

This study indicates a need for improvement in several areas of fire fighters' wellness and fitness, many of which may be improved through effective prevention and treatment interventions.

Improving the Health and Safety of Fire Fighters Through Wellness-Fitness Initiatives

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Firefighting is one of the most physically demanding, stressful, and dangerous occupations (Rhea, 2004). Cardiovascular events, traumatic injuries, back injuries, and other musculoskeletal injuries are very common in uniformed personnel and severely impact the ability of uniformed personnel to protect the citizenry. Given their unique understanding of injury prevention and treatment, doctors of chiropractic could potentially play an important role in improving the health and safety of fire fighters.

A properly designed health, wellness, and fitness program assists fire fighters in becoming more physically able to safely carry out their work responsibilities, which ultimately may enhance the safety of the community. With this in mind, the Fire Service Joint Labor



Management Wellness-Fitness Initiative (WFI) was developed by the International Association of Fire Chiefs (IAFC) and the International Association of Fire Fighters (IAFF) in 1997 to offer guidelines for prevention, early detection, and intervention services for fire fighters. A WFI-based program, according to the second edition of the guidelines (IAFC-IAFF, 1999), includes five components: 1) medical; 2) fitness; 3) medical/fitness/injury rehabilitation; 4) behavioral health; and 5) data collection and reporting. Of these five components, data collection and reporting appears to be the most elusive.

Several WFI-based programs have been operational for a decade, and many others are implemented annually through FEMA grants or other taxpayer subsidies. Depending on individual agency needs and resources, wellness-fitness programs may incorporate some or all of the components of the WFI. These programs have a great potential to improve fire fighter health, wellness, and fitness, and result in substantial savings in work-related injuries, disability, and related costs. However, the actual impact of these programs is unknown, since few data are available to describe the findings and assess the

effectiveness early detection, prevention, and treatment of fire fighter injuries and illnesses.

Clinicians and researchers in our group from the University of South Florida and Spine & Sport Foundation have worked with fire service agencies for several years in various aspects of fire fighter wellness-fitness programs and preventive services. We recently assessed the wellness and fitness characteristics of fire fighters through data gathered from initial fitness and medical evaluations of a recently started WFI-based program (Mayer, 2007). Baseline fitness and medical evaluations were conducted on 793 fire fighters—725 males and 68

females—of a medium-large fire-rescue department in the United States. Physical evaluations consisted of: physical

How to Assess Outcomes in Chiropractic Clinical Care and Research

Assessing clinical outcomes is crucial for chiropractic research and the care of patients by doctors of chiropractic. Considering the demands of today's health care environment, documenting treatment outcomes has never been more important. Patient-reported outcomes (PROs) offer distinct advantages over physical tests in terms of convenience, efficiency, and cost. It is unclear, however, which PRO is the most appropriate in clinical and research settings.

A recent systematic review by Khorsan et al. (Khorsan, 2008) provided some insight about this issue. The authors' objectives were to: 1) identify patient-based outcomes used in studies on chiropractic, 2) describe a framework for the use of these measures, and 3) address the challenges associated with use of these measures. 1166 articles were uncovered, of which 626 were considered relevant. The authors concluded that the integration of outcomes in chiropractic research is consistent with national initiatives to improve health care quality through performance measurement. A variety of outcomes were used in chiropractic research; the most common were the numerical rating scale, visual analog scale, Oswestry Disability Index, Roland-Morris Disability Questionnaire, and the SF-36.

The PROs described in the paper by Khorsan et al. are good starting points when choosing appropriate outcome instruments for chiropractic clinical practice or research. Keep in mind, however, that despite the availability of hundreds of PROs, new instruments are currently being developed to improve efficiency, accuracy, and precision, especially related to the assessment of physical function and activities of daily living. Consequently, it is essential to stay well-informed of changes in outcomes assessment and related policies concerning evidence-based management.

Khorsan R, Coulter ID, Hawk C, Choate CC. Measures in chiropractic research: choosing patient-based outcome assessments. Journal of Manipulative and Physiological Therapeutics, 2008;31(5):355-75.

examination, blood profile, chest x-ray, pulmonary function, EKG and cancer screenings. Fitness evaluations consisted

of maximal exercise stress test, body composition and various muscular strength, flexibility and endurance measures.

Results of interest from this study are as follows: 33 percent, 42 percent and 73 percent of the participants reported that they performed flexibility, resistance and cardiovascular exercise three-plus times per week, respectively. 45.4 percent of respondents reported a history of low back pain, compared with 1.3 percent who reported a history of heart disease. While many of the clinical and fitness test values were within normal limits, some of the clinically significant findings at examination included:

- ▶ 55 percent of participants had elevated subcutaneous body fat (less than 20 percent males; less than 25 percent females).
- ▶ 41 percent had elevated serum cholesterol.
- ▶ 82 percent had high-normal or high blood pressure.
- ▶ 40 percent had poor low back muscular endurance.
- ▶ 30 percent had predicted V02 max values less than the recommended value for fire fighters.

Serious medical conditions diagnosed at the evaluations include severe cardiac conditions, elevated blood PSA that was later diagnosed as prostate cancer, skin cancer, highly elevated blood pressure and cholesterol, and kidney disease. This study indicates a need for improvement in several areas of fire fighters' wellness and fitness, many of which may be improved through effective prevention and treatment interventions.

Our future plans include collaborating with fire service agencies on research grants to develop, augment, and study fire fighter wellness-fitness programs in order to optimize the effectiveness of these programs. Areas of focus will include: 1) assessing wellness-fitness needs and feasibility; 2) assisting with procuring funds for program start-up and continuance; 3) implementing efficient and interoperable data management systems; 4) developing and implementing functional capacity evaluation, and injury prevention and rehabilitation programs for back injuries and related disorders; and 5) assessing intervention effectiveness and cost-benefit.

As a doctor of chiropractic, your role in improving fire fighter wellness and fitness, and subsequently the safety of the community, cannot be under-emphasized. Please contact me if you are interested in learning more about our research and programs, or are aware of potential collaborating fire service agencies. 

IAFF-IAFC. The Fire Service Joint Labor Management Wellness-Fitness Initiative, 2nd Edition. International, Washington, 1999.

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Rhea MR, Alvar BA, Rayne G. Physical fitness and job performance of fire fighters. Journal of Strength and Conditioning Research, 2004;18(2):348-52.

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