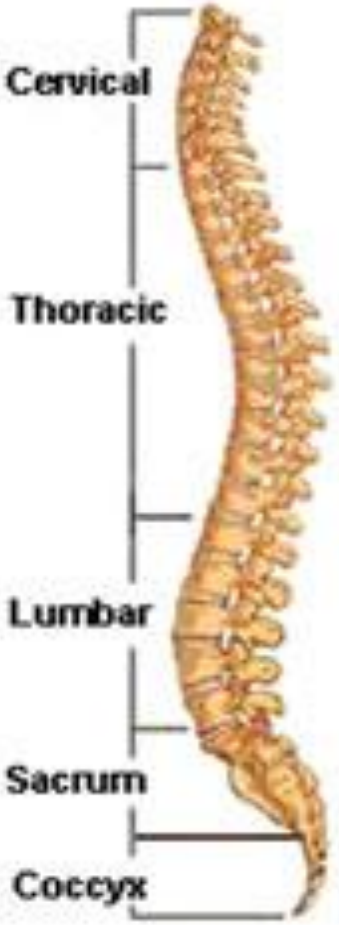
It All Starts with Posture

- Mom was right sit up straight
- Neutral aka. The plumb line
- Posture basics

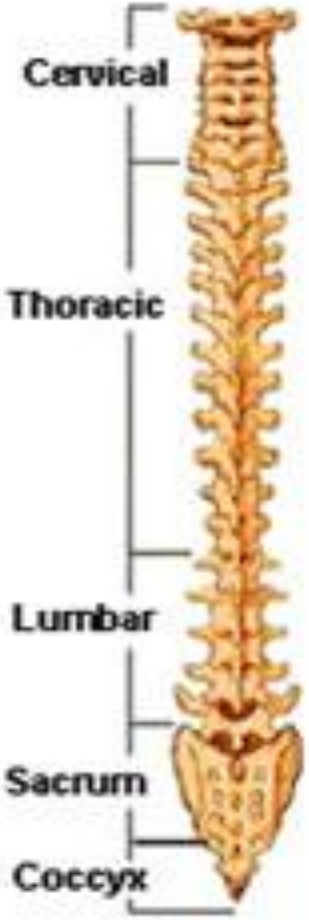
-head wt., compressive forces on the joints/spine.

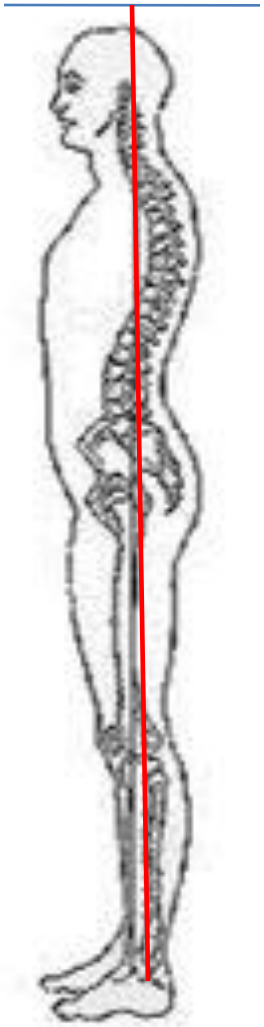
-load on impact (stepping up/down, walking, lifting) data!!!! ADD

Lateral (Side)
Spinal Column



Posterior (Back)
Spinal Column





It All Starts with Posture

- Chronic Postural distortion = faulty movement patterns.
- The proverbial straw that broke the responders back.

Upper crossed pattern

Lower crossed pattern

Allow me to vent

Let me break this down into something simple!

Injury Potential based on Postural analysis

- Lumbar
- Patella Femoral
- Neck/shoulder

Testing to Predict Injury

- Movement screening
- Basis and rationale

-yes we can predict where just not when

-we can see into the future based on specific patterns present in the body.

