

Kansas State University Libraries

**New Prairie Press**

---

Kansas State University Undergraduate  
Research Conference

Spring 2019

---

## The Effectiveness of a Multi-disciplinary Fitness and Wellness Program for Increasing Readiness and Resiliency in Army Soldiers

Emanuel Serrano

Phill Vardiman  
*Kansas State University*

Lauren Pacinelli  
*Kansas State University*

Follow this and additional works at: <https://newprairiepress.org/ksuugradresearch>



Part of the [Sports Sciences Commons](#)



This work is licensed under a [Creative Commons Attribution-Noncommercial 4.0 License](#)

---

### Recommended Citation

Serrano, Emanuel; Vardiman, Phill; and Pacinelli, Lauren (2019). "The Effectiveness of a Multi-disciplinary Fitness and Wellness Program for Increasing Readiness and Resiliency in Army Soldiers," *Kansas State University Undergraduate Research Conference*. <https://newprairiepress.org/ksuugradresearch/2019/posters/14>

This Event is brought to you for free and open access by the Conferences at New Prairie Press. It has been accepted for inclusion in Kansas State University Undergraduate Research Conference by an authorized administrator of New Prairie Press. For more information, please contact [cads@k-state.edu](mailto:cads@k-state.edu).



# The Effectiveness of a Multi-disciplinary Fitness and Wellness Program for Increasing Readiness and Resiliency in Army Soldiers

Emanuel Serrano<sup>1</sup>, Lauren E. Pacinelli<sup>1</sup>, Stafford Gosser<sup>2</sup>, Axel Wolff<sup>2</sup>, Donald Sexton<sup>2</sup>, & Philip Vardiman<sup>1</sup>  
 Kansas State University<sup>1</sup>, Irwin Army Community Hospital<sup>2</sup>

## ABSTRACT

**INTRODUCTION:** Structured exercise intervention has been shown to improve overall fitness performance and decrease injury rates in military soldiers. A recent operation order tasked the Holistic Health and Fitness Initiative committee at Fort Riley, Kansas to decrease the number of Army Physical Fitness Test (APFT), Body Composition Test failures, and reduce the number of Musculoskeletal (MSK) injuries. To address these concerns a multi-phase, multidisciplinary fitness program (Fit Nation [FN]) was developed. Phase 1 (P1) of FN focused on introduction to exercise and incorporated high-intensity, low-impact aerobic and anaerobic training. Phase 2 (P2) of FN focused on functional resistive strength development. With a current interest in FN's influence on strength performance, P2 will be reported. **METHODS:** Following the completion of P1, soldiers were invited to participate in P2. The P2 participants consisted of 16 soldiers (14 males, mean±SD: age=23.2±3.2 years; 2 females, 26.5±7.8 years). Originally 19 participants volunteered in P2, however 3 participants were removed due to incomplete data collection. Participants performed a resistance training protocol developed by a certified strength and condition professionals for 12 weeks (5 days/week). Pre- and post-test evaluations were performed prior to and after the 12-week protocol. **OUTCOMES MEASURED:** Pre- and post- measures of sumo deadlift (SUMO<sub>DL</sub>) to evaluate total body strength, back squat (SQ) to determine lower-body strength, and weighted push-ups (PUP<sub>w</sub>) to examine upper-body strength were performed. Repeated measures ANOVAs were applied to analyze SUMO<sub>DL</sub>, SQ, and PUP<sub>w</sub> with an alpha level of p≤0.05 to determine statistical significance. **RESULTS:** A significant difference in SUMO<sub>DL</sub>, SQ, and PUP<sub>w</sub> performance was demonstrated (post-mean±SD:117.5±28.9kg,115.1±30.6kg, 47.0±16.1kg; p≤0.001; p≤0.001; p≤0.001) respectively. **CONCLUSION:** The exercise intervention of P2 of FN has shown beneficial for strength developments of the entire body. This data could provide support for FN as a large-scale operation to improve strength beyond APTF and Body Composition Test failures. However, in its infancy, the long-term influence of FN still requires investigation. The greatest deterrent of this study was and continues to be attendance and attrition since active duty soldiers have military assignments and responsibilities such as in-field training and deployment.

## METHODS

**TRAINING PROTOCOL:** Following the completion of P1, soldiers were invited to participate in P2. The P2 participants consisted of 16 soldiers (14 males, mean±SD: age=23.2±3.2 years; 2 females, 26.5±7.8 years). P2's weekly regimen would consist of exercising 5 days/week, where on 2 separate days would be focused on lower body 3 rep-max strength and upper body 3 rep-max strength, respectively.



