

# Eric D. Ryan, Ph.D., FACSM, FNSCA, CSCS\*D

## Associate Professor and Stallings Scholar



### Positions:

- Associate Director MOTION Science Institute
- Director of the Exercise Science Teaching Laboratory

### Research Interests:

The influence of *acute* (i.e. passive stretching, vibration, fatigue, eccentric exercise) and *chronic* (i.e. aging, occupational demands, training, nutritional supplementation) stressors on neuromuscular function. Pubmed link: <https://tinyurl.com/4xvccmf2>

### Recent Grants:

- NIOSH U19 - [Total Worker Health Approach to Reduce Falls and Advance Fall Protection in Firefighters](#) (5 yr award)
- NIOSH R03 - [Feasibility of a Train-the-Trainer delivered exercise intervention in firefighters](#) (2 yr award)

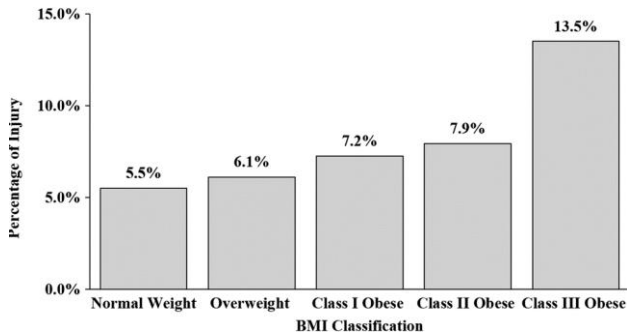
### Select Publications:

- [Ryan, E.D.](#), M.R. Laffan, A.J. Trivisonno, G.R. Gerstner, J.A. Mota, H.K. Giuliani, and B.G. Pietrosimone. **Neuromuscular determinants of simulated occupational performance in career firefighters.** *Appl Ergo.* (2021).
- Giuliani, H.K., N.W. Shea, G.R. Gerstner, J.A. Mota, J.T. Blackburn, and [E.D. Ryan](#). **The influence of age and obesity-altered muscle tissue composition on muscular dimensional changes: Impact on strength and function.** *J Gerontol A Biol Sci Med Sci.* (2020).
- Fragala, M.S., E.L. Cadore, S. Dorgo, M. Izquierdo, W.J. Kraemer, M.D. Peterson, and [E.D. Ryan](#). **Resistance training for older adults: Position statement from the National Strength and Conditioning Association.** *J Strength Cond Res.* (2019).
- Mota, J.A., Z.Y. Kerr, G.R. Gerstner, H.K. Giuliani, and [E.D. Ryan](#). **Obesity prevalence and musculoskeletal injury history in probation officers.** *Med Sci Sport Exerc.* (2019)
- Mota, J.A., T.J. Barnette, G.R. Gerstner, H.K. Giuliani, A.J. Tweedell, C.R. Kleinberg, B.J. Thompson, B. Pietrosimone, and [E.D. Ryan](#). **The influence of neuromuscular function on functional balance performance in firefighters.** *Sci Reports.* (2018).
- Gerstner, G.R., B.J. Thompson, J.G. Rosenberg, E.J. Sobolewski, M.J. Scharville, and [E.D. Ryan](#). **Neural and muscular factors contributing to the age-related reductions in rapid strength.** *Med Sci Sport Exerc.* (2017).

# Recent Graduate Student Projects

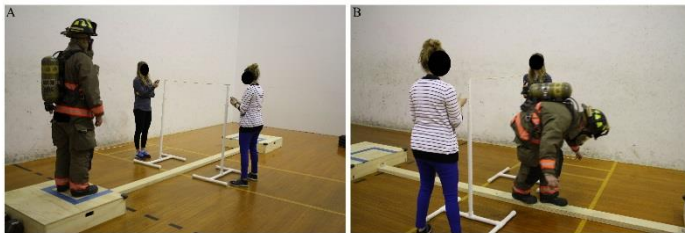
## Occupational Health & Performance

Probation officers have an alarming high prevalence of obesity (~10% severely obese). Obese and older POs had a greater odds of sustaining a work-related MSK injury.



**Source:** Mota et al. 2019 MSSE

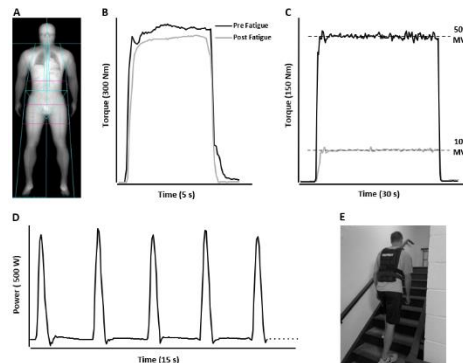
Leg strength at 100 ms, age, and %BF explains 42 – 50% of the variance in functional balance performance in firefighters.



**Source:** Mota et al. Sci Reports. 2018.

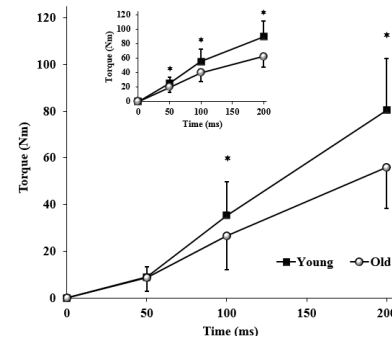
Leg peak power, steadiness, %BF, and age were key predictors of stair climb performance in firefighters.

**Source:** Ryan et al. Appl Ergo. 2021



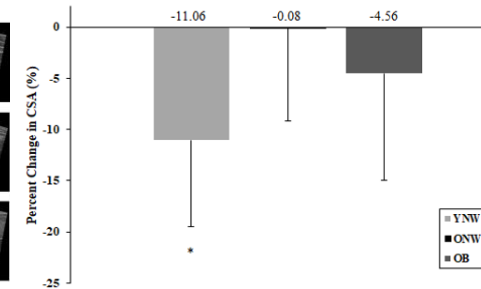
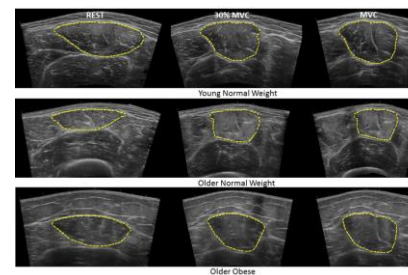
## Age-related Changes in Neuromuscular Function

Rapid strength ↓ with age at late time intervals ( $\geq 100$ ms) due to alterations in muscle quality, architecture, and activation



**Source:** Gerstner et al. MSSE. 2017

Influence of muscle tissue quality on muscular dimensional changes and its impact on strength and function. **Source:** Giuliani et al. J Gerontol 2021



The functional reactive agility test has acceptable reliability and construct validity. Due to its limited space requirements, it is an attractive tool to use in various clinical scenarios.

**Source:** Sobolewski et al. Aging Clin Exp Res. 2018