Head to Toe Screening

- What the physical with the doc will not tell you.
- What the ‘testing’ with the Therapist or Training officer will not tell you.
- Beware the fitness/therapy/physiologist trying to protect their job and or contract.

What the Physical with the MD will NOT tell us

- “many impairments are not evident in a typical doctor’s employment physical exam, x-rays or lab work”
- Most agencies that do not have a functional test have a 2-3% failure rate if hired solely off the MD findings. (ETF Audits revised, 2006)
- Cost?

Back to the problem

- Data from the movement screen
- Using the data to reduce injury of Sprains and Strains.

Implementing the program

- Legal stuff
- New employees
- Existing employees
- Department handbook with corrective strategies.
- Find it fix it approach.

New employee screening

- Functional test before or after the job specific test?
- Essential physical demands of the job are all ‘job related and consistent with the business necessity” (eeoc and ADA)

Current employees

- Yearly re-test
- Specific steps when a portion of the test is failed. Aka. Corrective actions
- Re-test upon return from injury.

Policy approval

- Policy must be established by the employer that all job offers are contingent on passing the functional test.
- Policy must also address providing ‘reasonable accommodation’ if the applicant fails. (ada guideline)
- This differs for prospective employees and current employees.

Find it fix it

- Just like responding to an EMS/Fire call, find the problem and fix it…..before it becomes a bigger problem.
- Why wait for the injury to occur!

Return on Investment

- Cost per screening +/- $100.00

-at an agency with 200 employees and a turn over rate of 50% the annual cost would be about $10,000.

Benefits of Functional Screening

- Eliminate 2-3% of applicants or current employees that are not safe for the job.

- Prior to the screening the 2-3% WILL have had an accident/injury.

- Increased Morale for not having to ‘take up the slack’ (eft)

Return on Investment

- Average WC cost for a back injury is $11,297.

-this $ does not include training new employees, turnover, morale, claim investigation, overtime, shift interruption.

- Direct cost = $10,000

- Direct Savings = $22-33,000 year

Technology

- Will technology save public safety employees from themselves?
- Is surgery cheating?

Technology

- They said 12 leads would never last in the field!
- They said Tasers would never last.
- Should we be afraid we may not last?
- New cots, stair chairs, infusion devices, fire fighting foams, extrication tools, protective devices……and the same old body.

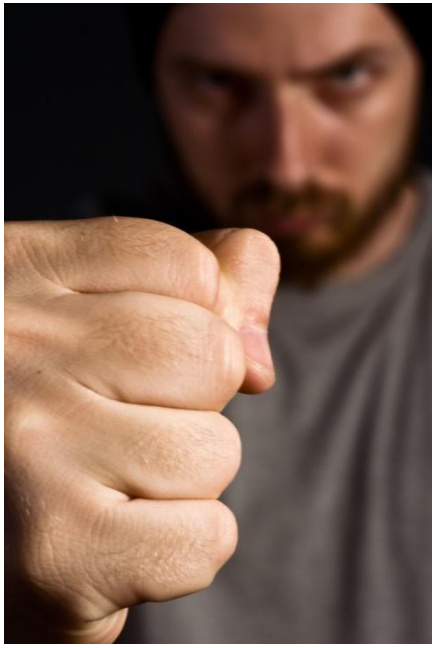
Technology

- Has the body changed?

-It’s gotten larger and fatter.

- We still move the same, technology can not change that.
- A faulty pattern is a faulty pattern.

Wake up and feel the Pain



Re-inventing the wheel

- Can a new cot and redesigned chairs stop injury?
- Can new protective gear stop injury?
- Can not stop repetitive strain injury without correcting the mechanical issue at hand = you!

Break

Standard Testing

- Do we still need the ‘standard tests’ ?
- Stretcher lift / Box lift.
- Sit up???
- Carry and walk test
- Patient drag
- Bench press

Standard Testing

- Stretcher lift = Yes!
- Gear carry = Yes! Use stairs
- Patient pull / Drag = Yes

- Take it a step further, can an employee do their job once they get there?