Figure 1. Back Squat (SQ)  
Lower-body strength



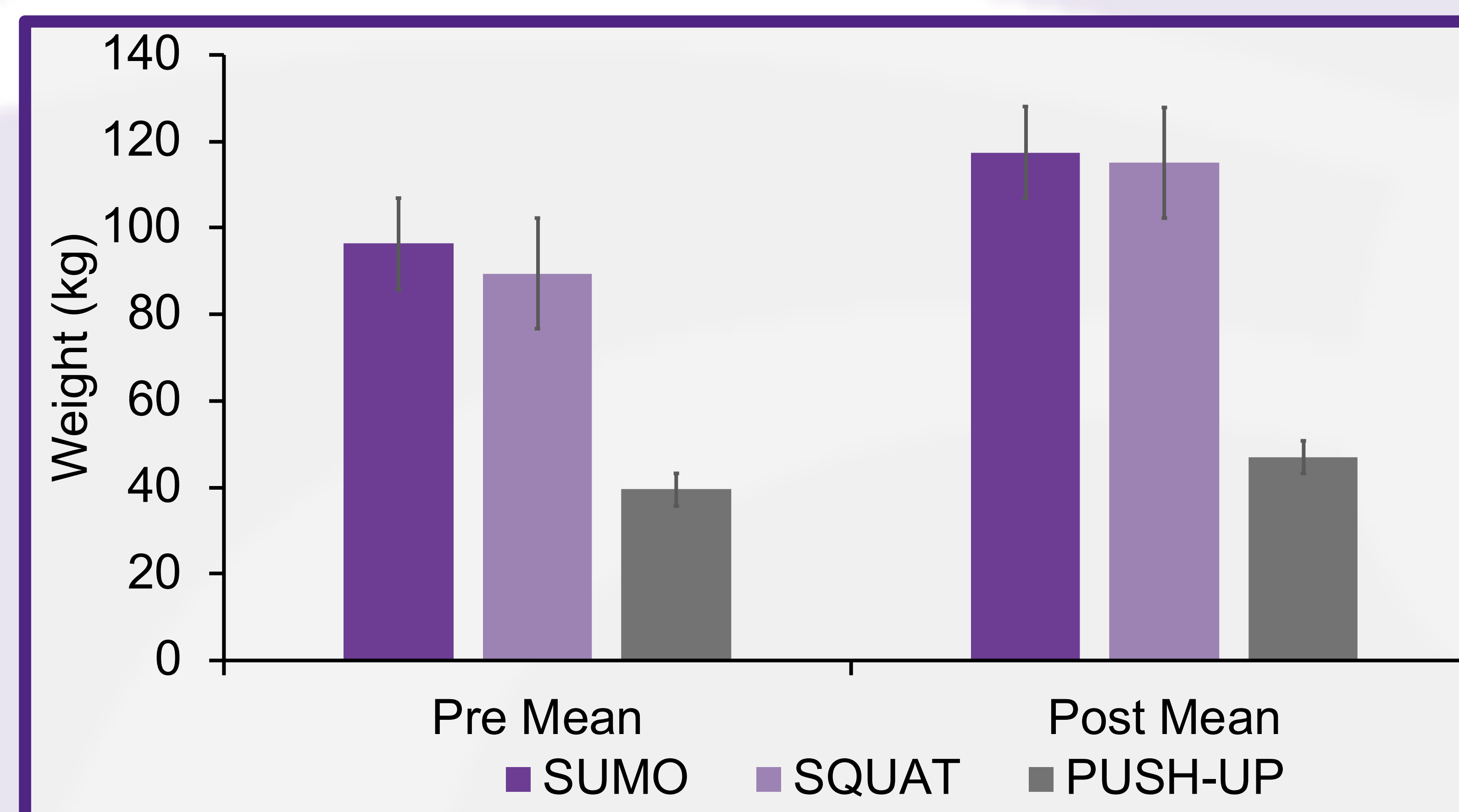
Figure 2. Sumo Deadlift (SUMO<sub>DL</sub>) Total-body strength



Figure 3. Weighted Push-Ups (PUP<sub>w</sub>) Upper-body strength

## RESULTS

**RESULTS:** After the end of the 13 weeks of P2, the intervention resulted significant increase in all three exercises. SUMO<sub>DL</sub> and SQ has shown the greatest increase (post-mean±SD:117.5±28.9kg,115.1±30.6kg;p≤0.001;p≤0.001). Although not as significant increase as the lower-body and total body exercise, PUP<sub>w</sub> has shown to increase significantly (47.0±16.1kg;p≤0.001).



## CONCLUSIONS

The exercise intervention of P2 of FN has shown beneficial for strength developments of the lower-body, upper-body, and total-body. This data could provide support for FN as a large-scale operation to improve strength beyond APFT and Body Composition Test failures, and reduce injury with proper lifting technique instructed. However, in its infancy, the long-term influence of FN still requires investigation. The greatest deterrent of this study was and continues to be attendance and attrition since active duty soldiers have military assignments and responsibilities such as in-field training and deployment.