Functional Testing and Movement Screen

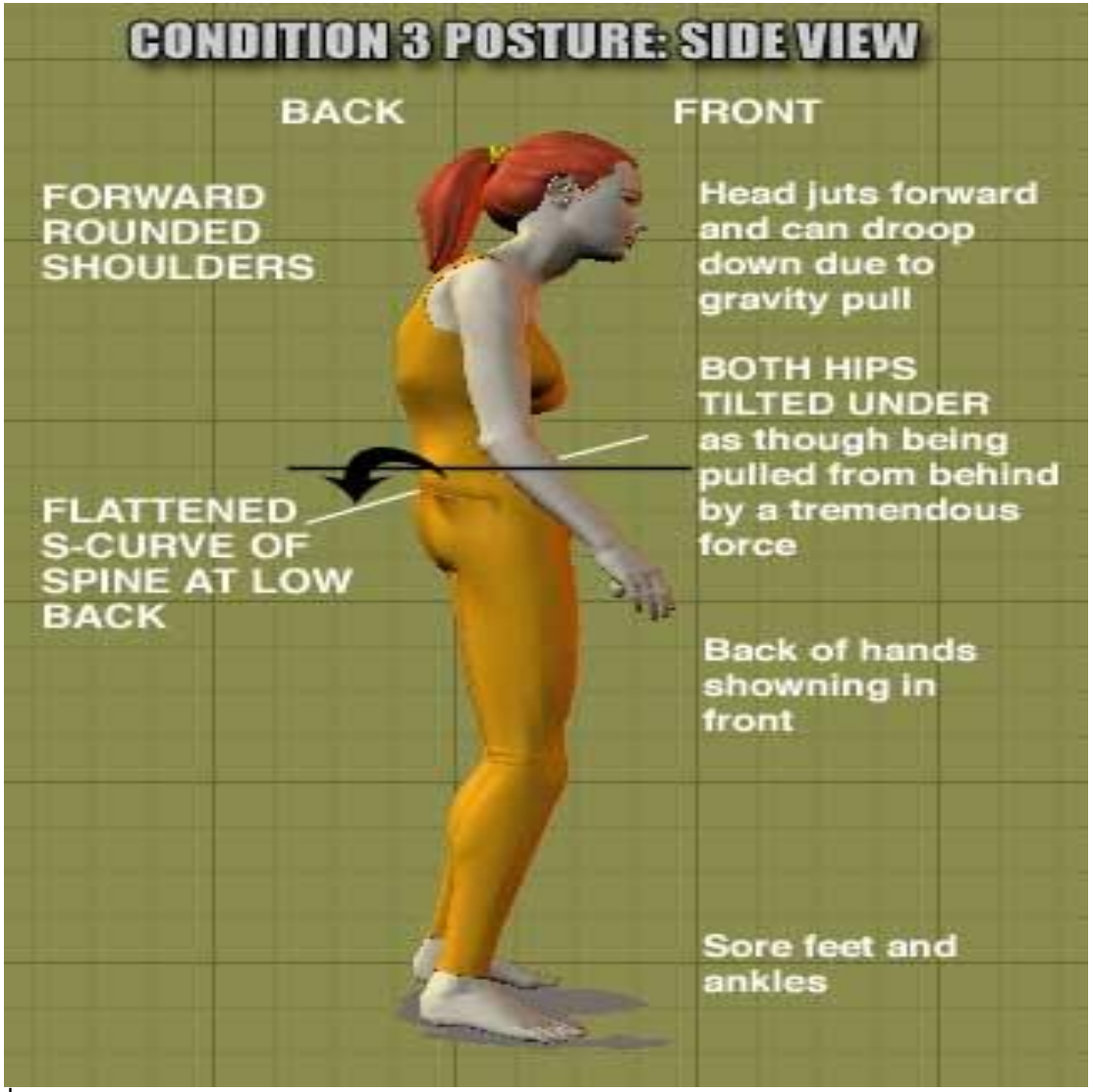
Functional Testing

1. A thorough lifestyle, sport, injury, treatment History.

- A good HX will tell you most of what you need to know……in person…not a written one!

Functional Testing

- Postural Assessment



Functional Testing

- Active ROM
- Passive ROM

Functional Testing

- Movement screening

Functional Testing

- **Single leg Test**

- Foot & Ankle-Patellafemoral-Pelvic Stability-Balance.

Functional Testing

- **Overhead Squat Profile**

- Total Body Movement Analysis!

Functional Testing

- **Segmental Stability**
- **Spinal Stability**
- Roll-Spin-Yaw.

Functional Testing

- **Step Up Test / Step Down Test**

- A ‘Functional’ and Job Specific Test at the same time?
- Lower body Strength and Balance, Power, eccentric control?

Functional Testing

- **Rotational Stability**

- Static Pelvic Rotational Control coupled with Extensor Chain Endurance.

Functional Testing

- **Prone Reach Out**

- A true ‘core’ test

Results

- What do we do with the results?
- Can we screen out the 2-3 % or maybe even more??
- Is it cost effective to pre-habilitate?????

-Fix it before it breaks!

Annual Testing

- Current and ‘Incumbent’ employees
- What if an active responder fails?
- Remediate, punish, effect pay/raises= see your friendly attorney.

- Put a positive spin on staying fit and passing the tests = prizes, bonus, time off, contests etc.

Corrective strategies

- Handbook and or poster at all stations with corrective strategies.
- ATC, PT, training officer to oversee and re-test.
- Team approach: Physical Therapist, Massage Therapist, Athletic Trainer, Chiropractor, etc.

Continued failure?

- Remedial training/exercise.
- Forced pre-hab.

- It is still much cheaper to pay an expert to prehabilitate a problem employee than to pay a WC claim.

Now that we know what's going to break how do we stop it?

- Fitness and wellness programs.
- Make on duty fitness a priority not something to be mocked.
- Set a National Fitness Standard for EMS!!

- Lessons from the corporate world and the Military.

Fit Responder

- Dispel the myths and misinformation regarding fitness, wellness and exercise.

- Psychology of exercise / mental barriers.
- Psychology of EMT's about Fitness = Help me Dr. Freud.

Fit Responder

- Stats on healthy employees

-Absenteeism: We all know what this is.

-Presenteesism: What the ?

Fit Responder

- Presenteeism: the problem of workers' being on the job but, because of illness or other medical conditions, not fully.
- Presenteeism appears to be a much costlier problem than its productivity-reducing counterpart, absenteeism

Presenteeism

—can cut individual productivity by one-third or more.

- Companies that have fitness and wellness programs report more productivity and less sick day’s with employees generally happier.

Healthy Employees

- Employers who invest in worksite health promotion programs can see a return of $3-$6 for every dollar invested over a 2-5 year period. Documented savings are observed in medical costs, absenteeism, worker's comp claims, short-term disability and presenteeism (lower on-the-job efficiency due to employee health problems.)

  Source: American Journal of Preventive Medicine, December 2005

Healthy Employees

- There are over 600 articles that analyze the research and anecdotal evidence of the cost-effectiveness of worksite wellness programs. In a review of 42 of these articles, there has been shown to be a: 28% reduction in sick leave absenteeism
- 26% reduction in use of the health care benefit.
- 30% reduced worker's comp clams and disability. management
- Reduced presenteeism losses.
- *Source: Larry Chapman, "Meta-evaluation of Worksite Health Promotion Economic Return Studies", The American Journal of Health Promotion, 2003*

Healthy Employees

- A recent study showed that corporate fitness center participants had 1.3 days fewer short-term disability claims per year per employee than non-participants and had fewer health risks. *Source: Journal of Occupational and Environmental Medicine, April 2006*

- On average, health care claim costs for IBM employees who exercise 1- 2 times a week are $350 a year less than those who don't exercise at all. *Source: Joyce Young, IBM's Well-Being Director in BenefitNews.com March, 2006*

Fit Responders Famous NO list

1) Crunches = have been proven to damage to the spine. (mcgill)

2) Leg Raises = Do not work the abs, only the hip flexors (see postural distortions)

3) Bench Press: Big bench bad shoulders!

4) Behind the neck press / pull down: Very bad for your shoulders, not a movement needed in life.

5) Smith Machine: Being forced to move within a cage on a piston is not natural.

6) Barbells: Dumbbells, cables, bands are a better option.

.

Fit Responders Famous No List

7) Back Extensions / Hyper-extensions: Just say NO! (mcgill)

8) Wrist / Ankle weights: No known benefit from there use, but they place extra strain on your joints!

9) Squats with a heel lift: Stretch your calves first so you do not need a lift.

10) Shrugs: Your upper traps are one of the most overused and posturally stressed muscles in the body, there is no need to make them any stronger

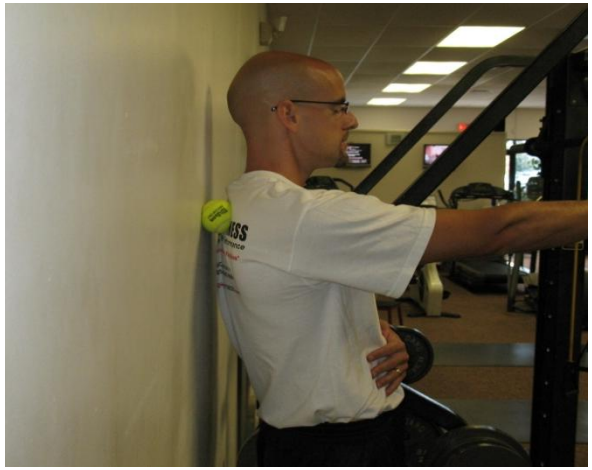
Fit Responder

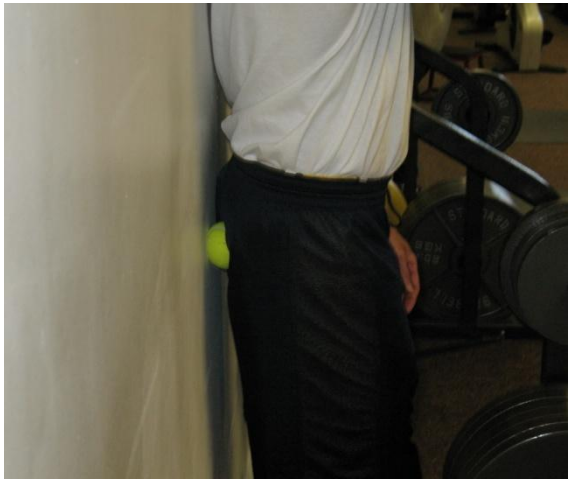
- Establish a progression of safe exercises.
- Fitness in uniform
- Daily self treatment hour!

-Self massage, Foam roll, stretching, PT

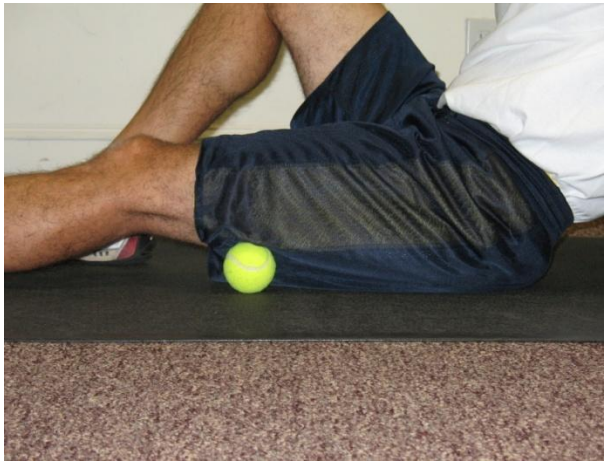
-Military does it why not us?

Self Massage

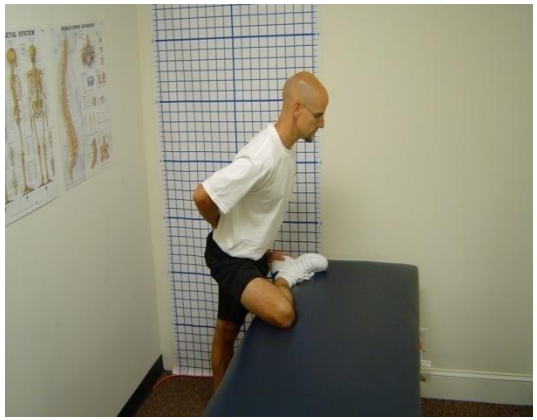




How much does a tennis ball cost?



Stretching in Uniform



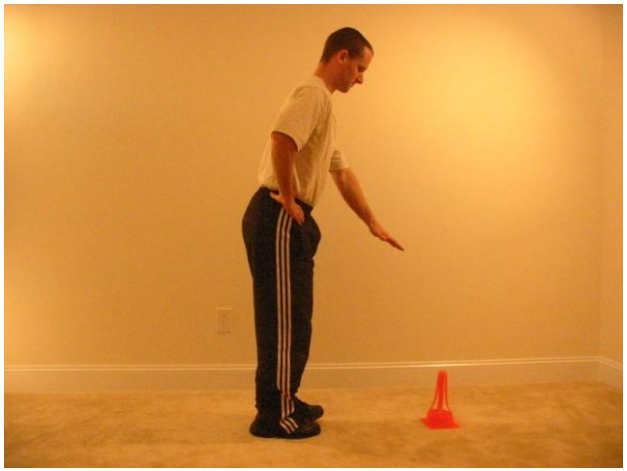
Fit Responder

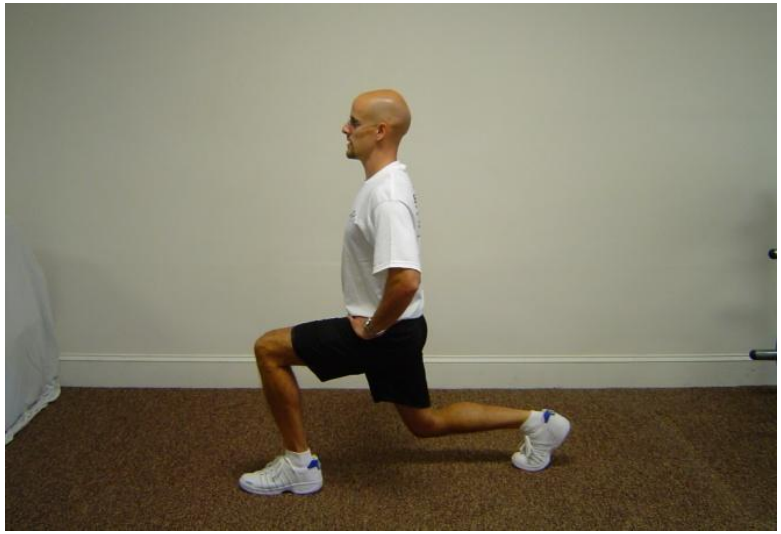
- Are there such things as back exercises?

Fit Responder

- Stabilization Exercise
  - It’s not flashy or fancy but done correctly it will prevent injury!

Stabilization

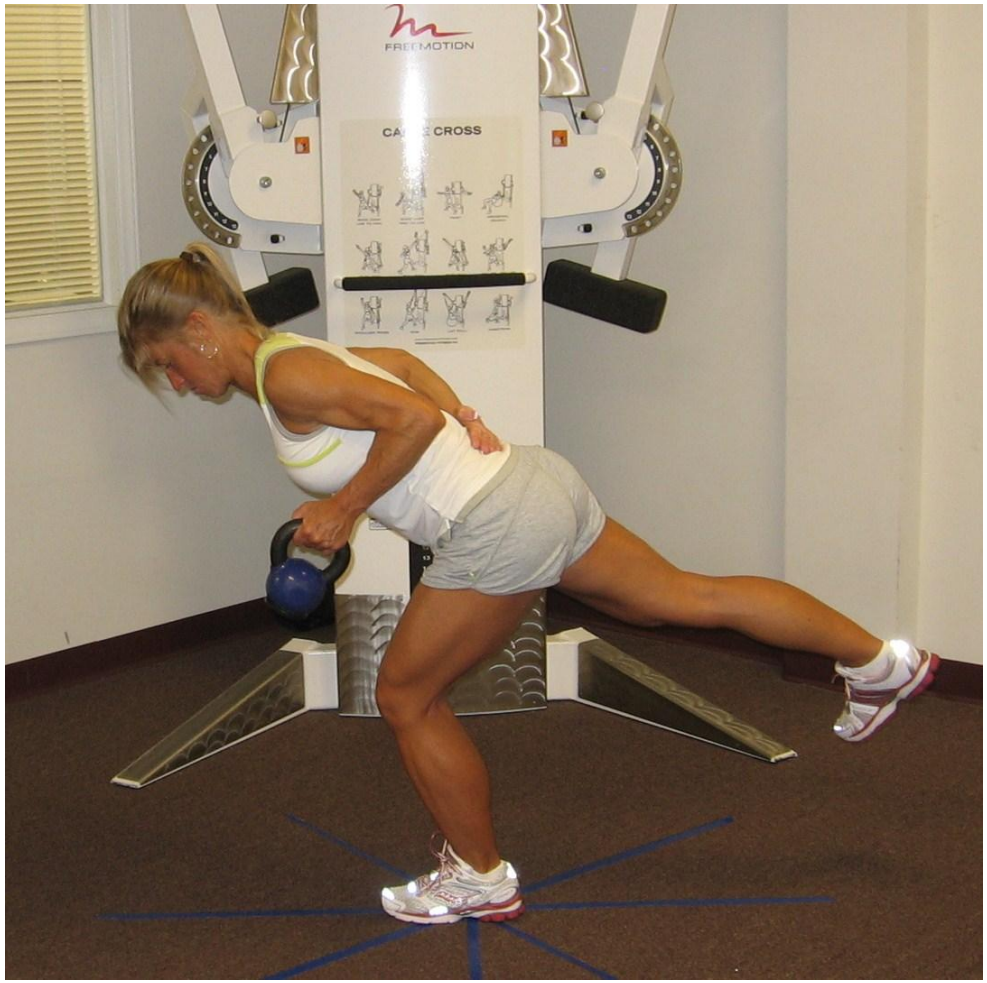




Advanced Stabs.

- Adding Instability with strength and power.
- Possibly the ultimate form of functional public safety fitness.

Kettle Bell Stabilization



Segmental Stabilization

Conclusion

- Public safety needs a new approach to fitness and testing.
- PS needs a new way to test for underlying faulty movements not just job specific tasks.
- We as a profession need to spend more time on preventing injury and changing how we think.

Conclusion

- Canadian and many European EMS programs have mandatory Physical training….sets a standard early.

- How many generations will it take to change!

- When will cost of injury and employee turnover finally destroy EMS?

Conclusion

- We have the only profession that gets paid to sit and watch TV, make exercise mandatory.
- Teach safe, cost effective, station friendly fitness and wellness programs.
- Teach self care and personal responsibility.

- bryan@firepoliceemsfitness.net

- www.fitresponder.com

  *the **Fit Responder Book**

  * coupon code Atlanta for 10% discount

- Fit Responder Blog

  www.fitresponder.wordpress.com